NORTH CAROLINA DEPARTMENT OF AGRICULTURE
& CONSUMER SERVICES

STRUCTURAL PEST CONTROL DIVISION
REGISTERED TECHNICIAN TRAINING PROGRAM

# THE REGISTERED TECHNICIAN INTRODUCTORY TRAINING WORKBOOK

# THE REGISTERED TECHNICIAN INTRODUCTORY TRAINING WORKBOOK

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## What Is the Registered Technician Training Program

The **REGISTERED TECHNICIAN TRAINING PROGRAM (RTTP)** is a mandatory verifiable pesticide training program designed to ensure a minimum level of training for all structural pest control registered technicians. *The North Carolina Department of Agriculture & Consumer Services Structural Pest Control Division* (SPCD) is the state regulatory agency responsible for the administration of the **RTTP**. There are three parts to the **RTTP**: 1) The Introductory Training Workbook; 2) On-the-Job Training; and 3) The Registered Technician School. The trainee is not permitted to mix or apply pesticides without on-site supervision by a licensee, certified applicator, or a registered technician for a minimum of three days or until the trainee completes the **REGISTERED TECHNICIAN INTRODUCTORY TRAINING WORKBOOK,** whichever is longer. All three parts of the **RTTP** must be completed within 75 days of employment.

## Purpose of the Registered Technician Introductory Training Workbook

The **REGISTERED TECHNICIAN INTRODUCTORY TRAINING WORKBOOK** contains information about pesticide labels and pesticide safety with which you must be familiar to become a structural pest control registered technician in North Carolina. Though it is primarily a resource for structural pest control pesticide applicators seeking technician registration, the workbook would also be useful to anyone involved in, or wishing to learn more about pesticide labels.

The **REGISTERED TECHNICIAN INTRODUCTORY TRAINING WORKBOOK** focuses on the safe and proper use of pesticides through a better understanding of the language contained in pesticide labels. Use of the **WORKBOOK** benefits the structural pest control technician and the general public. By learning how to handle pesticides correctly, applicators will be able to protect themselves, others, property, and the environment from adverse effects of pesticides. In doing so, they will ensure the continued use of, and benefits from, pesticides as valuable tools in structural pest management.

On-Site Supervision

A registered technician trainee is under the direct on-site supervision of a licensed commercial applicator, certified applicator, or registered technician of 2 years experience if the individual is acting under the instructions and control of the supervisor who is responsible for the actions of the trainee and who is continuously physically present at the time and place of the pesticide mixing and application activity.

## How to Use the Workbook

At the beginning of each of the units there is a list of **"Terms To Know."** Read through these terms first. It is important that you understand these terms as you read each unit. The **"Terms To Know"**are underlined in your **REGISTERED TECHNICIAN INTRODUCTORY TRAINING WORKBOOK.**

At the end of each of the units you will be required to answer questions to determine your understanding of the training material. The questions are designed to help in your overall understanding of the information and should not be considered a test that you must pass the first time.

Try to answer the questions by yourself first. If you have trouble with a question in a unit, review that unit. If you still have trouble you may need to refer to an earlier unit; questions may come from material in that unit or from units already completed. If you continue to have difficulty in answering any of the questions, ask your supervisor or trainer for assistance. As a last resort, answers to the questions can be found at the end of the **WORKBOOK**. You and your trainer, supervising licensee or certified applicator must then sign and date that you have completed each unit in the **WORKBOOK.**

**The use of trade names, suppliers, or other private labels in the Registered Technician Introductory Training Workbook are for illustration only. No product endorsement is implied nor is discrimination intended toward similar products or materials not mentioned or listed.**

## TERMS TO KNOW

**Key words or terms** in your **REGISTERED TECHNICIAN INTRODUCTORY TRAINING WORKBOOK** are represented as **underlined** text. Your understanding of key words or terms is crucial to your overall comprehension of the subject matter contained in this unit and throughout other units of your **Registered Technician Introductory Training Workbook.**

**Diluent** — Anything used to dilute a pesticide. The most commonly used diluent is water.

**Environment** — Is everything that is around us. It includes all living organisms, such as man and other animals, insects, plants, air, soil, and water. As a registered technician trainee, you must be aware that this definition also includes homes, offices, factories, schools, and all that is contained within these structures.

**EPA** — A Federal government agency responsible for the review of a pesticide manufacturers' application for product registration. The Agency determines that the use of the pesticide will not present an unreasonable risk to humans or the environment.

**Label** — The written, printed, or graphic matter on or attached to the pesticide or device or any of its containers or wrappers. This includes label instructions that "refer" the pesticide user to other labeling documents intended for the safe use of the pesticide.

**Labeling** — All labels and all other written, printed, or graphic matter accompanying the pesticide or device at any time or to which reference is made on the label or in literature accompanying the pesticide or device. Labeling is not necessarily attached to or part of the pesticide container.

**Personal Protective Equipment** — Equipment designed to prevent pesticides from contacting your body or clothing. This equipment also protects your eyes and prevents inhaling of pesticides.

**Pest(s)** — A pest is any living organism, including but not limited to, insects, rodents, birds, and fungi that:

a) competes with humans and domestic animals for food and water.

b) injures humans, animals, structures, or possessions.

c) spreads disease to humans and domestic animals

d) annoys humans or domestic animals

**Pesticide** — a substance or mixture of substances intended to prevent, destroy, repel, or mitigate any pest.

As a registered technician, you will use a variety of tools to control structural pests. Pesticides will probably be among those tools. It is important that you understand from the beginning what a pesticide is. The Environmental Protection Agency defines a pesticide as "any substance or mixture of substances for preventing, destroying, repelling, or mitigating any pest."

One of the most important tools that you will use as a structural pest control registered technician trainee is the **pesticide label**. Pesticide manufacturers are required by law to put certain instructions on the label. Failure to apply a pesticide in accordance with the label directions *can result in legal action* against the violator.

**THE INSTRUCTIONS ON A LABEL ARE NOT TO BE CONSIDERED ADVICE OR SUGGESTIONS THAT YOU MAY OR MAY NOT FOLLOW WHEN APPLYING PESTICIDES. . .THE INSTRUCTIONS ON THE LABEL MUST BE FOLLOWED!**

## Pesticide Registration

Every pesticide must be registered with the federal U.S. Environmental Protection Agency (US **EPA**) as well as with the **North Carolina Department of Agriculture & Consumer Services** Pesticide Section before it can be sold in North Carolina.

The registration procedure is intended to ensure the proper and safe use of pesticides and to protect people and the **environment** from ineffective or hazardous pesticides.

## EPA Registration Number

An EPA registration number (for example **EPA REG. NO.4758-137**) must appear on all pesticide labels. This indicates that the pesticide product has been registered and its label approved by the EPA. Most products will contain only two sets of numbers. In the above example, the first set of numbers, **4758**, identifies the manufacturer; the number **137** identifies the pesticide product. If a third number is present, this identifies the product as a supplemental registration, identical to the primary registration but made for another company under its special name.

The EPA registration number is NOT a guarantee of safety in all pesticide application situations. The safe use of pesticides can only come through a comprehensive pesticide applicator training program, such as your RTTP, and strict adherence to label directions.

## EPA Establishment Number

This number, for example **EPA EST. No. 11715-NC-1**, identifies the facility that produced the product and is useful in case a problem develops or the product is found to have been contaminated. As with the registration number, the first set of numbers, **11715**, identifies the manufacturer. The letters **NC**, in this example, identify the state of the manufacturer as North Carolina. The number **1** identifies the chemical plant within the state.

The registration number and establishment numbers are needed by the pesticide applicator in situations involving accidental poisoning, claims of misuse, or liability claims.

## Label and Labeling

Pesticide labeling is the main method of communication between a pesticide manufacturer and you, the pesticide applicator. The information printed on or attached to the pesticide container is the **label**. **Labeling** includes the label itself, plus all other information you receive from the manufacturer about the product when you buy it. The labeling includes brochures, leaflets, and other information that accompanies the pesticide product. Pesticide labeling gives you instructions on how to use the product safely and correctly. **Pesticide users are required by law to comply with all the instructions on a pesticide label.**

**The pesticide label provides instructions on:**

- how to mix a pesticide
- how, where, and when to apply a pesticide
- where **not** to apply a pesticide
- the proper storage of a pesticide
- how to properly dispose of the pesticide container when it is empty
- how to dispose of excess pesticide
- what to do in case anyone has been exposed to the pesticide

**The wording on a label is proposed by the manufacturer of the pesticide and approved by the United States Environmental Protection Agency (EPA). The EPA specifies what information must be provided on a label. It also requires that a particular format be used for every label, such as the size of the print and where on the label specific information must appear.**

## When To Read the Pesticide Label

**Before purchasing the pesticide**

- make sure it is labeled for your intended use.
- are you allowed by the label to apply the pesticide to a specific site, such as a kitchen, crawlspace, attic, food processing area, etc?
- does the pesticide state that it can be used against the **pest(s)** you are attempting to control?
- does the pesticide require special application equipment?
- do you have the **personal protective equipment (PPE)** required by the label for its use?

**Before mixing and applying the pesticide**

- do you have the proper personal protective equipment that is required for proper mixing and application of the pesticide?
- do you know what first aid and medical treatments are required by the pesticide label in the event of an accident?
- do you know what **diluent** should be used to mix the pesticide?

**When storing the pesticide**

- how should you store the pesticide to prevent breakdown or contamination?
- does this pesticide require the storage area to be posted with warning signs?
- can this pesticide be stored safely with other pesticides?
- always store the pesticide out of the reach of children or animals.
- are there any other storage requirements listed on the pesticide label?

**Before disposing of excess pesticide and empty pesticide containers**

- can you simply dispose of the pesticide in the trash dumpster?
- do you need to rinse the container?
- can the empty containers be recycled?

**NEVER** burn, bury, or dump excess pesticide or pesticide containers. To do so is a violation of Federal and State regulations!

The statement "**always read and follow all label directions**" is perhaps the most important overall statement you will hear in your work and throughout this **WORKBOOK.** The primary reason for the development of this **WORKBOOK** is to help you better understand labels. Each of the major pesticide label components will be discussed as individual units within this **WORKBOOK.**

## TEST YOUR UNDERSTANDING

Upon completion of each of the units contained in the **Registered Technician Introductory Training Workbook,** you will be required to answer questions to ensure your understanding of the training material.

**The questions may be from material contained in the unit you are currently completing or from units already completed.**

The questions should be considered an important part of the pesticide label learning process and should not be considered a test that you must pass the first time in order to complete the **WORKBOOK**.

Try to answer the questions by yourself. However, if you have difficulty in answering any of the questions, ask your designated trainer for assistance! Answers to the questions can be found at the end of the **WORKBOOK**.

## MULTIPLE CHOICE.

Select the **best** answer of the 4 choices provided:

I.1 The best source of information on how to use a pesticide can be found by:
- a contacting another structural pest control operator
- b reading the label
- c calling the individual who sells the pesticide
- d asking a farmer

I.2 The directions for use on a pesticide label:
- a are not required to be read by experienced pesticide applicators
- b are intended only for those unfamiliar in using pesticides
- c require that all pesticide use activities be made in strict accordance to the directions
- d don't need to be followed *every* time you use the product

I.3 Who has the responsibility to apply a pesticide according to the directions on the label?
- a the applicator of the pesticide
- b the pesticide manufacturer
- c the EPA
- d your local enforcement agency

I.4 When using a pesticide, how often should you refer to and "read the pesticide label"?
- a if you read it slowly, once should be enough
- b two to three times if it's a new pesticide
- c every 10 days
- d as often as necessary to apply the pesticide correctly and safely

I.5 When is it permissible to bury or burn excess pesticide?
a. whenever weather conditions are favorable to prevent pesticide pollution
b. if the pesticide container is water soluble
c. never
d. if the pesticide container is glass or metal

## FILL-IN THE BLANK.

Complete each statement with the appropriate word(s):

I.6 To comply with the requirements of the RTTP, on-site supervision must be conducted for a minimum of _____ days or until the _____ has been completed.

I.7 The _____is the regulatory agency responsible for the administration of the North Carolina **Registered Technician Training Program.**

I.8 Equipment designed to prevent pesticides from contacting your body or clothing is called _____.

I.9 A substance or mixture of substances that is intended to prevent, destroy, repel, or mitigate any pest is called a _____.

I.10 A _____ is the written, printed, or graphic matter on or attached to the pesticide or device or any of its containers or wrappers.

I.11 An EPA _____ _____ must appear on all pesticide labels.

I.12 The pesticide _____gives you instructions on how to use the product safely and correctly.

I.13 Failure to apply a_____ properly can result in legal action against the violator if the instructions on a pesticide label are not followed.

I.14 Pesticide applicators are required by_____ to comply with all the instructions and directions that appear on a pesticide label.

I.15 The pesticide label is a document which provides instructions on how to:

_____

_____

_____ (Provide 3 label instructions).

## TRUE OR FALSE.

Read each question. Decide if the statement is true (**T**) or false (**F**). Circle your answer.

I.16 An EPA registration number indicates that the pesticide has been registered and its label approved by the EPA.

T F

I.17 The establishment number appears on either the pesticide label or pesticide container.

T F

I.18 The labeling may include brochures, leaflets, and other information that accompanies the pesticide product.

T F

I.19 It is a violation of Federal and State regulations to burn, bury, or dump excess pesticide or pesticide containers.

T F

1.20 The safe use of pesticides can only come through strict adherence to label directions.

T F

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

_____ _____

**Registered Technician Trainee** **Date**

_____ _____

**Designated Trainer** **Date**

NOTES:

## TERMS TO KNOW

| | |
|---|---|
| **Active Ingredient** | The active ingredient, abbreviated "a.i.", is the material in a pesticide formulation that actually controls (prevents, destroys, repels) the target pest. |
| **Degradation** | The breakdown of a pesticide, by environmental factors or microorganisms, into an inactive or less active form(s). |
| **Dermal** | Pertaining to the skin. One of the major ways pesticides can enter the body to possibly cause harm. |
| **Exposure** | Coming in contact with a pesticide. |
| **Ground Water** | Ground water is water located beneath the earth's surface. Often, it is water trapped in pools, called aquifers. Ground water is one of the primary sources of water for drinking and irrigation. |
| **Hazard(s)** | The risk of harmful effects from pesticides. Hazard depends on both the toxicity of the pesticide and the exposure received. |
| **Inert Ingredient** | Material(s) in a pesticide formulation that are not active ingredients. The inert ingredient(s) are added to dilute the a.i. and improve the mixing and handling qualities of the pesticide. Inert ingredients may be hazardous to humans, animals, and plants. |
| **Leaching** | The movement of pesticide downward through the soil, usually by being dissolved in water, with the possibility of reaching groundwater. |
| **Organism(s)** | Any living thing(s). |
| **Residue** | Traces of the active ingredient or breakdown product of a pesticide that remain and can be detected in crops, soil, water or the environment following the use of a pesticide. |
| **Persistent** | A pesticide that remains active in the environment for long periods of time because it is not easily broken down by micro-organisms or other environmental factors. |
| **Federal Registration** | A pesticide registered by the US EPA. |
| **State Registration** | A pesticide must be registered with the appropriate state agency before it can be sold in the state. |
| **Toxicity** | The potential a pesticide has for causing harm to humans. |

Chemicals used in structural pest control are collectively known as pesticides.

Pesticides control insects, fungi, rodents, weeds, and other pests. Pesticides are developed from naturally-occurring compounds or are made in laboratories (synthetic pesticides) by chemists. On average, only one in 20,000 chemicals tested makes it through the development and screening process to become a commercially successful pesticide.

Every pesticide must be registered with the **United States Environmental Protection Agency (EPA)**, including those that you will use in structural pest control.

Each pesticide is subjected to rigorous health, safety and environmental tests. **Safety** is the most important factor in pesticide research and development. When used properly, pesticides must not create an unreasonable risk to the user or the environment.

**Pesticides are strictly regulated under the *Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).***

Pesticide manufacturers that have pesticides registered with the US EPA **(Federal registration)** will display an EPA approved label on their containers. To the manufacturer, registration means the pesticide may be legally sold and distributed in the United States. To the pesticide applicator, the label states how to use the pesticide correctly and legally. To physicians, the label provides information for proper medical treatment in cases of exposure to pesticide.

The EPA requires that pesticide labels list precise instructions for all **pesticide handling activities**. Some of these instructions provide valuable information regarding:

- personal protective equipment (PPE) requirements for pesticide applicators
- directions on mixing the pesticide
- warning statements about specific **hazards** when using the pesticide
- environmental warnings
- proper container disposal
- competency training (state certification) for those handling specific pesticides

Each time you handle a pesticide, you get *detailed* instructions on how to use it—right on the container label! It is your main source of information on how to use product **correctly, safely, and legally.** A recent survey promoted by a leading pest control magazine asked readers which pesticide topic was most important for training of new hires. Seventy-two percent responded that **label comprehension** was the key to ensuring a better understanding of pesticides.

The label is your source of special safety measures needed to protect yourself, those around you, and the environment. In case of an accident or **overexposure**, the label identifies the pesticide's active ingredient so medical personnel can provide immediate and proper treatment.

The label helps you achieve maximum benefits at a minimum risk. Going against the instructions may make the pesticide ineffective and, even worse, dangerous to you! As a new employee in the structural pest control industry, you should develop the habit of reading the label **before**:

- purchasing the pesticide
- mixing the pesticide
- applying the pesticide
- storing the pesticide
- disposing of the pesticide

Don't make the mistake of relying on your memory to recall important information on the label —it's too easy to forget! After all, you are not required to memorize the instructions on every pesticide label; but you **must** have the label readily accessible at all times and refer to it whenever needed.

Information on a pesticide label is usually grouped under major headings to make it easier to find the information you need. Some information is required by law to appear on a certain part of the label or under certain headings. Other information may be placed wherever the manufacturer chooses. Table 1.1 and the **Ficam** insecticide label on the following pages show the format and information required by the EPA on pesticide labels.

## Table 1.1

| | | |
|---|---|---|
| 1 | **Company Name And Address** | The manufacturer of the pesticide. |
| 2 | **Brand Name** | The name under which the product is sold. |
| 3 | **Net Contents** | This indicates how much product is in the container. |
| 4 | **EPA Registration Number** | The registration number assigned to the pesticide by the EPA at the time of registration. |
| 5 | **EPA Establishment Number** | The final facility at which the pesticide was produced. |
| 6 | **Type of Pesticide** | The term pesticide is a broad term under which insecticides, fungicides, and herbicides fall. Insecticides control insects, fungicides control fungal diseases and wood-decay fungi, and herbicides control brush and weed growth. |
| 7 | **Ingredient Statement** | The label of each pesticide must bear a statement which contains the name and percentage by weight of each **active ingredient** and the total percentage by weight of all **inert ingredients**. |
| 8 | **Precautionary Statements** | Required warnings and precautionary statements concerning the general areas of hazard including hazards to children, environmental hazards and physical or or chemical hazards. |
| 9 | **Child Hazard Warning** | Every pesticide label shall bear on the front panel the statement **"Keep out of Reach of Children"**. |
| 10 | **Human Hazard Signal Word** | A signal word is assigned on the basis of the **highest** human hazard (oral, inhalation or **dermal toxicity**) that is most likely to be harmful and which must be particularly protected against. |
| 11 | **Statement of Practical Treatment** | Lists the first aid treatment that should be administered to someone accidentally exposed to a pesticide. |
| 12 | **Hazards to Humans and Domestic Animals** | These precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions to be taken to avoid accident, injury or damage. |
| 13 | **Environmental Hazards** | Where a hazard exists to non-target organisms, excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident, injury or damage. |
| 14 | **Physical or Chemical Hazards**: | Warning statements on the flammability or the explosive characteristics of the pesticide. |
| 15 | **Directions For Use** | "It is a violation of Federal law to use this product in a manner inconsistent with its labeling" Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. |
| 16 | **Storage and Disposal** | All pesticide labels include general instructions for the appropriate storage and disposal of the pesticide and its container. |
| **The Label Components in Shaded Areas Are Self-Explanatory and Will Not Be Discussed Further in the Workbook.** | | |

1

NORAM CHEMICAL COMPANY

# FICAM® 2

## WASP & HORNET INSECTICIDE SPRAY 6

**CONTAINS SYNERGIZED BENDIOCARB**

**KILLS WASPS, HORNETS, YELLOW JACKETS, BEES, ANTS, AND SPIDERS**

**NOT FOR SALE OR USE IN CALIFORNIA**

**DIELECTRIC BREAKDOWN VOLTAGE: 23,000 volts**
**May be used in or around electrical equipment**

ACTIVE INGREDIENTS: Percent by Weight 7
•Bendiocarb(2,2dimethyl1,3benzodioxol4yl methylcarbamate) ..... 0.1%
• • Piperonyl Butoxide Technical ..... 0.5%
INERT INGREDIENTS: ..... .99.4%
TOTAL ..... 100.00%

•Protected by U.S. Patent No 4,056,625
••Equivalent to min. 0.40% (butylcarbityl) (6propylpiperonyl) ether and 0.10% related compounds

EPA Reg. No. 45639-140 4

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## KEEP OUT OF REACH OF CHILDREN WARNING 10

**STATEMENT OF PRACTICAL TREATMENT** 11

**IF SWALLOWED:** CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. DRINK 1 OR 2 GLASSES OF WATER AND INDUCE VOMITING BY TICKLING BACK OF THROAT WITH FINGER. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

**IF INHALED:** REMOVE AFFECTED PERSON TO FRESH AIR. APPLY ARTIFICIAL RESPIRATION IF INDICATED.

**IF IN EYES:** FLUSH WITH PLENTY OF WATER. CONTACT A PHYSICIAN IF IRRITATION PERSISTS.

**IF ON SKIN:** REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED AREAS OF SKIN WITH SOAP AND WATER. CONTACT A PHYSICIAN IF IRRITATION PERSISTS. WASH CLOTHING WITH SOAP AND WATER BEFORE RE-USE.

**NOTE TO PHYSICIAN:** BENDIOCARB IS A CHOLINESTERASE INHIBITOR. ATROPINE SULFATE 2 MG. SHOULD BE GIVEN BY INJECTION AND REPEATED AS NECESSARY UNTIL FULLY ATROPINIZED.

**PRECAUTIONARY STATEMENTS** 8

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS** 12

**WARNING**

May be harmful if swallowed or absorbed through the skin.
Do not get in eyes.
Avoid breathing spray mist.
Avoid contact with skin or clothing.
Wash thoroughly with soap and water after handling.

**ENVIRONMENTAL HAZARDS** 13

This product is toxic to fish, birds and other wildlife. Do not apply directly to water. Do not contaminate water when disposing of equipment washwaters.

**PHYSICAL & CHEMICAL HAZARDS** 14

Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.

**DIRECTIONS FOR USE** 15

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

Direct spraying will cause damage to plants on contact.
Do not allow spray to contact plastic, rubber, asphalt or stained wood surfaces due to the fact that further staining could result on previously stained cedar surfaces.

Do not use as a space spray indoors.

To be used in and around homes, apartments, commercial buildings, kennels, barns, patios, institutions, warehouses, theaters, office buildings, schools, motels, hotels, transformers, electrical boxes, and those areas where wasp, hornet, bee, and yellow jacket nests are generally located.

To operate, remove protective cap and depress button, being sure to aim spray opening at the location to be sprayed. Direct spray at wasps, hornets, bees, and yellow jackets whenever possible and under eaves, into nests, cracks, holes, or crevices wherever insects are noticed.

Spray for about 12 seconds or until surface is moist from insecticide. To prevent entrance of insects into the house, spray around points where outside plumbing, faucets, etc. enter the house and into any cracks or crevices in foundation as well as along sills and ledges.

**Kills wasps, hornets, honeybees, and yellow jackets:** This spray is fast acting when insects are hit directly. If a breeze is present,application should be made only with breeze at back. Application should be made in the evening when the hornets are at rest.

**Kills ants and spiders:** This spray is fast acting when pests are hit directly. With the breeze at back, thoroughly spray all pests present. Allow about 24 hours for those insects or spiders which were not directly hit by spray to leave the area. If insects or spiders, should return to the treated area, spray again. This container delivers a stream type spray, making it possible for the operator to stay back from the places sprayed. This formulation utilizes synergized Bendiocarb, a combination specifically effective on this class of pests. 16

**STORAGE AND DISPOSAL**

**STORAGE:** Store in a cool,dry place inaccessible to children and pets. Exposure to temperatures above 130°F may cause bursting.

**DISPOSAL:** Replace cap, wrap container in several layers of newspaper and discard in trash. Do not incinerate or puncture.

**IN CASE OF FIRE, LEAKY OR DAMAGED CONTAINERS, OR OTHER EMERGENCY, REPORT AT ONCE BY TOLLFREE TELEPHONE TO: 8004249300.**

**IMPORTANT: READ BEFORE USE**

By using this product user or buyer accepts the following conditions, warranty, disclaimer of warranties and limitations of liability.

**CONDITIONS:** The directions for use of this product are believed to be adequate and should be followed carefully. However, because of extreme weather and soil conditions, manner of use and other factors beyond NORAM Chemical Company's control, it is impossible for NORAM to eliminate all risks associated with the use of this product. As a result, crop injury or ineffectiveness is always possible. All such risks shall be assumed by the user or buyer.

**DISCLAIMER OF WARRANTIES:** THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL. No agent of NORAM Chemical Company is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. NORAM disclaims any liability whatsoever for incidental or consequential damages, including, but not limited to, liability arising out of breach of contract, express or implied NOR-AM Chemical Company. 1991warranty including warranties of merchantability and fitness for a particular purpose), tort, negligence, strict liability or otherwise. FW&H-SL-10M-(900912)-Rev. 12/92

The label on a pesticide is the result of years of research by scientists in both laboratory and field tests. The information on the label takes **10-12** years to obtain and costs the manufacturer millions of dollars!

Before a pesticide is registered, the manufacturer must test the pesticide to determine how hazardous or dangerous it is to humans, wildlife, and other **organisms.** The pesticide manufacturer must have performance data to show that the pesticide will control a particular pest or group of pests on one or more hosts or sites, such as plants, animals, soil, and structures.

The pesticide manufacturer must determine what happens to the pesticide after it is applied to the environment . . .

- does the pesticide **degrade** into harmless materials?
- does it **leach** or move through soil to the **groundwater?**
- how much pesticide **residue** remains in the environment
- how long after the application of the pesticide does it **persist?**

Only after a chemical manufacturer has conducted these and many other required tests, is the chemical manufacturer now ready to submit these data to the EPA for review. The chemical manufacturer asks for pesticide "use registrations" on the crops, animals, or, in the case of structural pest control, application sites, in which it has pest management and safety test data. The chemical manufacturer must support its claims that the pesticide is a safe and useful product when used for its intended purpose and according to label directions.

Federal law strictly defines the information manufacturers must put on pesticide labels. Before a manufacturer can register a product, the US EPA must approve its label language **(Federal registration)**. In North Carolina, and other states, the pesticide must be registered by the appropriate state agency before a pesticide can be sold or used in that state **(state registration).**

**The EPA registration process is necessary to protect you, the consumer, and the environment from the potential harmful effects of pesticides and to ensure the proper and safe use of pesticides.**

Some labels are very easy to understand; others are complicated. Regardless of the complexity of the label, it is your responsibility to *read and understand the label*. To help you better understand the information on a pesticide label, each of the label components will be discussed in detail in the remaining units of your **Registered Technician Introductory Training Workbook**.

## TEST YOUR UNDERSTANDING

### MULTIPLE CHOICE.

Select the **best** answer of the 4 choices provided:

1.1 Chemicals used in structural pest control are collectively known as:
a. leaching agents
b. herbicides
c. pesticides
d. diluents

1.2 A pesticide manufacturer's primary responsibility to the environment in developing a pesticide is to:
a. ensure the safety of the product under a wide range of environmental conditions
b. develop pesticides that will never degrade or breakdown
c. develop as many pesticides as possible
d. all of the above

1.3 Pesticides must be registered with the United States:
a. USDA
b. NCDA&CS
c. RTTP
d. EPA

1.4 Every pesticide label shall bear on the front panel the statement:
a. hot stuff—do not touch
b. keep out of reach of children
c. keep out of harms way
d. use in a manner inconsistent with the labeling

1.5 To register a pesticide with the US EPA, the manufacturer must:
a. show that the pesticide will have a minimum impact on the environment if the label is followed.
b. furnish all experimental data to support its use
c. prove that it can control pests listed on its label
d. all the above

## TEST YOUR UNDERSTANDING

### FILL-IN THE BLANK.

Complete each statement with the appropriate word(s):

1.6 _____ is the most important factor in pesticide research and development.

1.7 Pesticide registration means the pesticide may be legally _____ and _____ in the United States.

1.8 The hazard of a pesticide depends on both the _____ and the _____ received from the pesticide.

1.9 Label _____ is the key to ensuring a better understanding of pesticides.

1.10 The potential for a pesticide to cause harm to humans is called _____.

1.11 In case of an accident or overexposure, the label identifies the pesticide's _____ _____ so medical personnel can provide immediate and proper treatment.

1.12 Regardless of the complexity of the label, it is your responsibility to _____ and _____ the label.

1.13 As a new employee in the structural pest control industry, you should develop the habit of reading the label **before:**

1) _____

2) _____

3) _____

1.14 One of the major ways pesticides can enter the body to possibly cause harm is through the _____.

1.15 "It is a violation of Federal law to use this product in a manner inconsistent with its labeling". What does this statement mean to you?

_____

_____

_____

_____

## TEST YOUR UNDERSTANDING

### TRUE OR FALSE

Read each question. Decide if the statement is true (**T**) or false (**F**). Circle your answer.

1.16 Pesticides control pests.
T F

1.17 Pesticides can be broken down by microorganisms and other environmental factors.
T F

1.18 Pesticides that are slightly toxic will not harm you.
T F

1.19 Pesticide exposure can be prevented by wearing PPE.
T F

1.20 Label comprehension is the key to ensuring a better understanding of pesticides.
T F

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

| | |
|---|---|
| _____ | _____ |
| **Registered Technician Trainee** | **Date** |
| _____ | _____ |
| **Designated Trainer** | **Date** |

***NOTES:***

## TERMS TO KNOW

| | |
|---|---|
| **Active Ingredient** | Active ingredient, abbreviated "a.i.", is the material in a pesticide formulation that actually controls (prevents, destroys, repels) the target pest. |
| **Insecticide** | A pesticide used for the control of insects. Some insecticides are also labeled for control of ticks, mites, spiders, and other insect-like organisms. |
| **Formulation** | A mixture of active and inert ingredient(s) combined during manufacture. The inert ingredients are added to improve the mixing and handling qualities of the pesticide. |

Every pesticide manufacturer has a **brand (trade) name** for its product.

The brand name appears on the front panel of the label and is the one used in advertisements and by company salespersons. The brand name often indicates the type of **formulation**.

It is important to note that different brand names are used by different manufacturers, even though the products contain the same **active ingredient**.

For example, **fipronil insecticide**, an active ingredient commonly used in structural pest control pesticides, is manufactured by several companies and is advertised under the following brand names. Table 2.1 lists some of the brand names used by several of these manufacturers.

## Table 2.1

| MANUFACTURER | BRAND NAME | ACTIVE INGREDIENT |
|---|---|---|
| BASF | **Termidor HE** | Fipronil |
| Control Solutions, Inc | **Taurus SC** | Fipronil |
| The Dial Corporation | **Combat Ant Killing Gel** | Fipronil |
| Bayer | **Maxforce FC Magnum** | Fipronil |

**Always check the active ingredient(s) when comparing pesticides**. Many different pesticides contain the same active ingredient. Purchasing a pesticide based on the active ingredient it contains does not always ensure you are getting the right pesticide. You must also read the directions to be sure the pest and site of application are on the label.

When comparing two different products containing the same active ingredient, be sure to also 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.

Often manufacturers use a similar brand name, but with very slight variations in their label to designate that it is a different pesticide.

**PESTICIDE APPLICATORS MUST BE CAREFUL ABOUT CHOOSING A PESTICIDE BY BRAND NAME ALONE!**

For example, the three pesticide products listed below contain the active ingredient **fipronil**. These products are distributed by **BASF Corporation** under the brand names **Termidor 80 WG, Termidor Foam,** and **Termidor Dry.**

Though each of these products appear to be similar, each is a different formulation with different concentrations of fipronil active ingredient. While one label permits the use of that product as a spot treatment only in controlling subterranean termites or dry-wood termites, the other labels do not permit such use. There are numerous other differences in these products which make careful comparison of the product labels necessary before deciding which product to use.

| | | |
|---|---|---|
| **Brand name: Termidor 80 WG**<br>**Common name: fipronil**<br>**Active ingredient: 80%** | **Brand name: Termidor Foam**<br>**Common name : fipronil**<br>**Active ingredient: .005%** | **Brand name: Termidor Dry**<br>**Common name: fipronil**<br>**Active ingredient: .5%** |

The pesticide label is your primary source of information to help you decide whether the pesticide you have selected is the proper pesticide. When choosing among different brand names of the same pesticide, check each active ingredient (and its amount), the type of formulation, and where the pesticide may be applied to ensure it is the least hazardous and most effective pesticide for the job.

An excellent reference to help you decide the proper pesticide to use is the *"North Carolina Agricultural Chemicals Manual"*. The manual is prepared by the College of Agriculture and Life Sciences, North Carolina State University.

This manual is revised and published annually to provide extension, researchers, and other professional workers, dealers, applicators, distributors, formulators, and manufacturers with the most up-to-date information available on the selection, application, and safe and proper use of agricultural and structural pest control pesticides.

Copies of the manual are available by contacting:

Agricultural Chemicals Manual
North Carolina State University
Campus Box 7603
Raleigh, NC 27695-7603

## TEST YOUR UNDERSTANDING

## MULTIPLE CHOICE

To answer questions **2.1- 2.3**, refer to the **Termidor Foam, Termidor Dry, Termidor 80 WG, Termidor HE,** and **Taurus SC** labels included with this unit.
Select the **best** answer of the 4 choices provided:

2.1 What do **Termidor Foam, Termidor Dry,** and **Termidor 80 WG** pesticides have in common?
- a. the amount of the active ingredient is the same
- b. they contain the same active ingredient
- c. the active ingredient is different
- d. the formulation is the same

2.2 How many of the **Termidor** labels has a US EPA registration number?
- a. 0
- b. 1
- c. 2
- d. 3

2.3 **Termidor Foam, Termidor Dry,** and **Termidor 80 WG** are :
- a. insecticides
- b. fungicides
- c. rodenticides
- d. herbicides

2.4 What statement below is true for the pesticides **Termidor HE** and **Taurus SC**? (see **Table 2.1**)
- a. the brand names are different
- b. the active ingredient is different
- c. the active ingredient is the same
- d. both a. and c.

2.5 The name used by pesticide manufacturers to advertise their product is called the:
- a chemical name
- b. common name
- c. brand name
- d. ingredient name

## FILL-IN THE BLANK.

Complete each statement with the appropriate word(s):

2.6 The material in a pesticide formulation that actually controls (prevents, destroys, repels) the pest is the _____ _____.

2.7 Every pesticide manufacturer has a _____ name for its product.

2.8 It is important to check the _____ ingredient(s) when comparing pesticides.

2.9 Inert ingredients are added to improve the _____ and handling qualities of the pesticide

2.10 An example of an insecticide active ingredient is _____.

## TRUE OR FALSE.

Read each statement. Decide whether the statement is true (**T**) or false (**F**) Circle your answer.

2.11 Two pesticides containing the same active ingredient will always have similar directions for use indoors.

T F

2.12 **Termidor Foam** contains 100% active ingredient

T F

2.13 Some insecticides labeled for insects also control of ticks, mites, spiders, and other insect-like organisms.

T F

2.14 Pesticides may contain the same active ingredient but in different concentrations.

T F

2.15 Fipronil is a pesticide and an insecticide.

T F

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all Units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

| | |
|---|---|
| _____ | _____ |
| **Registered Technician Trainee** | **Date** |
| _____ | _____ |
| **Designated Trainer** | **Date** |

# TERMIDOR® FOAM

TERMITICIDE/INSECTICIDE

**KILLS:** Termites* (including subterranean, drywood, dampwood and arboreal), Ants (including: *foraging* Carpenter; excluding: Fire, Harvester, Leaf Cutter and Pharaoh)

**FOR USE IN AND AROUND STRUCTURES AND LIMITED OUTDOOR SPOT TREATMENTS:** Apartments, Homes, Food/Feed Handling Establishments (non-food/feed areas), Restaurants, Hospitals and Nursing Homes (non-patient areas), Hotels, Motels, Hobby Greenhouses, Interiorscapes, Office Buildings, Schools**, Transportation Equipment (Buses, Cargo Trucks, Trailers, Trains), Warehouses and Other Commercial and Industrial Buildings

* Not a substitute for mechanical alteration, soil or foundation treatment.
** **DO NOT** apply to classrooms when in use.

**ACTIVE INGREDIENT:**

| | |
|---|---|
| Fipronil [5-amino-1-(2,6-dichloro-4-(trifluoromethyl)phenyl)-4-((1,R,S)-(trifluoromethyl)sulfinyl)-1-H-pyrazole-3-carbonitrile]: | 0.005% |
| **OTHER INGREDIENTS:** | 99.995% |
| **TOTAL:** | 100.000% |

**EPA Reg. No. 499-563** **EPA Est. No.**

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

See side panel(s) for Precautionary Statements, Directions for Use, and Storage & Disposal.

**NET CONTENTS:**

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

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## PRECAUTIONARY STATEMENTS

### ENVIRONMENTAL HAZARDS

**DO NOT** apply within 15 ft of bodies of fresh water: lakes, reservoirs, rivers, permanent streams, marshes, natural ponds and commercial fishponds. A 15 ft buffer of uniform groundcover must exist between the application area and bodies of fresh water (uniform ground cover is defined as land which supports vegetation of > 2" throughout).

**DO NOT** apply within 60 ft of estuarine bodies of water. Estuarine water bodies are brackish, tidal water such as bays, mouths of rivers, salt marshes and lagoons.

This product is toxic to birds, fish and aquatic invertebrates. **DO NOT** apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Care must be taken to avoid runoff. **DO NOT** contaminate water by disposal of wastes.

### PHYSICAL OR CHEMICAL HAZARDS

Contents under pressure. **DO NOT** use or store near heat or open flame. **DO NOT** puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. This product contains a flammable propellant. Avoid drilling in areas near electrical wiring, plumbing, communication lines, etc. **DO NOT** apply directly into any electronic equipment such as radios, televisions, computers, etc. **DO NOT** apply where electrical short circuits might result, such as in wall outlets, conduits, motors, switches, etc. Product should only be used when can temperature is above 60°F. If can temperature is below 60°F, store at room temperature until a temperature above 60°F is reached.

## DIRECTIONS FOR USE

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

**SHAKE WELL BEFORE USING**

## PRODUCT INFORMATION

This product is a ready-to-use insecticide formulation. When dispensed, the formulation rapidly expands generating a dry foam with an expansion ratio of approximately 30:1, with 1 oz (weight) of product being dispensed in approximately 5 sec producing about 1 qt of foam. This product can be used to control insects where they are found or suspected; in nests, galleries, harborages and voids. This product can be applied in and around commercial and residential structures as well as structural and non-structural elements that are subject to attack by, or provide harborage to, insects. Applications can be made from the interior and/or exterior. Drilling of hole(s) may be required to access galleries or harborages. Treatment of insect harborages associated with trees, shrubs, utility poles, fences, bridges, landscape timbers, under slabs or other non-structural elements is permitted.

## APPLICATION INSTRUCTIONS

Use only with BASF approved actuator. Remove the outer cap and snap the actuator into place. Remove the finger pad cover. After using, replace the finger pad cover. When the can is empty, remove the actuator from the can and use it on another can.

**TREATMENT OF INSECT GALLERIES, HARBORAGES OR VOIDS:** Use adequate foam to treat the known or suspected insect harborages. After applying, hold the injector tip in place for approximately 8 sec to allow the product within the injector tube to dispense into the treatment area.

Drilling hole(s) may be required to gain access to the known or suspected gallery, harborage or void. Drill hole(s) at 1 or more locations along the gallery, harborage or void to adequately treat. Use of a moisture meter may aid in determining the spread of a treatment.

This product can be used as a localized treatment for the control of existing infestations of subterranean termites and other wood destroying insects as a supplemental treatment in a structural protection program. This treatment is intended for localized wood destroying insect infestations only. The purpose of such applications is to kill wood destroying insects which may be present in the treated channels at the time of treatment. Such applications are intended as supplemental treatments to, but not a substitute for, mechanical alteration, soil treatment, or foundation treatment. It should not be used as a stand-alone treatment for structural protection.

**Reapplication interval:** This product may be applied to previously treated sites if activity is found 30 days after previous application.

### WOOD DESTROYING PEST TREATMENTS - INDOORS

**TERMITES [SUBTERRANEAN (*Coptotermes*, *Reticulitermes*, and *Heterotermes*), ARBOREAL, DAMPWOOD (*Zootermopsis*), AND DRYWOOD]:** Use in areas where termites are known or suspected. Apply product to termite galleries, channels, damaged wood, harborages between structural elements or within construction voids.

Locations for indoor treatment may include areas associated with unexposed wooden elements inside wall voids, in and around bath traps, shower voids, pipe chases, utility penetrations and other probable sites of termite entry or harborage.

**Other WOOD DESTROYING PESTS (Powder Post Beetles, Old House Borer and Wharf Borer):** Locations for treatment may include areas associated with exposed, non-sealed wooden elements in areas such as crawl spaces, attics, unexposed wooden elements inside walls, galleries or other harborages.

## WOOD DESTROYING PEST TREATMENTS - OUTDOORS

Locations for outdoor treatments may include exterior wooden elements associated with bridges, decks, fencing, landscape timbers, wooden retaining walls, tree voids, siding, channels in damaged wood, in spaces between wooden elements of a structure, junctions between wood and foundations and voids associated with buildings. **DO NOT** apply this product in or on boats. **DO NOT** apply to areas of non-structural piers, bridges, or any other structures that may contact surface water bodies. **DO NOT** allow this product to contaminate or come into contact with surface waters through application or drift.

Application to exposed subterranean termite tunnels (i.e. shelter tubes) may be made to outdoor residential and commercial areas. Break open a section of the shelter tube and apply directly over the exposed area. Apply a sufficient amount of foam to cover the exposed area and to a distance of approx. 2" in each direction over the shelter tube itself.

Outdoor applications must be limited to small spot treatments only. **DO NOT** apply to any impervious surfaces. **DO NOT** make direct applications, nor any applications to the ground within the drip line of any trees or shrubs used for growing fruits, nuts, vegetables or other foods.

**TERMITES AND CARPENTER ANTS HARBORING IN TREES, SHRUBS, STUMPS, UTILITY POLES, SLABS AND FENCES:** Drill hole(s) in areas of suspected termite or ant activity. It may be necessary to drill multiple holes around the circumference of the tree, shrub, stump or utility pole and at varying heights to adequately treat the nest or gallery system. When treating below slabs, drill hole(s) through the slab where termites or carpenter ants are active, or suspected, and inject foam. For fences, treat exposed surfaces where termites or ants are active (foam must dissipate or be removed prior to leaving area) and/or drill wooden members where termites or ants are active, or suspected, and inject foam.

**TREATMENT OF BASF APPROVED TERMITE MONITORS:** For use only when toxicant containing bait is not in use. Remove monitoring cartridge if in station. Apply into void areas of station. After application, return monitoring cartridge or other components to the station.

**FORAGING CARPENTER ANTS:** Inject foam into galleries, cavities, harborages or structural voids. Treat harborages or ant trails outdoors associated with trees, shrubs, decks, fences or other non-structural elements. Foam up to a 6" length of the trail. Foam must dissipate or be removed before the applicator leaves the area.

## EXTERIOR PERIMETER/LOCALIZED INTERIOR (EP/LI)

### TERMITES [SUBTERRANEAN (*Coptotermes*, *Reticulitermes*, *Heterotermes* and *Zootermopsis*), ARBOREAL]

This product can be used as a preventative or curative interior structural void treatment for subterranean termites when applied in conjunction with an Exterior Perimeter/Localized Interior (EP/LI) termiticide treatment with Termidor® SC Termiticide/Insecticide, Termidor 80WG Termiticide/Insecticide, or other Termidor product labeled for EP/LI application and approved by BASF Corporation. Targeted interior application(s) may be made to vulnerable areas such as voids associated with plumbing/utility lines penetrating floors, bath and/or shower voids, expansion joints and/or settlement cracks, wall voids and other voids of probable, potential, or known termite entry.

When used to treat known or suspected localized interior termite infestation(s) this product can be used in lieu of selected localized interior treatment(s) with Termidor SC, Termidor 80WG or other Termidor product approved by BASF Corporation. Targeted interior application(s) may be made to vulnerable areas such as voids associated with plumbing/utility lines penetrating floors, bath and/or shower voids, expansion joints and/or settlement cracks, wall voids and other voids of probable or potential termite entry.

This application is only intended for localized areas of existing or potential termite activity and must not be applied to indoor surfaces for the purposes of general pest control. This product is not a substitute for soil applied termiticide treatment(s) beneath slabs or foundations.

## NON-WOOD DESTROYING PEST TREATMENTS

**CRAWLING PESTS – Ants (Excluding Fire, Harvester, Leaf Cutter and Pharaoh):** Treat voids, where these pests enter, hide or harbor. Immediately wipe up any product on exposed surfaces.

## FOOD/FEED HANDLING ESTABLISHMENTS

Applications are permitted in the non-food/feed areas of food/feed handling establishments as a void or exterior spot treatment. **DO NOT** apply to voids in any equipment or machinery used in the storage, processing or preparation of food.

**For Wood Destroying Pests:** Treat voids, from the exterior or interior, where these pests enter, hide or harbor. Immediately wipe up any product on an exposed surface.

Food/feed handling establishments are defined as places other than private residences in which exposed food/feed is held, processed, prepared or served. Food/feed areas are areas for receiving, storing, packing (canning, bottling, wrapping, boxing), preparing, edible waste storage and enclosed processing systems (mills, dairies, edible oils,

syrups) of food. Serving areas where food is exposed and the facility is in operation are also considered food areas.

Non-food/feed areas include 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 areas (after packaging, canning or bottling).

| STORAGE & DISPOSAL |
|---|
| **DO NOT** contaminate water, food or feed by storage or disposal. |
| **PESTICIDE STORAGE:** Store in a cool area away from heat or open flame. |
| **PESTICIDE DISPOSAL:** Waste resulting from use of this product may be disposed of on site or at an approved waste disposal facility. |
| **CONTAINER DISPOSAL: DO NOT** puncture or incinerate! Empty container by using the product according to the label directions. **If empty:** Offer container for recycling, if available, or place in trash if allowed by state and local regulations. **If partly full:** Contact your local solid waste agency for disposal instructions. |

Contains no CFCs or other ozone depleting substances.
Federal regulations prohibit CFC propellants in aerosols.

## CONDITIONS OF SALE AND WARRANTY

Follow the **Directions for Use**. It is impossible to eliminate all risks inherently associated with use of this product, and therefore all such risk shall be assumed by the Buyer. BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions for Use**, subject to the inherent risks, referred to above. **TO THE EXTENT CONSISTENT WITH APPLICABLE LAW: (A) BASF MAKES NO OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR PARTICULAR PURPOSE OR MERCHANTABILITY, (B) BUYER'S EXCLUSIVE REMEDY AND BASF'S AND SELLER'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT, AND (C) BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.** BASF and the Seller offer this product, and the Buyer accepts it, subject to these **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. PCS813

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Based on: NVA 2013-04-468-0331
Supersedes: 120827-11

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
We create chemistry

# TERMIDOR® DRY

**TERMITICIDE**

- For sale to, use and storage only by individuals/firms licensed or registered by the state to apply termiticide and/or general pest control products.
- Ready-to-Use product for the control of subterranean and drywood termites.

**ACTIVE INGREDIENT:**

Fipronil: 5-amino-1-(2,6-dichloro-4-(trifluoromethyl) phenyl)-4-((1,R,S)-(trifluoromethyl)sulfinyl)-1-H-pyrazole-3-carbonitrile ..... 0.5%

**OTHER INGREDIENTS:** ..... 99.5%

**TOTAL:** ..... 100.0%

1 lb of Termidor Dry contains 0.08 oz of Fipronil.

**EPA Reg. No. 499-546** **EPA Est. No.**

**KEEP OUT OF REACH OF CHILDREN**

## CAUTION • PRECAUCIÓN

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

FOR MEDICAL AND TRANSPORTATION EMERGENCIES ONLY CALL 24 HOURS A DAY 1-800-832-HELP (4357)

See full label accompanying product/reverse side for **First Aid**, **Precautionary Statements**, **Directions for Use**, **Storage and Disposal**, and **Conditions of Sale and Warranty**.

**NET WEIGHT:**

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

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| FIRST AID | |
|---|---|
| **If swallowed** | • Call a poison control center or doctor immediately for treatment advice.<br>• Have person sip a glass of water if able to swallow.<br>• **DO NOT** induce vomiting unless told to by a poison control center or doctor.<br>• **DO NOT** give anything by mouth to an unconscious person. |
| **If on skin or clothing** | • Take off contaminated clothing.<br>• Rinse skin immediately with plenty of water for 15 to 20 min.<br>• Call a poison control center or doctor for treatment advice. |
| **If inhaled** | • Move person to fresh air.<br>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.<br>• Call a poison control center or doctor for further treatment advice. |
| **If in eyes** | • Hold eyes open and rinse slowly and gently with water for 15 to 20 min.<br>• Remove contact lenses, if present, after the first 5 min, then continue rinsing eyes.<br>• Call a poison control center or doctor for treatment advice. |
| **HOTLINE NUMBER** | |
| Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-832-HELP (4357) for emergency medical treatment information. | |
| **NOTE TO PHYSICIAN:** There is no specific antidote. All treatment should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occurred. In severe cases of overexposure by oral ingestion, lethargy, muscle tremors, and in extreme cases, possibly convulsions may occur. | |

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**CAUTION:** Harmful if swallowed, absorbed through skin or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing dust. Causes moderate eye irritation. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

### ENVIRONMENTAL HAZARDS

This pesticide is toxic to birds, fish, and aquatic invertebrates. **DO NOT** apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift or runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Care must be taken to prevent any and all drift, spillage of the product, or runoff. **DO NOT** contaminate water by cleaning equipment or disposal of wastes or when disposing of equipment washwaters or rinsate.

## DIRECTIONS FOR USE

**IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING. READ ENTIRE LABEL BEFORE USING THIS PRODUCT.**

### USE RESTRICTIONS

During and after any application, the applicator is required to check for spills. Any and all spills resulting in the deposition of product in locations other than those prescribed on this label must be cleaned up immediately and prior to leaving the application site. **DO NOT** allow people or pets to contact contaminated areas or to reoccupy contaminated areas of the structure until the cleanup is completed.

### APPLICATION INSTRUCTIONS

Termidor Dry may be used alone to kill subterranean or drywood termites or as a supplement to a post-construction treatment of Termidor® 80 WG termiticide/insecticide or Termidor® SC termiticide/insecticide to provide protection from subterranean termites. This product will kill workers and/or winged reproductive forms of the listed termite species present at the time of application and will provide residual control of termites contacting the treated surfaces only as described in the Directions for Use. This product is intended only as a spot treatment. Application of this product will not provide structural protection nor substitute for mechanical alteration, or soil or foundation treatment with registered termiticide products. This product is not to be used as sole protection against termites, as it is not intended for elimination of termite infestations nor for protection against future infestations.

**Application Device:** This Ready-to-Use product is contained in a nonrefillable package and is for use with a specially designed applicator. Approximately 3 bulb compressions of the applicator delivers 0.1 g of product.

**Application Sites:** Apply into voids and galleries, shelter tubes, termite nests or other inaccessible areas of buildings, trees, utility poles, fencing, decking materials, railroad trestles, piers, beams and other structural or landscape timbers where termite damage is observed or termite activity is present or suspected. If necessary, gain access to gallery or void by creating an opening into it. Openings should be approximately every 24" or into each void.

Multiple injection points for each void, carton or gallery may be required. **DO NOT** apply more than 5 g product (25.0 mg Fipronil a.i.) per 1,000 $ft^2$ of total internal surface area of the void, carton, or gallery.

**Drywood Termites:** Apply 0.1 to 1 g/injection point.

**Subterranean Termites:** For termite galleries and shelter tubes apply 0.1 to 1 g/injection point. For applications into carton and nests apply 0.3 to 3 g/injection point. For applications into voids apply 0.2 to 2 g/injection point.

**Reapplication Interval:** This product may be applied to previously treated sites if termite activity is found 30 days after previous application.

| STORAGE AND DISPOSAL |
|---|
| **DO NOT** contaminate water, food, or feed by storage or disposal. |
| **PESTICIDE STORAGE:** Store unused product in original container only, out of reach of children and animals. |
| **PESTICIDE DISPOSAL:** Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide 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:** Nonrefillable Container. **DO NOT** reuse or refill this container. After completely emptying container, offer for recycling, if available. |

## CONDITIONS OF SALE AND WARRANTY

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However; it is impossible to eliminate all risks inherently associated with the use of this product. Ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling which are beyond the control of BASF. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer. BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. BUYER'S EXCLUSIVE REMEDY AND BASF'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED, TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.** BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. PCS813

***Termidor*** *and the ◎ symbol are registered trademarks of BASF.*

**NOTICE TO BUYER:** Purchase of this material does not confer any rights under patents governing this product or the use thereof in countries outside the United States.

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Supersedes: 100916-10

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
We create chemistry

# TERMIDOR® 80 WG

TERMITICIDE/
INSECTICIDE
in Water Soluble Packs

**Active Ingredient:**
fipronil: 5-amino-1-(2,6-dichloro-4-(trifluoromethyl) phenyl)-4-((1,R,S)-(trifluoromethyl)sulfinyl) -1-H-pyrazole-3-carbonitrile . . . . . 80%
**Other Ingredients:** . . . . . 20%
**Total:** . . . . . 100%

**EPA Reg. No. 7969-209** **EPA Est. No. _____**

**KEEP OUT OF REACH OF CHILDREN.**
**WARNING/AVISO**

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

**FOR MEDICAL EMERGENCIES ONLY**
**CALL 24 HOURS A DAY**
**1-800-832-HELP (4357).**

**NET CONTENTS: _____**

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

- **For sale to, use and storage only by individuals/firms licensed or registered by the state to apply termiticide and/or general pest control products.**
- **DO NOT use** this product for termite or other pest control indoors, except for label-specified applications for termite control and foam applications to wall voids for control of other listed pests.
- **DO NOT** use on golf course turf. May be used for control of termites and other listed pests found on/near structures associated with golf courses, but only as specified on this label.
- **DO NOT** use on/in commercial bee hives.
- **DO NOT** use on animal trophies or animal skins.

See inside booklet for additional **Restrictions**, **First Aid**, **Precautionary Statements**, **Directions For Use**, **Conditions of Sale and Warranty**, and state-specific use sites and/or restrictions.

TERMIDOR®

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
The Chemical Company

| FIRST AID | |
|---|---|
| **IF SWALLOWED** | • Call a poison control center or doctor immediately for treatment advice.<br>• Have a person sip a glass of water if able to swallow.<br>• **DO NOT** induce vomiting unless told to by a poison control center or doctor.<br>• **DO NOT** give anything by mouth to unconscious person. |
| **IF ON SKIN OR CLOTHING** | • Take off contaminated clothing.<br>• Rinse skin immediately with plenty of water for 15 - 20 minutes.<br>• Call a poison control center or doctor for treatment advice. |
| **IF INHALED** | • Move person to fresh air.<br>• If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth to mouth if possible.<br>• Call a poison control center or doctor for further treatment advice. |
| **IF 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.<br>• Call a poison control center or doctor for treatment advice. |

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

**NOTE TO PHYSICIAN:** There is no specific antidote. All treatment should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occurred. In severe cases of overexposure by oral ingestion, lethargy, muscle tremors, and in extreme cases, possibly convulsions may occur.

For medical emergencies call 24 hours a day 1-800-832-HELP (4357).

## Precautionary Statements

### Hazards to Humans and Domestic Animals

**WARNING.** May be fatal if swallowed or absorbed through skin or inhaled. Causes moderate eye irritation. **DO NOT** get in eyes, on skin or on clothing. **DO NOT** breathe spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove and wash contaminated clothing before reuse.

### Personal Protective Equipment (PPE)

All pesticide handlers (mixers, loaders, and applicators) must wear long-sleeved shirt and long pants, socks, shoes, and chemical-resistant gloves. All pesticide handlers must wear a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any N, R, P or HE filter, when working in a non-ventilated space, including but not limited to crawl spaces and basements. All pesticide handlers must wear protective eyewear (goggles, a face shield, or safety glasses with front, brow, and temple protection) when working in a non-ventilated space, including but not limited to crawl-spaces and basements or when applying termiticide by rodding or sub-slab injection.

For cleaning equipment: Wear a chemical resistant apron.

### USER SAFETY RECOMMENDATIONS

Users should wash hands thoroughly with soap and water before eating, drinking, chewing gum, using tobacco or using the toilet. Remove contaminated clothing/PPE. Then wash body thoroughly with soap and water and put on clean clothing. Wash clothing with detergent and hot water before reusing.

Remove PPE immediately after handling this product. Wash outside of gloves before removing. Wash PPE before reusing.

### Environmental Hazards

This pesticide is toxic to birds, fish, and aquatic invertebrates. **DO NOT** apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Care must be taken to avoid runoff. **DO NOT** contaminate water by cleaning equipment or disposal of wastes. **DO NOT** contaminate water when disposing of equipment washwaters or rinsate.

## Directions For Use

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

**Termidor® 80 WG termiticide/insecticide** cannot be used to formulate, reformulate or repackage into any other pesticide product without the written permission of BASF Corporation.

Read entire label before using this product.

For sale to, use and storage only by individuals/firms licensed or registered by the state to apply termiticide and/or general pest control products. States may have

more restrictive requirements regarding qualifications of persons using this product. Consult the structural pest control regulatory agency of your state prior to use of this product.

## STORAGE AND DISPOSAL

**DO NOT** contaminate water, food, or feed by storage or disposal.

### Pesticide Storage

Store unused product in original container only, out of reach of children and animals.

### Pesticide Disposal

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide 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.

In case of spill, clean up dust spillage resulting from container or pack breakage by sweeping material into a pile and avoid skin contact. Carefully scoop up loose material and place it in appropriate containers so as to avoid dust generation. Ensure adequate decontamination of tools and equipment following cleanup.

### Container Handling

Water soluble packages should be placed directly into spray tanks containing some water.

**(for plastic containers)**
**Nonrefillable Container. DO NOT reuse or refill this container.** After completely emptying container into application equipment, offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

**(for foil overpackaging)**
**Nonrefillable Container. DO NOT reuse or refill this container.** After completely emptying container into application equipment, dispose of empty bag in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

## DIRECTIONS FOR USE TO CONTROL TERMITES

## USE RESTRICTIONS

- When treating adjacent to an existing structure, the applicator must check the area to be treated, and immediate adjacent areas of the structure, for visible and accessible cracks and holes to prevent any leaks or significant exposures to persons occupying the structure. People present or residing in the structure during application must be advised to remove their pets and themselves from the structure if they see any signs of leakage. After application, the applicator is required to check for leaks. All leaks resulting in the deposition of termiticide in locations other than those prescribed on this label must be cleaned up prior to leaving the application site. **DO NOT** allow people or pets to contact contaminated areas or to reoccupy contaminated areas of the structure until the clean up is completed.
- Prior to drilling and treating through concrete structures, such as patios, porches, sidewalks and foundation slabs applicator should first determine that there are no habitable areas below that could be unintentionally contaminated by the treatment.
- Only protected applicators wearing personal protective equipment as required by this product label may be in the area during application.
- All holes in commonly occupied areas into which **Termidor® 80 WG termiticide/insecticide** has been applied must be plugged. Plugs must be of a non-cellulose material or covered by an impervious, non-cellulose material.
- **DO NOT** apply finished dilution of **Termidor 80 WG** until all heating/air conditioning ducts, air vents, plumbing pipes, sewer lines, floor drains, heating pipes and electrical lines/conduits are known and identified. **DO NOT** puncture or contaminate any of these.
- **DO NOT** treat within a distance of one foot out from the drip line of edible plants.
- **DO NOT** contaminate public and private water supplies.
- **DO NOT** make treatments while precipitation is occurring.
- **DO NOT** treat soil that is water-saturated or frozen.
- Use anti-backflow or air gap equipment with filling hoses.
- **DO NOT** use in tanks with borate contaminants.

## GENERAL INFORMATION

**Termidor 80 WG**, when used as recommended in this label, provides effective prevention and/or control of subterranean termites. In order to maximize the termiticide potency of **Termidor 80 WG**, it should be applied in a manner to provide a continuous treated zone to prevent termites from infesting the wood to be protected. **Termidor 80 WG** should only be applied by licensed technicians familiar with trenching, rodding, short rodding, sub-slab injection, low-pressure banded surface applications, and foam delivery techniques. **Termidor 80 WG** is highly effective against a variety of subterranean termites including species of *Reticulitermes*, *Zootermopsis*, *Heterotermes*, and *Coptotermes*. While **Termidor 80 WG** is labeled for use at 0.06%, 0.09% and 0.125% finished dilution, the 0.06% finished dilution should be used for typical control situations. Where severe termite infestations occur, where problem soils occur or where difficult or problem construction types are encountered, it may be advisable to use 0.09% or 0.125% **Termidor 80 WG**.

**Termidor 80 WG** is formulated as a dry powder containing 80% active ingredient and is packaged in water soluble packages (paks). Paks are contained inside a resealable plastic overpacking container. **DO NOT** allow paks to become wet prior to adding to the spray tank. **DO NOT** handle the paks with wet gloves. **DO NOT** handle the paks roughly as such handling may cause breakage of the water soluble packaging. If a pak gets wet prior to placement in the spray tank, return the “wet” pak to the resealable overpacking container. This “wet” pak

can still be used. Pour the contents of the "wet" pak directly into the spray tank, following the mixing directions below. Unused paks need to be re-sealed in the plastic overpacking container. To prepare the spray mixture, remove the paks from the overpacking container and follow the mixing instructions below.

## MIXING INSTRUCTIONS

Mix **Termidor® 80 WG termiticide/insecticide** in the following manner:

1. Fill tank 1/4 to 1/3 full with water. Filling hose must be equipped with an anti-backflow device or water flow must include an air gap to protect against back siphoning.
2. Start pump to begin by-pass agitation and place end of treating tool in tank to allow circulation through hose.
3. Add appropriate number of **Termidor 80 WG** paks. Refer to the table in the box below to determine the proper number of paks required to prepare the desired amount of finished dilution.
4. Add remaining amount of water.
5. Let pump run and allow recirculation through the hose back into the tank until all paks in the tank have dissolved and the **Termidor 80 WG** has dispersed completely. Depending on the water temperature and thoroughness of agitation, the paks should dissolve within a few minutes from the time they were added to the water. Paks dissolve slower in cold water.

| Desired Termidor 80 WG Concentration* | Number of Paks** to Add | Gallons of Water |
|---|---|---|
| Finished Dilution of **Termidor 80 WG** at 0.06% | 1 | 25 |
| | 2 | 50 |
| | 4 | 100 |
| Finished Dilution of **Termidor 80 WG** at 0.09% | 1 | 17 |
| | 2 | 34 |
| | 4 | 67 |
| | 6 | 100 |
| Finished Dilution of **Termidor 80 WG** at 0.125% | 2 | 25 |
| | 4 | 50 |
| | 8 | 100 |

* Percentage weight of active ingredient to weight of spray dilution.

**Each pak of **Termidor 80 WG** weighs 2.61 ounces and contains 2.1 ounces of fipronil.

## APPLICATION VOLUME

To provide maximum control and protection against termite infestation, apply the volumes of **Termidor 80 WG** finished dilution specified in the **DIRECTIONS FOR USE** throughout this label. However, if the soil will not accept these labeled volumes of **Termidor 80 WG**, twice the concentration of **Termidor 80 WG** may be applied in half the volume of finished dilution. For example, if 0.06% **Termidor 80 WG** cannot be applied to achieve 4 gallons finished dilution per 10 linear feet per foot of depth, then 0.125% **Termidor 80 WG** applied in 2 gallons finished dilution per 10 linear feet per foot of depth may be substituted. **DO NOT** treat while precipitation is occurring. **DO NOT** treat soil that is water-saturated or frozen or in any conditions where runoff or movement from the treatment area (site) is likely to occur.

**NOTE:** Large reductions of application volume reduce the ability to obtain a continuous treated zone. Variance is allowed when volume and concentration are consistent with label directed rates and a continuous treated zone is still achieved. At reduced application volume; it may be necessary for the applicator to drill holes closer than 12 inches apart to create a continuous treated zone.

## PRE-CONSTRUCTION TREATMENT

**DO NOT** APPLY AT A DOSAGE AND/OR CONCENTRATION LOWER THAN **Termidor 80 WG** AT 0.06% FOR APPLICATIONS UP TO AND INCLUDING INSTALLATION OF THE FINAL GRADE. Prior to each application, applicators must notify the general contractor, construction superintendent, or similar responsible party, of the intended **Termidor 80 WG** application and intended sites of application and instruct the responsible person to notify construction workers and other on site individuals to leave the treatment area and not return until **Termidor 80 WG** has been absorbed into the soil.

### GENERAL

Pre-construction treatments are defined to include treatments made during all phases of construction up to and including installation of the final grade. Effective pre-construction termite control is achieved by establishing a thorough and complete horizontal and vertical treated zone using 0.06%, 0.09% or 0.125% **Termidor 80 WG**.

When treating foundations deeper than 4 feet, apply the termiticide as the backfill is being replaced, or, if the construction contractor fails to notify the applicator to permit this, treat the foundation to a minimum depth of 4 feet after the backfill has been installed. The applicator must trench and rod into the trench or trench along the foundation walls and around pillars and other foundation elements, at the rate prescribed from grade to a minimum depth of 4 feet. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing. However, in no case should a structure be treated below the footing.

## CONCRETE SLAB (INCLUDING MONOLITHIC, FLOATING AND SUPPORTED CONCRETE SLABS) ON GROUND OR IN BASEMENTS

### HORIZONTAL TREATED ZONES

Apply an overall treatment of **Termidor 80 WG** to the entire surface to be covered beneath the concrete slab. This includes the slab under the actual living area, plus carports, porches, basement floors, and any extended entrances. Make this treatment at the rate of 1 - 1.5 gallons finished dilution per 10 square feet. Make these applications using a coarse spray nozzle and low-pressure spray (less than 25 p.s.i.), spraying the dilution evenly and uniformly over the entire area treated.

**VERTICAL TREATED ZONES**
Apply **Termidor® 80 WG termiticide/insecticide** at rate of 1 gallon finished dilution/square foot around anything penetrating the slab (e.g. utility services, plumbing lines) and at 4 gallons of finished dilution per 10 linear feet per foot of depth along the inside and outside perimeter of foundation walls. The applicator must trench and rod into the trench or trench along the foundation walls and around pillars and other foundation elements. Make this treatment along the inside of foundation walls at the rate of 4 gallons finished dilution (0.06%, 0.09% or 0.125% **Termidor 80 WG**) per 10 linear feet per foot of depth, or if the footing is more than 4 feet below grade, to a minimum depth of 4 feet below grade. A trench need not be wider than six inches. Low pressure spray (less than 25 p.s.i. at the nozzle) may be used to treat soil which will be replaced in the trench. When rodding from grade or from the bottom of a shallow trench, rod holes should be spaced in a manner that will allow for application of a continuous treated zone, but not wider than 12 inches apart. Rod holes should not extend below the top of the footing.

These two applications, horizontal treated zone (overall treatment 1-1.5 gallons/10 square feet) and vertical treated zone (the additional treatment of 4 gallons/10 linear feet) should be made prior to covering area with the concrete slab. If slab is poured prior to horizontal treatment, **Termidor 80 WG** can be used to treat penetrations, joints, bath traps, shower pan accesses, etc. as detailed in **Post Construction Treatment** section of label. However, it is highly recommended that a complete horizontal treated zone be created prior to slab pour. If the slab is not to be poured the same day as treatment, cover the treated soil with a waterproof barrier such as polyethylene sheeting.

After completion of the grading, apply **Termidor 80 WG** by trenching and rodding into the trench or trenching alone along the slab or foundation perimeter at the rate of 4 gallons finished dilution (0.06%, 0.09% or 0.125% **Termidor 80 WG**) per 10 linear feet per foot of depth, or if the footing is more than 4 feet below grade, to a minimum depth of 4 feet. Trenches must be a minimum of 6 inches deep or to the bottom of the footing and need not be wider than 6 inches. When trenching in sloping (tiered) soil, the trench must be stepped to ensure adequate distribution and to prevent **Termidor 80 WG** from running out of the trench. The finished dilution (0.06%, 0.09% or 0.125% **Termidor 80 WG**) should be mixed with the soil as it is replaced in the trench. Rod holes must be spaced so as to achieve a continuous treated zone but in no case more than 12 inches apart. However, in no case should the structure be treated below the footing.

## CRAWL SPACES

For crawl spaces, apply vertical termiticide treatment at the rate of 4 gallons of finished dilution (0.06%, 0.09% or 0.125% **Termidor 80 WG**) per 10 linear feet per foot of depth from grade to the top of the footing, or if the footing is more than 4 feet below grade, to a minimum depth of 4 feet. Apply by trenching and rodding into the trench, or trenching. Treat both sides of foundation and all piers and pipes. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing.

- Rod holes and trenches must not extend below the bottom of the footing.
- Rod holes must be spaced so as to achieve a continuous treated zone but in no case more than 12 inches apart.
- Trenches must be a minimum of 6 inches deep or to the bottom of the footing, whichever is less, and need not be wider than 6 inches. When trenching in sloping (tiered) soil, the trench must be stepped to ensure adequate distribution and to prevent termiticide from running off. The finished dilution must be mixed with soil as it is replaced in the trench.

## HOLLOW BLOCK FOUNDATIONS/VOIDS

Hollow block foundations or voids in masonry resting atop the footing may be treated in order to create a continuous treatment zone in the area to be treated. Applicators may drill and treat into voids of masonry elements if not openly accessible. Apply at the rate of 2 gallons of finished dilution per 10 linear feet of footing using a nozzle pressure of 25 p.s.i. or less. When using this treatment, access holes may be drilled below the sill plate and should be as close as possible to the footing as is practical. Treatment of voids in block or rubble foundation walls must be closely examined: Applicators must inspect areas of possible runoff as a precaution against application leakage in the treated areas. Some areas may not be treatable or may require mechanical alteration prior to treatment.

All leaks resulting in the deposition of **Termidor 80 WG** in locations other than those prescribed on this label must be cleaned up prior to leaving the application site. **DO NOT** allow people or pets to contact contaminated areas or to reoccupy the contaminated areas of the structure until the clean up is completed.

**Not for use in voids insulated with rigid foam.**

## POST-CONSTRUCTION CONVENTIONAL STRUCTURAL TERMITE TREATMENT

## GENERAL

For applications made after the final grade is installed for the purpose of protecting the structure from termite infestation and/or for controlling existing termite populations. The applicator must trench and rod into the trench or trench along the foundation walls and around pillars and other foundation elements, at either 0.06%, 0.09% or 0.125% **Termidor 80 WG** from grade to the top of the footing. When the footing is more than four (4) feet below grade, the applicator must trench and rod into the trench or trench along the foundation walls, at either 0.06%, 0.09% or 0.125% **Termidor 80 WG**, to a minimum depth of four feet. The actual depth of treatment will vary depending on soil type, degree of compaction, and location of termite activity. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing. However, in no case should a structure be treated below the footing.

Exterior concrete structures adjoining the foundation, such as patios, porches and sidewalks, may be drilled followed by treatment by sub-slab injection of the **Termidor 80 WG** dilution in order to complete the exterior perimeter treatment zone along the foundation wall.

**DO NOT** apply finished dilution (0.06%, 0.09% or 0.125% **Termidor® 80 WG termiticide/insecticide**) until the location and type of (1) construction of heat or air-conditioning ducts and vents, (2) water and sewer (or plumbing) lines and (3) electrical lines/conduits are known and identified. Caution must be taken to avoid contamination of and damage to these structural elements and airways.

## CONCRETE SLAB ON GROUND (INCLUDING MONOLITHIC, FLOATING AND SUPPORTED CONCRETE SLABS)

### EXTERIOR PERIMETER

Apply by trenching and rodding into the trench or trenching along the foundation at the rate of 4 gallons finished dilution (0.06%, 0.09% or 0.125% **Termidor 80 WG**) per 10 linear feet per foot of depth, or if the footing is more than 4 feet below grade, to a minimum depth of 4 feet. Trenches must be a minimum of 6 inches deep or to the bottom of the footing and need not be wider than 6 inches. The finished dilution (0.06%, 0.09% or 0.125% **Termidor 80 WG**) should be mixed with the soil as it is replaced in the trench. Rod holes must be spaced so as to achieve a continuous treated zone but in no case more than 12 inches apart. However, in no case should the structure be treated below the footing.

### SUB-SLAB INJECTION

Sub-slab injection treatments can be made from inside the structure or in cases when this is not possible, by drilling through the foundation from the outside as directed below. Prior to making any treatments, locate all heating/air conditioning ducts, vents, water/sewer lines, and electrical lines/conduits.

**Vertical Drilling/Injection:** To treat under the slab, drill vertically through the slab along the interior perimeter of the foundation including the garage. Drill holes along all concrete expansion joints, cracks, plumbing, and utility services penetrating the slab. It may be necessary to drill holes along one side of the slab adjacent to an interior partition wall if there is clear evidence of termite activity or damage in the wall. All drill holes through the slab should be spaced so as to achieve a continuous treated zone but in no case be more than 12 inches apart. Inject a 0.06%, 0.09% or 0.125% dilution of **Termidor 80 WG** into the drilled holes at the rate of 4 gallons per 10 linear feet per foot of depth. For best results, application should be made with a lateral dispersal nozzle. All holes in commonly occupied areas into which material has been applied must be plugged. Plugs must be of a non-cellulose material or covered by an impervious, non-cellulose material.

**Horizontal Drilling/Rodding/Sub-slab Injection from the Exterior of the Foundation:** This technique should be used to treat underneath the slab only when floors or interior design do not allow for vertical drilling. Care must be exercised not to rod into heating ducts, water/sewer lines, and electrical lines/conduits. Horizontal short-rodding practices can be used to establish a continuous treated zone in the soil proximal to the inside of the foundation wall. Holes should be drilled from outside the foundation at an angle which allows a finished dilution (0.06%, 0.09% or 0.125%) of **Termidor 80 WG** to be deposited below heating ducts, water/sewer lines, and electrical conduits if present. Horizontal long rodding practices may only be employed to treat areas underneath the slab that are not accessible by vertical rodding or horizontal short rodding. Long rods exceeding 20 feet should not be used. For all horizontal rodding applications, all drill holes through the foundation should be spaced so as to achieve a continuous treated zone but in no case be more than 12 inches apart. Inject a 0.06%, 0.09% or 0.125% dilution of **Termidor 80 WG** into the drilled holes at the rate of 4 gallons per 10 linear feet per foot of depth. For best results, make applications with a lateral dispersal nozzle. All holes must be plugged. Plugs must be of a non-cellulose material or covered by an impervious, non-cellulose material.

**BATH TRAPS:** Exposed soil or soil covered with tar or similar sealant beneath or around plumbing and/or drain pipe entry areas should be treated with a minimum of 1 gallon to a maximum of 4 gallons of finished dilution per square foot. Tar or sealant may have to be removed to allow for adequate soil treatment. An access door or inspection portal should be installed if not already present. After inspection and removal of all wood/cellulose debris, the soil can be treated by rodding or drenching the soil with a 0.06%, 0.09% or 0.125% dilution of **Termidor 80 WG**.

**SHOWER DRAINS:** Soil beneath and adjacent to shower pan drains may be treated. Drill through slab adjacent to shower pan and apply 0.06%, 0.09% or 0.125% finished spray dilution of **Termidor 80 WG** by sub-slab injection to the soil below. Foam can be used to maximize dispersion. Multiple access points may be drilled adjacent to the drain. A directional dispersion tip may be used to enhance treatment of the soil below the drain. Treat soil with a minimum of 1 gallon but no more than 4 gallons finished spray dilution per shower drain. Horizontal rodding can be used to access and treat the soil associated with the shower drain.

## BASEMENT STRUCTURES

### EXTERIOR PERIMETER

Apply by trenching and rodding into the trench or trenching along the foundation at the rate of 4 gallons finished dilution (0.06%, 0.09% or 0.125% **Termidor 80 WG**) per 10 linear feet per foot of depth, or if the footing is more than 4 feet below grade, to a minimum depth of 4 feet. Trenches must be a minimum of 6 inches deep or to the bottom of the footing and need not be wider than 6 inches. When trenching in sloping (tiered) soil, the trench must be stepped to ensure adequate distribution and to prevent **Termidor 80 WG** from running out of the trench. The finished dilution (0.06%, 0.09% or 0.125% **Termidor 80 WG**) should be mixed with the soil as it is replaced in the trench. Rod holes must be spaced so as to achieve a continuous treated zone but in no case more than 12 inches apart. However, in no case should the structure be treated below the footing.

### INSIDE PERIMETER

**DO NOT contaminate wells or cisterns.**

To treat under the basement floor slab, drill vertically through the slab along the interior perimeter of the foundation. Drill holes along all concrete expansion joints, cracks, plumbing, and utility services penetrating the slab. Drill holes along both sides of partition foundation walls, and around piers. It may be necessary to drill holes

along one side of the slab adjacent to a non-foundation interior partition wall if there is clear evidence of termite activity in the wall. All drill holes through the slab should be spaced so as to achieve a continuous treated zone but in no case be more than 12 inches apart. Inject a 0.06%, 0.09% or 0.125% dilution of **Termidor® 80 WG termiticide/insecticide** into the drilled holes at the rate of 4 gallons per 10 linear feet per foot of depth. For best results, application should be made with a lateral dispersal nozzle. All holes in commonly occupied areas into which material has been applied must be plugged. Plugs must be of a noncellulose material or covered by an impervious, noncellulose material.

## STRUCTURES WITH FRENCH DRAINS AND SUMP PUMPS

French drains eliminate water at the footer along a foundation perimeter. They are common in hollow block foundation structures to drain water seeping from the exterior perimeter or underneath the foundation. Soil must be dry before applying to sites with French drains. **DO NOT** treat soil that is saturated or frozen. **DO NOT** make treatments while precipitation is occurring. **DO NOT** rod through the slab any closer than 24 inches to the French drain to prevent finished dilution seepage and/or damage to the drain or the tiles. **DO NOT** apply **Termidor 80 WG** within 5 feet of the sump pit and pump. **DO NOT** drill through hollow block foundations that border the French drain in order to prevent drainage/seepage from the block into the drain.

Once French drains have been identified and located, apply **Termidor 80 WG** as follows:

1) Unplug the sump pump. Inspect sump pit for water. If no water is present, the treatment can be made provided the sump pump remains unplugged; or
2) If water is in the sump pit, unplug the sump pump and remove four cups of water from the pit. Mark the water level. Wait 10 minutes and check the water level in the pit again. If the water level has risen, there is too much seepage to perform the treatment at this time. If the water level does not rise, make the treatment provided the sump pump remains unplugged.

During application, check the sump pump pit every few minutes for the presence of termiticide dilution. If dilution is detected, stop treatment immediately and remove dilution from the pump pit. All dilution must be removed from the sump pump pit before plugging in the sump pump again. Dispose of dilution from the sump pump as directed by this label in the **PESTICIDE DISPOSAL** section.

## ACCESSIBLE CRAWL SPACE CONSTRUCTION

**BEFORE TREATMENT: Turn off any air circulation system that moves air from area to be treated to an untreated interior space of the structure until application has been completed and all Termidor 80 WG has been absorbed by the soil.**

For crawl spaces, apply vertical termiticide treatment at the rate of 4 gallons of 0.06%, 0.09% or 0.125% **Termidor 80 WG** per 10 linear feet per foot of depth from grade to the top of the footing, or if the footing is more than 4 feet below grade, to a minimum depth of 4 feet. Apply by trenching and rodding into the trench, or trenching. Treat both sides of the foundation and around all piers and pipes. Where physical obstructions, such as concrete walkways adjacent to foundation elements, prevent trenching, treatment may be made by rodding alone. When soil type and/or conditions make trenching prohibitive, rodding may be used. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing. Read and follow mixing and use directions on this label if situations are encountered where the soil will not accept the full application volume.

- Rod holes and trenches must not extend below the bottom of the footing.
- Rod holes must be spaced so as to achieve a continuous treated zone but in no case more than 12 inches apart.
- Trenches must be a minimum of 6 inches deep or to the bottom of the footing, whichever is less, and need not be wider than 6 inches. When trenching in sloping (tiered) soil, the trench must be stepped to ensure adequate distribution and to prevent termiticide from running off. The 0.06%, 0.09% or 0.125% **Termidor 80 WG** dilution must be mixed with the soil as it is replaced in the trench.

## INACCESSIBLE CRAWL SPACE CONSTRUCTION

**BEFORE TREATMENT: Turn off any air circulation system that moves air from the area to be treated to an untreated interior space of the structure until application has been completed and all Termidor 80 WG has been absorbed by the soil.**

For inaccessible interior areas, such as areas where there is insufficient clearance between floor joists and ground surfaces to allow operator access, excavate, if possible, and treat according to the instructions for accessible crawl spaces. Otherwise, apply one, or a combination of the following two methods:

1. To establish a horizontal treated zone, apply to the soil surface, 1 gallon of 0.06%, 0.09% or 0.125% **Termidor 80 WG** per 10 square feet using a nozzle pressure of less than 25 p.s.i. and a coarse application nozzle (e.g., Delavan Type RD **Raindrop®**, RD-7 or larger, or Spraying Systems Co. 80410LP **Teejet®** or comparable nozzle). For an area that can not be reached with the application wand, use one or more extension rods to make the application to the soil. **DO NOT** broadcast or power spray with high pressures.
2. To establish a horizontal treated zone, drill through the foundation wall or through the floor above and treat the soil adjacent to the foundation wall at a rate of 1 gallon of 0.06%, 0.09% or 0.125% **Termidor 80 WG** per 10 square feet. Drill spacing must be at intervals not to exceed 16 inches. Many states have smaller intervals so check state regulations which may apply. Soil adjacent to foundation elements may be treated with short or long rod techniques without drilling, if access for treatment tool to soil site is available.

## HOLLOW BLOCK FOUNDATIONS/VOIDS

Hollow block foundations or voids in masonry resting atop the footing may be treated. Drill and treat voids in multiple masonry elements of the structure extending

from the structure to the soil in order to create a continuous treatment zone in the area to be treated. Applicators may drill and treat into voids of masonry elements if not openly accessible. Apply at the rate of 2 gallons of finished dilution per 10 linear feet of footing using a nozzle pressure of 25 p.s.i. or less. When using this treatment, access holes may be drilled below the sill plate and should be as close as possible to the footing as is practical. Treatment of voids in block or rubble foundation walls must be closely examined: Applicators must inspect areas of possible runoff as a precaution against application leakage in the treated areas. Some areas may not be treatable or may require mechanical alteration prior to treatment.

All leaks resulting in the deposition of **Termidor® 80 WG termiticide/insecticide** in locations other than those prescribed on this label must be cleaned up prior to leaving the application site. **DO NOT** allow people or pets to contact contaminated areas or to reoccupy the contaminated areas of the structure until the clean up is completed.

**Not for use in voids insulated with rigid foam.**

## TREATMENT OF STRUCTURES WITH WELLS OR CISTERNS

**DO NOT contaminate wells or cisterns.**

**DO NOT** apply **Termidor 80 WG** within 5 feet of any well or cistern. Soil between 5 and 10 feet from a well or cistern must only be treated by the backfill method. Treatment of soil adjacent to water pipes within 3 feet of grade must only be done by the backfill method.

**Backfill Method**

1. Trench and remove soil to be treated onto heavy plastic sheeting or similar material or into a wheelbarrow.
2. Treat soil at the rate of 4 gallons of 0.06%, 0.09% or 0.125% **Termidor 80 WG** per 10 linear feet per foot of depth of the trench, or 1 gallon of 0.06%, 0.09% or 0.125% **Termidor 80 WG** per 1.0 cubic foot of soil. Mix thoroughly into the soil taking care to contain the liquid and prevent runoff or spillage.
3. After the treated soil has absorbed the **Termidor 80 WG** finished dilution, return the soil into the trench.

## STRUCTURES WITH ADJACENT WELLS/CISTERNS AND/OR OTHER WATER BODIES

Applicators must inspect all structures with nearby water sources such as wells, cisterns, surface ponds, streams, and other bodies of water and evaluate, at a minimum, the treatment recommendations listed below prior to making an application.

1. Only treat foundations that are more than 5 feet from a well or cistern.
2. Prior to treatment, if feasible, expose the water pipe(s) coming from the well to the structure, if the pipe(s) enter the structure within 3 feet of grade. Treatment of soil adjacent to the waterpipe(s) should be done according to the backfill method described above.
3. Prior to treatment, applicators are advised to take precautions to limit the risk of applying the termiticide into subsurface drains that could empty into any bodies of water. These precautions include evaluating whether application of **Termidor 80 WG** to the top of the footer may result in contamination of the subsurface drain. Factors such as depth to the drain system, soil type and degree of soil compaction should be taken into account in determining the depth of treatment.
4. When appropriate (e.g., on the water side of the structure), the treated backfill method (described above) can also be used to minimize off-site movement of **Termidor 80 WG**.
5. Applicator may apply a 0.125% dilution at 2 gallons/10 linear feet/foot of depth to minimize potential of runoff into nontarget areas.

## PLENUM CONSTRUCTION

**BEFORE TREATMENT: Turn off any air circulation system that moves air from the space to be treated to an untreated interior space of the structure until application has been completed and all Termidor 80 WG has been absorbed by the soil.**

Application of **Termidor 80 WG** to the soil exterior to the foundation walls should follow the instructions listed above in **ACCESSIBLE CRAWL SPACE CONSTRUCTION**, including instructions for sloping (tiered) soils.

Interior treatment of plenum structures that use a sealed underfloor space to circulate heat and/or cooled air throughout the structure need to follow the instructions below:

1. Remove the sealing fabric and anything on the sealing fabric to expose no more than 18 inches adjacent to all foundation structures, including foundation walls, interior piers, pipes, and any other structures with soil contact. Follow the instructions listed above for exterior and interior treatment of **ACCESSIBLE CRAWL SPACE CONSTRUCTION**.
2. After the finished dilution of **Termidor 80 WG** has been absorbed by the soil, replace the sealing fabric and anything to be placed on the sealing fabric to its original, pre-treatment position.

## FOAM APPLICATIONS

Construction practices, soil subsidence, and other factors may make it difficult to create a continuous treatment zone. In such situations, conventional liquid application methods can be supplemented through the use of foam generating equipment. Treatment of filled stoops and porches, chimney bases, piers, soil under concrete slabs, into block voids, behind masonry, other veneers, and stud walls are examples where foam applications may be useful. Foam applications to wall voids in stud walls should utilize dry foam only (from a range of relatively dry foam of 15:1 to 25:1 to 50:1 expansion ratio). Apply foam to wall voids where termites or termite damage are present or suspected.

In general, “foam only” treatment under slabs is appropriate when attempting to maximize horizontal coverage in areas where there is no deep foundation or footing (e.g. around plumbing entries, and near settlement cracks in concrete slabs). In areas where both lateral spread and deeper vertical penetration of the termiticide is needed both foam and conventional liquid should be used (e.g. adjacent to foundation walls). Foam and liquid

# TERMIDOR® *H·E*

## HIGH-EFFICIENCY TERMITICIDE

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

- **For use only by individuals/firms licensed or registered by the state to apply termiticide products.**
- **DO NOT** use this product for termite control indoors, except for label-specified applications for termite control.
- **DO NOT** use on golf course turf. May be used for control of termites found on/near structures associated with golf courses, but only as specified on this label.
- **DO NOT** use on/in commercial bee hives.
- **DO NOT** use for general pest control. This product is only for use as a termiticide.
- **DO NOT** use on animal trophies or animal skins.

See inside booklet for additional **Restrictions**, **First Aid**, **Precautionary Statements**, **Directions For Use**, **Conditions of Sale and Warranty**, and state-specific use sites and/or restrictions.

**Active Ingredient:**

fipronil: 5-amino-1-(2,6-dichloro-4-(trifluoromethyl)phenyl)-4-((1,R,S)-(trifluoromethyl)sulfinyl)-1*H*-pyrazole-3-carbonitrile ..... 8.73%

**Other Ingredients:** ..... 91.27%

**Total:** ..... 100.00%

One gallon of Termidor® *H•E* High-Efficiency Termiticide contains 0.8 lb of fipronil.

**EPA Reg. No. 7969-329** **EPA Est. No.**

**KEEP OUT OF REACH OF CHILDREN**

## CAUTION/PRECAUCIÓN

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

**FOR MEDICAL AND TRANSPORTATION EMERGENCIES ONLY**
**CALL 24 HOURS A DAY 1-800-832-HELP (4357)**

**For Product Use Information, call 1-877-TERMIDOR**

**Net Contents:**

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
The Chemical Company

| FIRST AID | |
|---|---|
| **If on skin or clothing** | • Take off contaminated clothing.<br>• Rinse skin immediately with plenty of water for 15 to 20 minutes.<br>• Call a poison control center or doctor for treatment advice. |
| **If swallowed** | • Call a poison control center or doctor immediately for treatment advice.<br>• Have person sip a glass of water if able to swallow.<br>• **DO NOT** induce vomiting unless told to by a poison control center or doctor.<br>• **DO NOT** give anything by mouth to an unconscious person. |
| **If in eyes** | • Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes; then continue rinsing eyes.<br>• Call a poison control center or doctor for treatment advice. |
| **If inhaled** | • Move person to fresh air.<br>• If person is not breathing, call 911 or ambulance; then give artificial respiration, preferably by mouth to mouth, if possible.<br>• Call a poison control center or doctor for treatment advice. |
| **HOTLINE NUMBER** | |
| Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In case of medical emergency involving this product, call BASF Corporation at 1-800-832-HELP (4357) or dial 911. | |
| **NOTE TO PHYSICIAN:** There is no specific antidote. All treatment should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occurred. In severe cases of overexposure by oral ingestion, lethargy, muscle tremors, and in extreme cases, possibly convulsions may occur. | |

## Precautionary Statements

### Hazards to Humans and Domestic Animals

**CAUTION.** Harmful if swallowed, absorbed through skin or inhaled. **DO NOT** get in eyes, on skin, or on clothing. **DO NOT** breathe spray mist.

### Personal Protective Equipment (PPE)

Some materials that are chemically resistant to this product are listed below. For more options, refer to **Category A** on an EPA chemical-resistance category selection chart.

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Shoes plus socks
- Waterproof gloves, such as barrier laminate, butyl rubber ≥ 14 mils, or others listed in selection **Category A**

**When working in a non-ventilated space, including but not limited to crawl spaces and basements, all pesticide handlers must wear:**

- A dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH-approved respirator with any N, R, P or HE filter

**When working in a non-ventilated space, including but not limited to crawl spaces and basements or when applying termiticide by rodding or sub-slab injection, all pesticide handlers must wear:**

- Protective eyewear (goggles, a faceshield, or safety glasses with front, brow, and temple protection)

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

### USER SAFETY RECOMMENDATIONS

**Users should:**

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

### Environmental Hazards

This pesticide is toxic to birds, fish, and aquatic invertebrates. **DO NOT** apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Care must be taken to avoid runoff. **DO NOT** contaminate water by cleaning equipment or disposal of wastes. **DO NOT** contaminate water when disposing of equipment washwater or rinsate.

## Directions For Use

It is a violation of federal law to use this product in a manner inconsistent with its labeling. Read the entire label before using this product.

**Termidor® *H·E* High-Efficiency Termiticide** cannot be used to formulate, reformulate, or repackage into any other pesticide product without the written permission of BASF Corporation.

For use only by individuals/firms licensed or registered by the state to apply termiticide products. States may have more restrictive requirements regarding qualifications of persons using this product. Consult the structural pest control regulatory agency of your state prior to use of this product.

## STORAGE AND DISPOSAL

**DO NOT** contaminate water, food, or feed by storage or disposal.

### Pesticide Storage

Store unused product in original container only, out of reach of children and animals.

### Pesticide Disposal

To avoid waste, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

### Container Handling

**Nonrefillable Container. DO NOT** reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

**Triple rinse containers small enough to shake (capacity ≤ 5 gallons) as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

**Pressure rinse as follows:** Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

### Spills

In case of large-scale spill of this product, call:

- CHEMTREC 1-800-424-9300
- BASF Corporation 1-800-832-HELP (4357)

**Steps to take if this material is released into the environment or spilled:**

- Wear **Personal Protective Equipment (PPE)** and avoid exposure when managing a spill. (See **Precautionary Statements** section of this label for required PPE.)
- Dike and contain the spill with inert material (e.g., sand, earth) and transfer liquid and solid diking material to separate containers for disposal. Small-scale spills of **Termidor® *H·E* High-Efficiency Termiticide** finished dilution (that can be cleaned up with a typical spill kit) may be applied to labeled sites.
- Remove contaminated clothing, and wash affected skin areas with soap and water. Wash clothing before reuse.
- Keep spill out of all sewers and open bodies of water.

## Use Restrictions

- When treating adjacent to an existing structure, the applicator must check the area to be treated, and immediate adjacent areas of the structure, for visible and accessible cracks and holes to prevent any leak or significant exposure to persons occupying the structure. People present or residing in the structure during application must be advised to remove themselves and their pets from the structure if they see any sign of leakage. After application, the applicator is required to check for leaks. All leaks resulting in the deposition of termiticide in locations other than those prescribed on this label must be cleaned up before leaving the application site. **DO NOT** allow people or pets to contact contaminated areas or to reoccupy contaminated areas of the structure until the cleanup is completed.
- Before the applicator drills and treats through concrete structures (e.g., patios, porches, sidewalks, and foundation slabs), first determine that there are no habitable areas below that could be unintentionally contaminated by the treatment.
- Only protected applicators wearing personal protective equipment, as required by this product label, are allowed to be in the immediate area during application.
- All drill holes, in commonly occupied areas into which product has been applied, must be plugged. Plugs must be of a non-cellulose material or covered by an impervious, non-cellulose material (e.g., Portland cement).
- **DO NOT** apply product until heating/air conditioning ducts, air vents, plumbing pipes, sewer lines, floor drains, heating pipes and electrical lines/conduits are known and identified. **DO NOT** puncture or contaminate any of these.
- **DO NOT** use this product in voids insulated with rigid foam.
- **DO NOT** treat within a distance of one foot out from the drip line of edible plants.
- **DO NOT** contaminate public and private water supplies.
- **DO NOT** make treatments while precipitation is occurring.
- **DO NOT** treat soil that is water saturated, or frozen, or in conditions where runoff or movement from the treatment area/site will occur.
- Use anti-backflow or air gap equipment with filling hoses.

## Product Information

When used as directed in this label, **Termidor® *H·E* High-Efficiency Termiticide** (henceforth referred to as **Termidor *HE***), provides effective prevention and/or control of listed termites. To maximize the termiticide potency, apply **Termidor *HE*** finished dilution in continuous treated zone(s) to prevent termites from infesting the wood to be protected.

**Termidor *HE*** finished dilution must only be applied by licensed technicians familiar with trenching, rodding, short-rodding, sub-slab injection, low-pressure banded surface applications, and foam delivery techniques. **Termidor *HE*** finished dilution is highly effective against a variety of subterranean, arboreal, drywood, and damp-wood termites including species of *Reticulitermes*, *Coptotermes*, *Heterotermes*, *Nasutitermes*, and *Zootermopsis*.

**Termidor *HE*** is a water-based suspension concentrate containing 8.73% fipronil and a BASF Corporation-proprietary additive that optimizes the termiticide's performance under a wide range of soil types, environmental conditions, and application techniques.

Pre-construction and post-construction horizontal treatments and post-construction inaccessible crawl space construction treatments may be made with a 0.06% or 0.125% **Termidor *HE*** finished dilution. Pre-construction vertical and all post-construction treatments (including applications to posts/poles/wood landscape ornamentation and applications for termites above ground) listed on this label must be made using a 0.125% **Termidor *HE*** finished dilution (exception 0.06% finished dilution option for inaccessible crawl space construction).

### Mixing Instructions

Mix **Termidor *HE*** in the following manner:

1. Fill tank 1/4 to 1/3 full with water. Filling hose must be equipped with an anti-backflow device or water flow must include an air gap to protect against back-siphoning.
2. Start pump to begin bypass agitation and place end of treating tool in tank to allow circulation through hose.
3. Add appropriate amount of **Termidor *HE***. Refer to **Table 1** and **Table 2** for pre-construction and post-construction horizontal treatments and post-construction inaccessible crawl space construction and **Table 3** for pre-construction vertical and all other post-construction treatments to determine the proper amounts to add to prepare the desired amount of finished dilution.
4. Add remaining amount of water.
5. Let pump run and allow recirculation through the hose back into the tank until the **Termidor *HE*** has completely dispersed.

**NOTE:** For tanks pre-filled with water, follow steps 2, 3, and 5 above.

**NOTE:** Recirculation/agitation may not be required for in-line injection or other application systems.

**(Table 1.) 0.06% Termidor *HE* Finished Dilution for Pre-construction and Post-construction Horizontal Treatments**

| 0.06% Termidor *HE* Finished Dilution (gals) | Water (gals) | Termidor *HE* Termiticide (fl ozs) |
|---|---|---|
| 1 | 1.00 | 0.8 |
| 25 | 25.00 | 19.8 (1 pt + 3.8 fl ozs) |
| 50 | 49.75 | 39.5 (1 qt + 7.5 fl ozs) |
| 100 | 99.50 | 79.0 (2 qts + 15 fl ozs) |

**(Table 2.) 0.125% Termidor *HE* Finished Dilution for Pre-construction and Post-construction Horizontal Treatments**

| 0.125% Termidor *HE* Finished Dilution (gals) | Water (gals) | Termidor *HE* Termiticide (fl ozs) |
|---|---|---|
| 1 | 1.00 | 1.6 |
| 25 | 24.75 | 39.5 (1 qt + 7.5 fl ozs) |
| 50 | 49.50 | 79.0 (2 qts + 15 fl ozs) |
| 100 | 99.00 | 158.0 (1 gal + 30 fl ozs) |

**(Table 3.) 0.125% Termidor *HE* Finished Dilution for Pre-construction Vertical and All Other Post-construction Treatment Types**

| 0.125% Termidor *HE* Finished Dilution (gals) | Water (gals) | Termidor *HE* Termiticide (fl ozs) |
|---|---|---|
| 1 | 1.00 | 1.6 |
| 25 | 24.75 | 39.5 (1 qt + 7.5 fl ozs) |
| 50 | 49.50 | 79.0 (2 qts + 15 fl ozs) |
| 100 | 99.00 | 158.0 (1 gal + 30 fl ozs) |

## CONDITIONS OF SALE AND WARRANTY

Follow the **Directions for Use**. It is impossible to eliminate all risks inherently associated with use of this product, and therefore all such risk shall be assumed by the Buyer. BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions for Use**, subject to the inherent risks, referred to above. **TO THE EXTENT CONSISTENT WITH APPLICABLE LAW: (A) BASF MAKES NO OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR PARTICULAR PURPOSE OR MERCHANTABILITY, (B) BUYER'S EXCLUSIVE REMEDY AND BASF'S AND SELLER'S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT, AND (C) BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.** BASF and the Seller offer this product, and the Buyer accepts it, subject to these **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. PCS813

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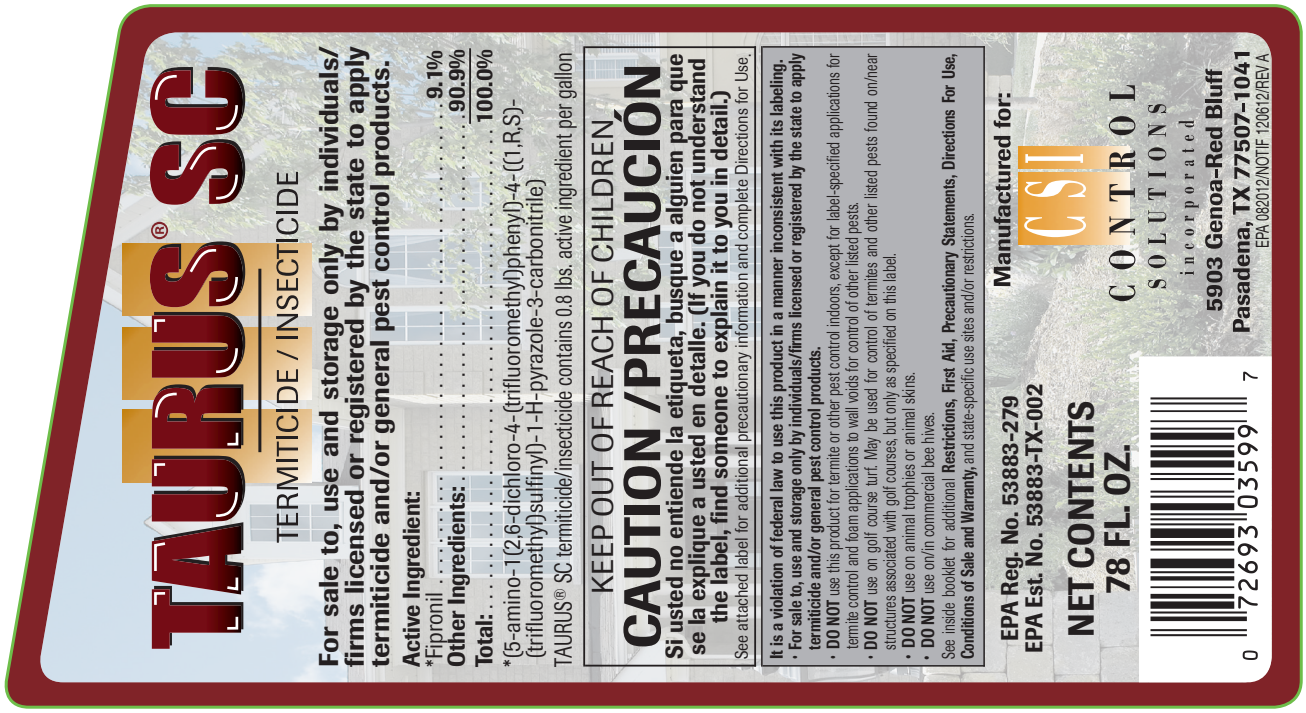
Based on: NVA 2013-04-468-0331
Supersedes: 120827-11

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
We create chemistry

TAURUS® SC
TERMITICIDE / INSECTICIDE
For sale to, use and storage only by individuals/firms licensed or registered by the state to apply termiticide and/or general pest control products.
Active Ingredient: *Fipronil ..... 9.1%
Other Ingredients: ..... 90.9%
Total: ..... 100.0%
*(5-amino-1(2,6-dichloro-4-(trifluoromethyl) phenyl)-4-((1,R,S)-(trifluoromethyl) sulfinyl)-1-H-pyrazole-3-carbonitrile)
EPA Reg. No. 53883-279 EPA Est. No. 53883-TX-002
It is a violation of federal law to use this product in a manner inconsistent with its labeling.
• For sale to, use and storage only by individuals/firms licensed or registered by the state to apply termiticide and/or general pest control products.
• DO NOT use this product for termite or other pest control indoors, except for label-specified applications for termite control and foam applications to wall voids for control of other listed pests.
• DO NOT use on golf course turf. May be used for control of termites and other listed pests found on/near structures associated with golf courses, but only as specified on this label.
• DO NOT use on animal trophies or animal skins.
• DO NOT use on/in commercial bee hives.
See inside booklet for additional Restrictions, First Aid, Precautionary Statements, Directions For Use, Conditions of Sale and Warranty, and state-specific use sites and/or restrictions.
EPA 082012/NOTIF 120612/REV A
KEEP OUT OF REACH OF CHILDREN
CAUTION /PRECAUCIÓN
Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)
See attached label for additional precautionary information and complete Directions for Use.
TAURUS® SC termiticide/insecticide contains 0.8 lbs. active ingredient per gallon
CSI
CONTROL SOLUTIONS incorporated
Manufactured By:
Control Solutions, Inc.
5903 Genoa-Red Bluff
Pasadena, TX 77507-1041
NET CONTENTS 20 FL. OZ.
0 72693 03598 0


TAURUS® SC
TERMITICIDE / INSECTICIDE
For sale to, use and storage only by individuals/firms licensed or registered by the state to apply termiticide and/or general pest control products.
Active Ingredient: *Fipronil ..... 9.1%
Other Ingredients: ..... 90.9%
Total: ..... 100.0%
*(5-amino-1(2,6-dichloro-4-(trifluoromethyl)phenyl)-4-((1,R,S)-(trifluoromethyl)sulfinyl)-1-H-pyrazole-3-carbonitrile)
TAURUS® SC termiticide/insecticide contains 0.8 lbs. active ingredient per gallon
KEEP OUT OF REACH OF CHILDREN
CAUTION /PRECAUCIÓN
Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)
See attached label for additional precautionary information and complete Directions for Use.
It is a violation of federal law to use this product in a manner inconsistent with its labeling.
• For sale to, use and storage only by individuals/firms licensed or registered by the state to apply termiticide and/or general pest control products.
• DO NOT use this product for termite or other pest control indoors, except for label-specified applications for termite control and foam applications to wall voids for control of other listed pests.
• DO NOT use on golf course turf. May be used for control of termites and other listed pests found on/near structures associated with golf courses, but only as specified on this label.
• DO NOT use on animal trophies or animal skins.
• DO NOT use on/in commercial bee hives.
See inside booklet for additional Restrictions, First Aid, Precautionary Statements, Directions For Use, Conditions of Sale and Warranty, and state-specific use sites and/or restrictions.
EPA Reg. No. 53883-279
EPA Est. No. 53883-TX-002
NET CONTENTS
78 FL. OZ.
Manufactured for:
CSI
CONTROL SOLUTIONS incorporated
5903 Genoa-Red Bluff
Pasadena, TX 77507-1041
EPA 082012/NOTIF 120612/REV A
0 72693 03599 7

## TERMS TO KNOW

| | |
|---|---|
| **Botanical Pesticide** | A pesticide produced from naturally occurring chemicals found in some plants. Examples are nicotine, pyrethrum, and rotenone. |
| **Carbamate Insecticide** | One of a class of insecticides derived from carbamic acid. |
| **Chemical Name** | The scientific name of the active ingredient found in the formulated product. The name is derived from the chemical structure of the active ingredient. |
| **Common Name** | A common chemical name given to a pesticide by a recognized committee on pesticide nomenclature. Many pesticides are known by a number of trade or brand names but have only one recognized common name. |
| **Environment** | Everything that is around us. It includes the air, soil, water, plants, animals, houses, office building, factories and all that they contain. |
| **Inorganic** | A compound lacking carbon in its structure. Sometimes called "minerals" because they are generally mined from earthen deposits before being refined and formulated for use. |
| **Insecticide** | A pesticide used for the control of insects. Some insecticides are also labeled for control of ticks, mites, spiders, and other arthropods. |
| **Organophosphate** | A class of insecticides derived from phosphoric acid esters. |
| **Persistent** | The quality of an insecticide to remain as an effective residue. |
| **Pyrethroid** | A synthetic (man-made) pesticide that mimics pyrethrin, a botanical pesticide derived from certain species of chrysanthemum flowers. |
| **Resistance** | The measurable decrease in the effectiveness of a pesticide as a result of previous exposure(s) of a pest population to that pesticide or related types. |
| **Vertebrate(s)** | Animals that have an internal skeleton and segmented spine, such as fish, birds, reptiles, and mammals. Insects have an exoskeleton (the hard covering on the outside of their bodies) with no internal skeleton. |

## Common Name

All pesticides have a **chemical name**. These names are usually long and complex. Because of this, many pesticides, but not all, have been assigned a shorter **common name**. Only common names approved by the EPA may be used in the ingredient statement on the pesticide label. Table 3.1 illustrates the common and chemical names of several pesticides common to the structural pest control industry.

### Table 3.1 EXAMPLES OF PESTICIDES WITH COMMON NAMES

| BRAND NAME | COMMON NAME | CHEMICAL NAME |
|---|---|---|
| **Termidor 80 WG** *insecticide* | fipronil | 5-amino-1-(2,6 dichloro-4-(trifluoromethyl) phenyl)-4-((1,R,S)-(trifluoromethyl)sulfinyl)-1-Hpyrazole-3-carbonitrile |
| **Ultracide** *Flea Adulticide* | Pyriproxyfen, pyrethrin, permethrin | 2-(1-Methyl-2-(4-phenoxyphhenoxy) ethoxy) pyridine N-Octylbicyloheptene bicarboximide |
| **Transport GHP** *insecticide* | acetamiprid | 2-Methy{1,1′-biphenyl}-3-y1)methyl 3-(2-chloro-3,3,3-trifluoro-1 propenyl)-2,2-dimethylcyclopropanecarboxylate, {1,alpha,3,alpha(z)}+(+) |
| **Avitrol** *Kills Birds* | pyridines | C,5H,6N,2-CL 4-aminopyridine |
| **Lambda Star 9.7% CS** *insecticide* | Lambda-cyhalothrin | (R+S)-alpha-Cyano-3-phenoxybenzyl (1S+1R)-cis-3-(Z-2-chloro-3,3,3-trifluoroprop-1-enyl)-2,-2-dimethylcyclopropanecarboxylate |
| **Temprid SC** *insecticide* | imidacloprid | 1-((6-chloro-3-pyridinyl)methyl)-N-nitro-2-imidazolidinimine, β-Cyfluthrin, Cyano(4-fluoro-3-phenoxyphenyl)methyl 3-(2,2-dichloroethenyl |
| **Phantom** *termicide/insecticide* | chlorfenapyr | 1-H-Pyrrole 3-carbonitrile, 4-bromo-2-(4-chlorophenyl)-1-(ethoxymethyl)-5-(trifluoromethyl) |

## Chemical Name

Every pesticide label must list the product's active ingredient by its chemical name. The chemical name is the complex name on a pesticide label that identifies the chemical components and structure of the pesticide.

For example, the chemical name of the active ingredient in Ultracide Pressurized Flea IGR & Adulticide, shown in Figure 3.1, is 2-(1-Methyl-2-(4-phenoxyphenoxy) ethoxy) pyridine N-Octilbicyloheptene bicarboximide. The common name for this active ingredient is pyriproxyfen.

To comply with **Structural Pest Control Rules & Regulations**, you are required to keep a record of each pesticide applied. All pesticide treatment records must include the **entire** brand name of the pesticide.

Acceptable documentation: Lambda Star 9.7% CS

**Unacceptable documentation: Lambda Star**

As mentioned above, the chemical name describes a unique chemical structure for that particular pesticide. In general, pesticides with similar chemical structures are placed in classes based on some aspect of their chemical make-up. Pesticides grouped within a class exhibit similar chemical characteristics.

In your work as a structural pest control technician, you will use many different pesticides to control pests. In structural pest management, the most important objective is to:

**Control Pests While Minimizing Hazards to the Environment.**

Until you become a **Registered Technician**, most of the decisions regarding the selection of a pesticide will be the responsibility of your company's supervisor or licensee.

## Pesticide Classes

Once you have become a registered technician, the single-most important decision that you will ultimately make is to choose the **right** pesticide for your particular pest control situation. This requires a basic understanding of the different classes of pesticides. Pesticide classification often reveals properties of a pesticide which will be important for you to know, such as how **persistent** a pesticide is in the **environment** or the potential of a pesticide to cause harm to you and other organisms.

The major groups of insecticide active ingredients (see Table 3.2) used in structural pest control can be categorized as follows:

- **BOTANICALS -** Botanically-derived insecticides have gained favor in recent years, due in part to the perception that they are more safe or "natural" because they originate from plant material. However, it is important to be aware that they are pesticides, and that they fall under the same state and federal regulations as synthetic pesticides. All pesticides must be labeled for the specific pest(s) on the particular crop(s) or site(s) for their use to be legal. If the use is not stated on the label, then the pesticide is not legal to apply.

**Botanicals** were first discovered many centuries ago when certain varieties of chrysanthemum flowers were found to have insecticidal properties when dried and crushed into a dust or powder. **Pyrethrum** is the most widely used botanical insecticide in structural pest management. **Pyrethrum** has very low toxicity to humans, however, it is quite toxic to most fish, birds, reptiles, and amphibians.

- **CHLORINATED HYDROCARBONS** - most chlorinated hydrocarbon insecticides are no longer used in the United States. This class of insecticides was alleged to cause adverse effects on people and the environment.

- **ORGANOPHOSPHATES** - the **organophosphates** were the first insecticides to replace the chlorinated hydrocarbons, such as DDT and chlordane. Organophosphates, also called OP's, were developed in the early 1950's and some are highly toxic to mammals and for this reason OP's are not used in structural pest control. The primary toxic action (mode of action) of organophosphates to humans and animals involves inhibition of an important nervous system enzyme, called cholinesterase.

Most OP's break down rapidly in the environment and do not pose a problem of long term **persistence** like the chlorinated hydrocarbons.

**Cholinesterase controls the "communication" of nerve impulses between nerve cells. Exposure to OP's inhibits the release of this enzyme which may cause "messages" between nerve cells to be disrupted, leading to muscle failure.**

**It is important to note that pets, such as dogs and cats, have cholinesterase in their nervous systems! Be especially careful when applying pesticides near pets as they too could be harmed.**

- **CARBAMATES** - **carbamate** insecticides work in much the same way as the organophosphates. As with organophosphates, carbamates are cholinesterase inhibitors. Generally, the carbamates have even lower toxicity to humans and animals than most organophosphates.

- **INORGANICS** - this class of insecticides is one of the oldest insecticides used in structural pest management today. They are mined from naturally occurring deposits of borax or the fossilized silica-shell remains of algae. **Inorganics** are slow acting insecticides that provide a long residual action against a variety of structural pests. Most inorganics control pests by destroying the waxy layers of the insect's skin tissue (cuticle) and causing death by desiccation (excessive drying of tissue).

- **PYRETHROIDS** - **pyrethroids** are synthesized from the insecticidally active compounds found in pyrethrum, called pyrethrins. Pyrethroids generally have some form of improved insecticidal activity, often increased residual, when compared to natural pyrethrins. Blockage of nerve impulse transmission which leads to paralysis (pest knockdown) and eventual death is the primary mode of action for pyrethroids.

- **BIORATIONALS** - biorationals are pest-specific pesticides of natural origin (or synthetic versions of natural chemicals) that have a minimal or no adverse impact on non-target species or the environment.

- **INSECT GROWTH REGULATORS (IGR'S)** - IGR's are a group of compounds that can disrupt a number of normal processes, such as molting, in the growth and development of insects. They generally have very little toxicity to humans, animals, and other **vertebrates**.

**Once insects hatch from eggs, they grow in a series of definite stages. The growth of an insect in each stage is limited by its exoskeleton. As the insect develops, it forms a new skeleton directly beneath the old one. The old skeleton splits and the next insect stage emerges and expands to a larger size before the skeleton hardens. This process of growth is called MOLTING. The number of times an insect molts ranges from four to twenty or more.**

## Table 3.2

| Chemical Name | Examples of Pesticides | | |
|---|---|---|---|
| **BOTANICALS** | *pyrethrins* | *pyrethrum* | *d-limonene* |
| **CARBAMATES** | *bendiocarb* | | *propuxur* |
| **INORGANIC** | *boric acid* | *diamaceous earth* | *silica aerogel* |
| **ORGANOPHOSPHATES** | *acephate* | *chlorpyrifos* | |
| **PYRETHROIDS** | *permethrin* | *fenvalerate* | *cyfluthrin* |
| **BIORATIONALS** | *abamectin* | *Melarhizium anisopliae* | *pyripoxyfen* |
| **IGR** | *fenoxycarb* | *hydroprene* | *methiprene* |
| **OXADIANZINES** | *indoxacarb* | | |
| **NEONICOTINOIDS** | *imidacloprid* | *dinotefuran* | *acetamiprid* |
| **SPINOSYNS** | *spinosad* | *spinetoram* | |
| **PHENYLPYRAZOLES** | *fipronil* | *pyraclofos* | |
| **AVERMECTINS** | *abamectin* | *emamectin benzoate* | *ivermectin* |
| **DIAMIDES** | *chlorantraniliprole* | | *proflanilide* |
| **CHITIN SYNTHESIS INHIBITORS** | *diflubenzuron* | *hexaflumuron* | *noviflumuron* |
| **AMIDINOHYDRAZONES** | *hydramethylnon* | | |
| **PYRROLES** | *chlorfenapyr* | | |
| **FUMIGANT** | *sulfur fluoride* | | |

## Types of Pesticides

As discussed earlier, pesticides can be classified by their chemical structure or their source. There is another common way of classifying pesticides. On the front of the pesticide label is a statement which indicates, in general terms, what pest(s) the product is intended to control. Remember that the term *pesticide* is a broad term under which other specific-use pesticides are included.

Pests can be insects, mice, rodents and other animals, fungi, microorganisms like bacteria and viruses, or unwanted plants (weeds). Though often misunderstood to refer only to insecticides, the term pesticide also applies to herbicides, fungicides, and various other substances used to control pests.

Many household products are pesticides. Did you know that all of these common products are considered pesticides?

- Cockroach sprays and baits
- Insect repellents for personal use.
- Rat and other rodent poisons.
- Flea and tick sprays, powders, and pet collars.
- Kitchen, laundry, and bath disinfectants and sanitizers (such as **Clorox**®).
- Products that kill mold and mildew.
- Some lawn and garden products, such as weed killers.
- Some swimming pool chemicals.

By their very nature, most pesticides create some risk of harm to humans, animals, or the environment because they are designed to kill or otherwise adversely affect living organisms.

At the same time, pesticides are useful to the environment because of their ability to kill potential disease-causing organisms and control insects, weeds, and other pests. Biologically-based pesticides, such as pheromones and microbial pesticides, are becoming increasingly popular and often are less hazardous than traditional chemical pesticides.

Table 3.3 lists some common kinds of pesticides and their function.

## Table 3.3

| PESTICIDE | FUNCTION |
|---|---|
| Algicides | Control algae in lakes, canals, swimming pools, water tanks, and other sites. |
| Antimicrobials | Kill microorganisms (such as bacteria and viruses). |
| Attractants | Attract pests (for example, to lure an insect or rodent to a trap). |
| Biocides | Kill microorganisms. |
| Disinfectants and sanitizers objects. | Kill or inactivate disease-producing microorganisms on inanimate |
| Fungicides | Kill fungi (including blights, mildews, molds, and rusts). |
| Fumigants | Produce gas or vapor intended to destroy pests in buildings or soil. |
| Herbicides | Kill weeds and other plants that grow where they are not wanted. |
| Insecticides | Kill insects and other arthropods. |
| Insect growth regulators | Disrupt the molting, maturity from pupal stage to adult, or other life processes of insects. |
| Miticides (acaricides) | Kill mites that feed on plants and animals. |
| Microbial pesticides | Microorganisms that kill, inhibit, or out-compete pests, including insects or other microorganisms. |
| Molluscicides | Kill snails and slugs. |
| Nematicides | Kill nematodes (microscopic, worm-like organisms that feed on plant roots). |
| Ovicides | Kill eggs of insects and mites. |
| Pheromones | Biochemicals used to disrupt the mating behavior of insects |
| Repellents | Repel pests, including insects (such as mosquitoes) and birds. |
| Rodenticides | Control mice and other rodents. |

**A Pheromone is a chemical produced by an animal or insect to attract other animals or insects of the same species.**

What about structural pest control devices? The EPA also has a role in regulating devices used to control pests. More specifically, a "device" is any instrument or contrivance (other than a firearm) intended for trapping, destroying, repelling, or mitigating any pest. A mousetrap is an example of a device. Unlike pesticides, EPA does not require devices to be registered with the Agency.

## Pesticide Failures

The pesticide storage area of your company contains many pesticides for the control of a variety of structural pests. The reason for this is that rarely does any one single pesticide kill all the pests encountered in your work.

Sometimes, however, even with this broad assortment of pesticides to choose from, a pesticide may fail to control a pest. When faced with this possibility, simply picking the next pesticide available on the storage shelf may not provide a solution to the problem until you can determine the reason for the failure.

There are several possible reasons for failure of a pesticide to work as anticipated:

*. . . did you apply the correct dosage as directed on the label?*

*. . . was the pest properly identified?*

*. . . was the pesticide applied at the appropriate time as recommended on the label?*

When selecting a pesticide, an important **long-term** consideration is that some pests have developed significant levels of **resistance**[1] to particular pesticides. When a pesticide is used repeatedly in the same place, against the same pest, the opportunity for resistance to that pesticide and to other pesticides in the same class becomes greater.

To reduce the likelihood of pesticide resistance developing, you should acquire the habit of "rotating" pesticides. Rotating pesticides means using a pesticide from a different insecticide class, such as a change to a pyrethroid insecticide if resistance to carbamate insecticides is suspected.

**Resistance develops most frequently and rapidly in insects, especially in those that have high rates of reproduction and short life cycles and are not able to move rapidly from one locality to another. Resistance does not develop in all pests nor in all places where a particular pest is found. In certain insects, it may take years or many insect generations before resistance develops. It usually appears first in local situations and then becomes common throughout the geographical range of the pest.**

*[1] resistance is the ability of a pest to tolerate exposure to a specified amount of a pesticide. Not all pests in a population may be killed by a pesticide, even though all may have picked up or acquired the same amount of pesticide. The few that survive have a greater natural tolerance and form the breeding stock of the next generation. Resistance develops most quickly in pests which reproduce rapidly, such as flies and some cockroaches.*

## WORKBOOK EXERCISES

Completing the following exercises will help develop a greater awareness of the different classes and types of pesticides in your storage area. Carefully review the contents of your pesticide storage area. Select 5 pesticides which have **different active ingredients**. It may be a good idea to have your trainer present to assist you with this exercise.

Enter the following information regarding each pesticide in the table below:

1) the brand name of the pesticide,
2) the pesticide class or group represented by the pesticide and,
3) two (2) pests controlled by the pesticide.

| BRAND NAME | CLASS OF INSECTICIDE | PESTS CONTROLLED |
|---|---|---|
| **EXAMPLE; Transport GHP** | acetamiprid | ants and cockroaches |
| 1) | | |
| 2) | | |
| 3) | | |
| 4) | | |
| 5) | | |

On the front of the pesticide label is a statement which indicates, in general terms, what the product is intended to control. It is important to remember that the term *pesticide* is a broad term under which other specific-use pesticides are included.

As a review, an **insecticide** is a pesticide used to control insects, **rodenticides** control rodents, **acaricides** control mites (*Acarina* is an order of mites, hence, the name acaricide), **termiticides** control termites and **fungicides** control fungi (such as wood-decaying fungi).

Below is a list of several common types of pesticides. Provide one or two brand names for each type of pesticide that you may use in your work as a registered technician. Include brand names for household pest control products and for wood-destroying organism pesticides.

INSECTICIDE _____

FUNGICIDE _____

RODENTICIDE _____

ACARICIDE _____

AVICIDE (for bird control) _____

INSECT GROWTH REGULATORS _____

REPELLENTS _____

PHEROMONES _____

DESICCANTS _____

# TEST YOUR UNDERSTANDING

## MULTIPLE CHOICE

Select the best answer of the 4 choices provided:

3.1 Chemical names on pesticide labels are:
- a. in larger print than trade names
- b. the same as trade names
- c. long and complex
- d. short and simple

3.2 Pesticides with different brand names but the same common names will have:
- a. similar trade names
- b. the same active ingredient
- c. the same inert ingredient
- d. the same amount of active ingredient

3.3 A pesticide classified as "persistent" would:
- a. break down very rapidly
- b. never break down
- c. break down slowly
- d. control all pests

3.4 All pesticides used in structural pest control have:
- a. a common name
- b. a trade name
- c. a chemical name
- d. both b. and c.

3.5 **Imidacloprid** insecticide will exhibit chemical properties that are similar to (refer to Table 3.2):
- a. cyfluthrin
- b. boric acid
- c. acetamiprid
- d. pyrethrum

## FILL-IN THE BLANK

Complete each statement with the appropriate word(s).

3.6 All registered pesticides have a _____ name.

3.7 To comply with **Structural Pest Control Rules & Regulations**, you are required to keep a record of each _____ applied.

3.8 The _____ name is the complex name on a pesticide label that identifies the chemical components and structure of the pesticide.

3.9 The single-most important decision that you will ultimately face is to determine the _____ pesticide for your particular pest control situation.

3.10 The_____ were the first insecticides to replace the chlorinated hydrocarbons.

3.11 _____ have even lower toxicity to mammals than most organophosphates.

3.12 Inorganics are slow killing insecticides that provide a long _____ action against a variety of structural pests.

3.13 Pyrethroids are synthesized from the insecticidally active compounds found in _____.

3.14 Pesticides grouped within classes will exhibit common _____.

3.15 **Pyrethrum** is the most widely used _____ insecticide in structural pest management.

## TRUE OR FALSE.

Read each statement. Decide whether the statement is true (**T**) or false (**F**). Circle your answer.

3.16 When a pesticide is used repeatedly in the same place, against the same pest, the opportunity for resistance decreases.

T F

3.17 **Pyrethrum** is very toxic to humans.

T F

3.18 All pesticides have a common name.

T F

3.19 **Carbaryl** is a carbamate insecticide.

T F

3.20 Chlorox bleach is a commonly used household cleaning product but it is also considered a pesticide.

T F

3.21 Pheromones kill pests.

T F

3.22 Termiticides control cockroaches.

T F

3.23 Rodenticides control mice.

T F

3.24 All insecticides are pesticides.

T F

3.25 All pesticides are insecticides.

T F

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

_____ _____

**Registered Technician Trainee** **Date**

_____ _____

**Designated Trainer** **Date**

*NOTES:*

## TERMS TO KNOW

| | |
|---|---|
| **Active Ingredient** | active ingredient, abbreviated "a.i.", is the material(s) in a pesticide formulation that actually controls (prevents, destroys, repels) the target pest. |
| **Dilute** | to make less concentrated. |
| **Emulsifier** | a chemical that aids in suspending one liquid in another. |
| **Emulsion** | a mixture in which one liquid is suspended as very small drops in another liquid, such as oil in water. As an example, when concentrated pesticide active ingredient is dissolved in an oil and then mixed with emulsifiers, they form emulsifiable concentrates. When emulsifiable concentrates are then mixed in water within a spray tank, they form an emulsion. Emulsions are typically milky-white in appearance. |
| **Formulation** | a mixture of active and inert ingredients(s) combined during manufacturing. |
| **Hazard** | the risk of harmful effects from a pesticide. Hazard depends on the particular toxicity of a pesticide and the length of exposure to that pesticide. |
| **Inert Ingredient** | materials in a pesticide formulation that are not the active ingredients. The inert ingredients are added to dilute the active ingredient(s) and improve the mixing and handling qualities of the pesticide. Inert ingredients may be hazardous. |
| **Pesticide** | chemical substances or preparations used to kill, control or manage pest populations. |
| **Solution** | a liquid that contains dissolved substances; (example, table salt dissolved in water). |
| **Solvent** | a liquid, such as water, kerosene, xylene, or alcohol, that will dissolve a substance to form a solution. |
| **Suspension** | a substance that contains undissolved particles mixed throughout a liquid; (example, ground pepper mixed with water). |
| **Toxicity** | the potential for a pesticide to cause harm to humans and animals. |

## What is a Formulation?

The term formulation refers to the character or form of the pesticide product. There are several different types of **pesticide formulations**; for example dust, granular, and emulsifiable concentrate, among others. Only those commonly used in structural pest control will be discussed in this **WORKBOOK**. Table 4.2 lists the formulations commonly used in structural pest control.

The purest form of a **pesticide** (technical grade) contains 100% **active ingredient**. In most cases, this material would be very difficult to mix or apply safely. The material would be very **toxic** and be extremely dangerous to the applicator! Because of the **hazards** involved in handling technical grade pesticides, these are not generally available to structural pest control pesticide applicators.

Pesticide manufacturers add substances to technical grade pesticides to improve handling, application, effectiveness, and storage, and to make the pesticide safer to use. A manufacturer mixes the active ingredient with one or more **inert** (non-pesticide) ingredients. This mixture of active and inert ingredients is known as a pesticide **formulation**. It may be ready-to-use as packaged or may require that you **dilute** it in a **solvent** (e.g. water) or other carrier.

***Therefore, a formulation is a convenient form of a pesticide which allows the applicator to use it effectively and safely at a required concentration for a specific pest control purpose.***

Different formulations require different methods of handling. The label will always indicate what type of formulation the product contains and how to use it properly.

## Active Ingredient

| | |
|---|---|
| **TERMIDOR 80 WG** | |
| 80% Water Soluble Packs | |
| ACTIVE INGREDIENTS: fipronil (5-amino-1 (2,6-dichloro-4- | |
| (trifluoromethyl | 20% |
| INERT INGREDIENTS: | 80% |
| **TOTAL:** | **100.0%** |

**Figure 4.1**

Every pesticide label must list each active ingredient and show its concentration in a percentage by weight on the front panel of the label. The active ingredient (a.i.) is the chemical in a pesticide formulation which has a specific effect on a pest. Often, the kind of formulation is also listed.

Active ingredients in a pesticide can kill, repel, attract, or otherwise control the target pest.

While there are about 19,500 pesticides registered by the EPA for use in agriculture, forestry, industry and home and gardens, only **690** different active ingredients are used.

In Figure 4.1 **TERMIDOR 80 WG** contains 20% by weight of the a.i. **fipronil** (fipronil is the **common name** of this pesticide). The **WG** in the brand name indicates that the product is a water dispersible granular formulation

To determine the amount of active ingredient in a container holding 10 pounds of pesticide in this particular formulation, use the formula below.

**80% a.i. (expressed as 0.80) x 10.0 lbs. (product weight) = 8.0 lbs TERMIDOR insecticide per 10.0 pound bag**

In this example, 8.0 pounds fipronil active ingredient are contained in the 10.0 container of TERMIDOR insecticide.

Liquid formulations, such as an **EC** (emulsifiable concentrate) often indicate the amount of a.i. in pounds per gallon of formulation. For example, a 4 **EC** would mean 4 lb. per gallon of a.i. in an emulsifiable formulation.

The sum of the amount of active ingredients plus the amount of inert ingredients in a pesticide formulation, as a percentage of weight, always equal 100%!

## WORKBOOK EXERCISE

Below are three pesticide formulations. Calculate the amount of active ingredients, or inert ingredient, in pounds, for each of the products.

| FORMULATION | Weight of product (in pounds) | Active ingredient | Inert ingredient |
|---|---|---|---|
| FIRE ANT 2.5 G | 100.0 | 2.5 | ? ____ |
| TERMIDOR 80 WG | 10.0 | ?_____ | 2.0 |
| LAMBDA STAR 9.7% CS | 10.0 | ?_____ | 9.03 |

## Inert Ingredients

As stated earlier, the other ingredients used to make a pesticide formulation are referred to as **inert ingredient**s. Inert ingredients (inactive ingredients) are the components of the formulation that generally do not have reported activity against pests. The inert liquid or solid material is added to an active ingredient by the manufacturer to prepare the pesticide formulation for use by the applicator. The inert ingredients are not usually named, but the label must show what percentage of the total contents they make up.

Inert ingredients are used in a pesticide formulation to make the pesticide:

- safer,
- more effective,
- easier to measure, mix, and apply,
- more convenient to handle.

The term *"inert"* in inert ingredients is sometimes misleading. Although they are not intended by the pesticide manufacturer to kill pests, they are generally **not** harmless. They may exhibit potentially hazardous characteristics, such as flammability, if improperly stored near a source of heat, or **toxicity**, if accidentally swallowed or inhaled. Petroleum solvents, for example, are used in many pesticides. They are both highly flammable and toxic.

An example of an inert ingredient in a pesticide formulation is the coarse corn grit in some fire ant baits that serves as a carrier for the active ingredient.

Also important when discussing pesticide formulations is the fact that, while the active ingredients may be odorless; the inert ingredients may have odors. Compounds with a strong or offensive odor are sometimes added to the formulation by the manufacturer to serve as a warning agent. Generally, though, inert ingredients have no, or insignificant, pesticidal activity against pests.

## Other Pesticide Ingredients

Pesticide manufacturers also commonly add materials to pesticide formulations to help increase the effectiveness. Most pesticide formulations contain at least some amount of these materials, called "adjuvants". Adjuvants change the spreading, dispersing, and wetting properties of spray droplets. While there are many different adjuvants available, it is unlikely that you will be required to use them with pesticides used in structural pest control.

## Types of Formulations

Pesticide labels generally list the formulation type, such as wettable powder, dust, granules, bait, etc. Some manufacturer's spell-out the type of formulation completely, such as **WATER DISPERSABLE GRANULE**; others may abbreviate this information as **WG** or **W,** in the brand name of the pesticide. In Figure 4.1 **TERMIDOR 80 WG** is the manufacturer's brand name of this pesticide with the active ingredient **fipronil**. **WG** indicates that it is a dust formulation.

It is often possible to select from two or more formulations of the same pesticide to control a pest. If you find that more than one formulation is available for your pest control situation, you must choose the best one for the job.

For example, an emulsifiable concentrate insecticide usually provides a faster kill but will have a shorter residual action than a wettable powder. Emulsifiable concentrates may stain some surfaces or fabrics and may not be suitable for such surfaces. Wettable powders may leave a visible residue on smooth, dark surfaces such as tile or stained wood. Whenever a choice is available, consider the safety of the pesticide applicator, building occupants (including pets) and the surfaces or area to which the pesticide will be applied.

Before you choose, ask yourself several questions about each formulation:

- *Do you have the necessary application equipment?*
- *Can the formulation be applied safely under the conditions in the application area?*
- *Will the formulation reach your target and stay in place long enough to control the pest?*
- *Is the formulation likely to harm the surface to which you will apply it?*

To answer these kinds of questions, you need to know something about the characteristics of the different types of pesticide formulations and the general advantages and disadvantages of each type. Table 4.2 summarizes most of the important structural pesticide formulations and the characteristics of each type.

**Why Are There Many Kinds of Pesticide Formulations —Why Not Just One?**

There are three main reasons for this:

- A single active ingredient often is available as different formulations.
- The chemistry of the active ingredient itself dictates what formulations are possible. As an example, some active ingredients are water soluble and others are not; those not soluble in water are formulated in other solvents.
- Different formulations offer different advantages; for example, some formulations are less likely than others to cause harm/injury to the environment.

**Figure 4.2—See Following Page**

| LIQUID FORMULATIONS | | CHARACTERISTICS | PRO (+) / CONS (-) |
|---|---|---|---|
| **E**mulsifiable **C**oncentrates | **EC** | Contains a liquid active ingredient, one or more that allows the formulation to be mixed. Diluted with water and forms milky liquid (emulsion) when mixed. | + easy to mix and apply<br>+ little agitation required — will not settle out<br>+ little or no visible residue on treated surfaces<br>- easily absorbed through skin of humans and animals<br>- solvents may cause sprayer rubber or plastic parts to deteriorate<br>- phytotoxic (cause harm) to some plants. |
| **S**olutions | **S** | Soluble in water or oil. Forms clear liquid when mixed. | + no agitation necessary<br>- few products are available in structural pest control |
| **A**erosols | **A** | These formulations contain one or more active ingredients and a solvent. Most aerosols contain a low percentage of active ingrediant. Aerosol formulations are usually small, self-contained units that release the pesticide when the nozzle is triggered. | + ready to use<br>+ easily stored<br>- practical for very limited uses<br>- risk of inhalation injury<br>- hazardous if punctured<br>- difficult to confine to target site |
| **F**lowable **M**icroencapsulation | **FM/ ME/ SC** | Active ingredient is in fine particles or encased in tiny plastic capsules which are suspended in other formulation ingredients and diluted in water for spraying. | + easy to mix<br>+ very good residual activity<br>+ very low toxicity to humans and animals<br>- constant agitation required<br>- visible residues on some treated surfaces |
| **S**uspension **C**oncentrates | **SC** | as with FM's or ME's | 0as with FM's or ME's |
| **R**eady-**t**o-**U**se finished sprays | **RTU** | Active ingredient is diluted to a finished spray and packaged as a pressurized aerosol or in a trigger sprayer. | + no dilution necessary for use in the field<br>- may be more expensive to purchase than concentrates |
| **U**ltra-**L**ow-**V**olume<br>**U**ltra-**L**ow-**D**ose | **ULV**<br>**ULD** | These pesticide concentrates may contain 100% active ingredient. They are designed to be used as is or to be diluted with small quantities of specified solvents, generally oils. | + little or no agitation required<br>+ not abrasive to equipment<br>+ no plugging or screens and nozzles<br>+ little visible residue on treated surfaces<br>- difficult to keep pesticide in the target site—high drift hazard<br>- specialized equipment required<br>- easily absorbed through skin of humans and animals |

| DRY FORMULATIONS | | CHARACTERISTICS | PRO (+) / CONS (-) |
|---|---|---|---|
| **D**usts | **D** | Active ingredient carried on dry particles, ie, clay or talc. Dusts may also contain 100% active ingredient. | + ready to use — no mixing<br>+ excellent residual when kept dry<br>- easy to over apply dusts<br>- visible residues likely<br>- sometimes difficult to confine dusts to target area<br>- may irritate eyes, nose, throat and skin |
| **W**ettable **P**owders | **WP** | Usually contain 50% or more active ingredient. WP's do not dissolve in water — they form **suspensions**. | + better residual on porous surfaces than EC's<br>+ lower phytotoxicity hazard than EC's<br>+ less skin and eye absorption than EC's<br>- inhalation hazard to applicator while pouring and mixing the concentrated powder<br>- requires constant agitation in the spray tank<br>- residues may be visible |
| **S**oluble **P**owders | **SP/WG** | Similar in appearance to WP's but SP's dissolve readily in water and form a true **solution**. | + same as for wettable powders<br>- inhalation hazard to applicator while pouring and mixing the concentrated powder |
| **B**aits | **B** | Active ingredient mixed with food or another substance. May be solid, liquid, or gel. The active ingredient in baits is usually less than 5%. | + ready to use<br>+ long residual activity<br>+ entire area need not be treated as pest will generally go to the bait<br>- some baits may pose hazards to children and nontarget placed in tamper-resistant containers |
| **G**ranules | **G** | Granular particles are larger than dusts. Active ingredient carried by clay or ground nutshells. Active ingredient either coats or is absorbed into them. Active ingredient is usually between 1 and 15%. | + ready to use — no mixing<br>+ low drift hazard<br>+ provide longer residuals than WP's or EC's<br>- may need moisture to activate pesticidal action |
| **GAS FORMULATIONS** | | | |
| **F**umigants | **F** | Fumigants are pesticides that form poisonous gases when released. Fumigants can be formulated as pressurized liquids, liquids that volatilize (change to a gas) when released, or solids that release gases when applied under high humidity conditions. | + toxic to many insect and rodent pests<br>+ the gas can penetrate cracks, crevices, wood and other porous surfaces.<br>+ single applications will control most stages of pests<br>- the application site must be enclosed or covered to prevent gas escape.<br>- highly toxic to humans and all other organisms.<br>- requires the use of specialized application detection and personal protective equipment.<br>- fumigants provide no residual activity<br>- **Applicators Must Be Certified or Licensed to Apply Fumigants** |

## WORKBOOK EXERCISES

**Give an example of a brand name for each formulation listed below that your company may use.**

| FORMULATION | SYMBOL | BRAND NAME OF PESTICIDE |
|---|---|---|
| **A**erosols | A | |
| **B**aits | B | |
| **D**usts | D | |
| **E**mulsifiable **C**oncentrates | EC or E | |
| **F**lowable **M**icroencapsulation | FM / ME | |
| **F**umigants | F | |
| **G**ranules | G | |
| **S**oluble **P**owders | SP | |
| **S**olutions | S | |
| **S**uspension **C**oncentrates | SC | |
| **U**ltra-**L**ow-**V**olume concentrates | ULV | |
| **W**ettable **P**owders | WP | |
| **Are there other formulations that you will use in your work? If so, include the pesticide formulation and its symbol below:** | | |
| | | |
| | | |
| | | |
| | | |

## TEST YOUR UNDERSTANDING

### MULTIPLE CHOICE.

Select the **best** answer of the 4 choices provided.

4.1 A pesticide formulation:
a. is the total amount of active ingredient contained in the pesticide
b. cannot contain more than 50% active ingredient
c. consists of active and inert ingredients
d. is always diluted and ready-to-use

4.2 The formulation symbol for emulsifiable concentrate is:
a. E
b. CE
c. EC
d. Both a. and c.

4.3 Which of the following is a true statement regarding pesticides?
a. the brand name and chemical name will always be the same
b. most pesticides consist of nearly 100% technical material
c. most pesticides are diluted before use
d. pesticides produced by different manufacturers which contain the same active ingredient will also have the same trade name.

4.4 Which dry pesticide formulation requires frequent agitation to remain in suspension?
a. a solution
b. an aerosol
c. a wettable powder
d. granules

4.5 A microencapsulated pesticide:
a. can be applied wet or dry
b. has a very short residual
c. contains an active ingredient surrounded by a plastic coating
d. is safe to touch, measure and mix without gloves

4.6 A pesticide formulation that contains 0.01 percent active ingredient is _____ than one which contains 0.1 percent active ingredient?
a. 10 times more concentrated
b. 100 times more concentrated
c. 10 times less concentrated
d. 100 times less concentrated

4-7 **Termidor 80 WG** is:
a. an insecticide
b. a water dispersable granule
c. a pesticide
d. all the above

## FILL-IN THE BLANK

Complete each statement with the appropriate word(s).

4.8 Soluble powders mixed in water form a _____.

4.9 Pesticides are available in different forms called _____.

4.10 Every pesticide label must list each _____ _____and show its amount as a percentage by weight on the front panel of the label.

4.11 _____ is the risk of harmful effects from pesticides and will depend on the particular toxicity of a pesticide and the length of exposure to that pesticide.

4.12 The_____ _____ is the chemical in a pesticide formulation which has a specific effect on a pest.

4.13 A pesticide formulation consists of _____ and _____ ingredients.

4-14 Inert ingredients are used in a pesticide formulation to make the pesticide _____.

4.15 Ultra-low-volume concentrates may contain _____ % active ingredient.

4.16 WP's mixed in water form _____.

4.17 A pesticide formulation containing 55% active ingredient will also contain _____% inert ingredient.

## TRUE or FALSE.

Read each statement. Decide whether the statement is true (**T**) or false (**F**). Circle your answer.

4.18 Inert ingredients in a pesticide formulation are always safe and harmless.

T F

4.19 Fungicides control fungi and wood-decaying organisms.

T F

4.20 Applicators must be certified or licensed to apply fumigants.

T F

4.21 A formulation is a convenient form of a pesticide which allows it to be used effectively and safely at a required concentration for a specific pest control purpose.

T F

4.22 Microencapsulated pesticides can be applied in a dry form without mixing in water.

T F

4.23 Aerosols contain a high percentage of active ingredient(s)

T F

4.24 A repellent is not considered a pesticide.

T F

4.25 All pesticide active ingredients are completely soluble in water.

T F

## WORKBOOK EXERCISE

To complete this exercise, refer to the **Ultracide Pressurized Flea IGR & Adulticide** pesticide label included with this unit.

4.26 What is the common name of this product? _____

4.27 What type of pesticide formulation is **Ultracide Pressurized Flea IGR & Adulticide**?

_____

4.28 How much active ingredient is contained in **Ultracide Pressurized Flea IGR & Adulticide**

_____

4.29 Who is the manufacturer of **Ultracide Pressurized Flea IGR & Adulticide?**

_____

4.30 **Ultracide Pressurized Flea IGR & Adulticide** is NOT approved for treatment of fleas on

_____

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

_____ _____

**Registered Technician Trainee** **Date**

_____ _____

**Designated Trainer** **Date**

# Prescription Treatment® brand
# ULTRACIDE®

## Pressurized Flea IGR & Adulticide

**Contains Nylar* Insect Growth Regulator**

Formula 1

**KILLS:**
- Active flea infestations and prevents infestations from developing
- Prevents re-infestation of fleas for 7 months
- Ticks

**FOR USE IN AND AROUND:**
Apartments, Automobiles, Homes, Hospitals, Hotels, Kennels, Motels, Offices, Schools, Supermarkets, Transportation Equipment (Buses, Boats, Ships, Trains, Trucks), Warehouses, Utilities, Veterinary Clinics and Other Commercial and Industrial Buildings

**ACTIVE INGREDIENTS:**

| | |
|---|---|
| Pyriproxyfen | 0.100% |
| Pyrethrins | 0.050% |
| n-Octyl bicycloheptene dicarboximide† | 0.400% |
| Permethrin | 0.400% |
| Related Compounds | 0.035% |
| **OTHER INGREDIENTS:** | 99.015% |
| | TOTAL: 100.000% |

†MGK* 264, Insecticide Synergist (Cistrans isomers ratio: Max. 55% ± cis and Min. 45% ± trans)

**EPA Reg. No. 499-404**

**KEEP OUT OF REACH OF CHILDREN**

## CAUTION

### FIRST AID

**IF SWALLOWED:** Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give ANY liquid to the person. Do not give anything by mouth to an unconscious person.

**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.

**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 INHALED:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for treatment advice.

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

## PRECAUTIONARY STATEMENTS

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION:** Harmful if swallowed, inhaled or absorbed through skin. Do not breathe vapors or spray mist. Avoid contact with skin or eyes. In case of contact, flush with plenty of water. Wash with soap and warm water after use. Obtain medical attention if irritation persists. Avoid contamination of food or feedstuffs.

**ENVIRONMENTAL HAZARDS**

This product is toxic to fish and birds. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift from treated areas may be hazardous to organisms in adjacent aquatic sites. Apply this product only as specified on the label.

**PHYSICAL OR CHEMICAL HAZARDS**

**EXTREMELY FLAMMABLE.** Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.

## DIRECTIONS FOR USE

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

**SHAKE WELL BEFORE USE**

**GENERAL INFORMATION**

Ultracide kills fleas and prevents flea infestations for a full season. Adult fleas may be seen in the treated areas when brought in on infested animals or when adults emerge from pupal cases; however, a population will not develop in the treated area.

In transportation equipment, certain plastics may be whitened or dulled. Apply only to carpets and cloth upholstered areas, or test an inconspicuous area before treating.

**DIRECTIONS**

Use Ultracide at the rate of 20 oz for up to 2,625 sq ft (10 oz for up to 1,300 sq ft). Carpeted areas may be vacuumed before treatment and after treatment has dried. Treat infested areas or areas which could be infested; these include rugs, carpets, upholstered furniture, pet beds and pet resting areas. Hold can at arms length and direct spray toward the area to be treated. Use a sweeping motion to apply product and back away from treated area while holding the can 36 inches away from the surface being treated. An area of 80 - 100 sq ft can be treated in approximately 10 seconds with Ultracide. When treating upholstered furniture, treat under cushions and areas where flea development occurs.

Cover aquariums and fish bowls and remove birds from area prior to treating. Treated areas should be vacated during application.

**TO CONTROL TICKS AND FLEAS:** Old bedding should be removed and replaced with fresh, clean bedding after treatment. Pets should be treated with a registered product for flea and tick control in conjunction with this product.

**EXCEPT FOR APPLICATOR, DO NOT PERMIT HUMANS OR PETS TO CONTACT TREATED SURFACES UNTIL THE SPRAY HAS DRIED. Do not treat pets with this product.**

**NOTICE:** Ultracide has been tested on several types of carpet, fabric and other household furnishings without adverse affects. In a few instances, waxed surfaces have been whitened or dulled. Holding the can 36 inches away from the target surface normally prevents any whitening from occurring. Because of the wide variety of floor types and finishes, treat a small inconspicuous area before treating the entire area. Avoid contact with antique finishes.

## STORAGE AND DISPOSAL

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

**STORAGE:** Store in a cool dry area away from heat or open flame and inaccessible to children.

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

**CONTAINER DISPOSAL:** Do not puncture or incinerate! Empty container by using the product according to the label directions. Offer empty container for recycling, if available, or place in trash if allowed by state and local regulations. If container is partly filled, contact your local solid waste agency or call 1-800-CLEANUP for disposal instructions.

Contains no CFCs or other ozone depleting substances. Federal regulations prohibit CFC propellants in aerosols.

NO CFCs

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

© 2005 Whitmire Micro-Gen Research Laboratories, Inc.

* Nylar and MGK - Reg. TM of McLaughlin Gormley King, Inc.

**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.

081218-72

NOTES:

## TERMS TO KNOW

| | |
|---|---|
| **Acute Toxicity** | a rapid response of the body, often within minutes or hours, to a single sufficiently high exposure of a pesticide or other chemical, and which brings about rapid symptoms of poisoning. |
| **Chronic Toxicity** | injury or illness that can result from repeated exposures, over time, to doses of some pesticides. |
| **Hazard** | is the risk of harmful effects from pesticides. The hazard of a pesticide depends on the toxicity of the pesticide (highly toxic, very toxic, slightly toxic) and the length of time, exposure, that the pesticide is in, or, on your body. |
| **Non-target Organism** | any plants or animals within a pesticide treated area that are not intended to be controlled by a pesticide application. |
| **Rinsate** | the liquid which results from rinsing empty pesticide containers or pesticide spray equipment. |
| **Sensitization** | substances, such as pesticides, which may cause harmful allergic reactions in certain people to exposures to some pesticides. |
| **Signal Word** | the word **DANGER**, **WARNING**, or **CAUTION**, that appears on a pesticide label that signifies how toxic the pesticide is and what toxicity category it belongs to. |
| **Systemic** | a chemical, such as a pesticide, that is taken up into the tissues of an organism and transported to other locations where it will affect pests. |
| **Toxicity** | the potential a pesticide has for causing harm. |

## Pesticide Exposure

When a pesticide comes into contact with an organism, that contact is called a *pesticide exposure*. For humans, pesticide exposure means getting pesticide in or on the body. The toxic effect of a pesticide exposure depends on how much pesticide is involved, what part of the body is effected, how toxic the pesticide is and how long it remains there. The precautionary and other warning statements on the label are meant to protect the applicator and the environment from harmful pesticide exposures.

## Routes of Exposure

The first step in protecting yourself from the hazards of pesticides is to understand how they can enter the body, referred to as "routes of exposure". Pesticides contact your body in four main ways:

- dermal exposure - pesticide on the skin
- oral exposure - swallowing a pesticide
- inhalation exposure - inhaling a pesticide
- ocular exposure - pesticide entering the eyes

Dermal exposure is the most common type of exposure for the applicator since the skin is easily exposed when handling pesticides.

Oral exposure, or ingestion occurs least frequently with careful applicators, but exposures do occur when users eat, smoke, or drink around pesticides or forget to wash after use.

Inhalation, breathing a pesticide into the lungs, is less common, but is still a potential danger to the applicator.

Ocular exposures are particularly dangerous. The eyes, as well as the abdomen and groin absorb pesticides more quickly that do other parts of the body. The eyes and skin can also be badly damaged by the corrosive effects of many pesticides.

## Avoiding Pesticide Exposure

The key to personal safety when handling pesticides is to avoid exposure. Always keep personal clothing, food, drinks, chewing gum, tobacco products, and other items away from where pesticides are being applied or stored. They could become contaminated and injure you when you use them.

Exposure and the resulting **hazards** that may occur when handling pesticides can be reduced significantly by following a few good work practices.

Wear personal protective equipment (PPE) when required by the label. The skin is the part of the body that is most likely to receive exposure from pesticide. Personal protective equipment is designed to protect your skin and other parts of the body from contact with pesticide residues.

When taking a break from activities involving pesticides, wash your gloves on the outside before removing them----then wash your hands and face thoroughly. If you desire to eat, drink, or smoke; it is now safe for you to do so.

Avoid getting pesticide on yourself when you use the toilet. The skin in the genital area has been shown to absorb more pesticides than any skin area. Be sure to thoroughly wash you hands *before* using the toilet.

When you finish working with pesticides for the day----clean all reusable personal protective equipment----even if they were worn for only a brief period of exposure to pesticides during that day. This includes washing chemical-resistant items such as gloves, footware, goggles, and respirators.

If personal protective equipment and clothing are brought home to be cleaned, be sure to place these items in a separate plastic bag or container. Keep pesticide contaminated clothing away from children or pets (that could injure themselves if the clothing is touched.) And remember to always wash personal protective clothing seperately from uncontaminated laundry, otherwise; pesticide residues may be transferred onto other clothing (that may harm you or your family.)

**You can avoid pesticide exposures by:**

- wearing personal protective equipment.
- washing exposed areas of the body often.
- keeping your personal protective equipment clean and working properly.

## Signal Word

An important part of every label that alerts the applicator to the hazards of pesticide exposure is the **signal word**. Every pesticide label carries a signal word in large letters on the front panel following the child hazard warning "**KEEP OUT OF REACH OF CHILDREN.**" The signal word provides the pesticide user with an *indication* of the relative **toxicity** of the formulated product to humans and animals.

A misconception regarding signal words is that pesticides that bear a **Danger** or **Warning** signal word will control a greater variety of pests or control them more quickly than a pesticide with a **Caution** signal word. This is simply **not** true! The signal word does not tell you how well a pesticide will control a pest. For example, "**DANGER**" means the pesticide can be more dangerous to you, not more toxic to pests, than a pesticide labeled with "**CAUTION**".

Table 5.1 contains signal words listed in decreasing order of relative toxicity.

## TABLE 5.1

| | |
|---|---|
| **DANGER** | The product is ***very likely*** to cause **acute** illness from oral, dermal, or inhalation exposure, or to cause severe eye or skin irritation.**TYPICAL DANGER LABEL STATEMENTS**: *"Fatal if swallowed" . . ."extremely hazardous by skin contact" . . ."poisonous if inhaled".* |
| **WARNING** | The word **WARNING** indicates that the product is ***likely*** to cause acute illness from oral, dermal, or inhalation exposure or that the product is likely to cause moderate skin or eye irritation moderate toxicity **TYPICAL WARNING LABEL STATEMENTS**: *"Harmful or fatal if swallowed" . . . harmful or fatal if absorbed through skin" . . . "harmful or fatal if inhaled".* |
| **CAUTION** | The product has only ***slight*** potential to cause acute illness from oral, dermal, or inhalation exposure. Skin or eye irritation would likely to be slight. **TYPICAL CAUTION LABEL STATEMENTS**: *"Harmful if swallowed" . . . "may be harmful if absorbed through skin" . . . "may irritate eyes, nose, throat, and skin".* |

**DANGER** with the word "poison" and the "skull and crossbones" symbol means *"very dangerous if swallowed or inhaled."* Without the word "poison" and the "skull and crossbones" symbol, **DANGER** usually means that the pesticide has a high potential as a skin or eye irritant.

The signal word associated with each pesticide listed above indicates its relative level of toxicity. Pesticides with a high toxicity value signify that relatively small quantities of the pesticide may cause serious illness or death. (see **Table 5.3**).

Following the signal word on a label is the statement which indicate the route(s) of entry posing the greatest risk to the applicator when handling the pesticide. These statements are related to the toxicity of the pesticide and indicate which parts of the body must be particularly protected. Often, the label will also indicate "specific action" statements that should be taken to prevent pesticide poisoning accidents:

***"Do not breath vapors or spray mist"***
***"Avoid contact with the skin or clothing".***

Knowing the product's general level of toxicity helps you choose the proper precautionary measures (which includes wearing the appropriate protective equipment) for handling and applying the pesticide.

It must be emphasized that the signal word is not based solely on the active ingredient of the pesticide, but on the contents of the **formulated** product. The signal word on a pesticide label indicates the **hazard** to you of *any* active ingredients, solvents, or inert ingredients contained in the formulation.

The EPA determines which signal word will be required on a label, not the manufacturer. A signal word is determined by the most severe toxicity category assigned to the four **acute toxicity** routes of exposure discussed above. For example, a pesticide product which exhibits low dermal and inhalation toxicity, but has moderate oral toxicity, must carry the signal word **WARNING.** Unfortunately, there is no information on the label to let you know which aspect of toxicity (oral, dermal, inhalation, ocular) determined the appropriate signal word. It is possible for a pesticide product which has a "**DANGER**" signal word to present a lower practical application hazard on the job, than a product with a "**WARNING**" signal word!

While the signal word provides the pesticide user with an *indication* of the relative toxicity of the formulated product, do not depend solely on these indicators when considering the potential dangers of a pesticide to humans; your understanding of the term "hazard" is equally important.

**The terms hazard and toxicity do not mean the same!** Toxicity is the relative capacity of a pesticide to cause harm to humans and animals. Hazard, on the other hand, is a function of two factors: *toxicity* **AND** *exposure.*

**Toxicity**

The ability of a chemical to damage an organ system, such as the liver or kidneys, or to disrupt a biochemical process, such as the blood-forming mechanism, or to disturb an enzyme system at some site in the body.

Simply stated, toxicity is the property of a chemical which causes damage to the body of a living organism.

Some pesticides are highly toxic to humans; only a few drops in the mouth or on the skin can cause extremely harmful effects. Other pesticides are far less toxic, but too much exposure to them will cause harmful effects also!

There are two types of toxicity, **acute** and **chronic**. **Acute toxicity** refers to exposure to a single dose of a pesticide which produces symptoms within a short period of time after the exposure. The pesticide label warns of the dangers of acute toxicity through the various precautionary statements and signal words. **Label Signal words are prominently displayed on the front panels of all pesticide labels.** They are based on a system which breaks pesticides into categories and specific ratings of toxicity. These specific ratings are described in terms of $\mathbf{LD_{50}}$, the lethal dosage of a pesticide necessary to kill 50 percent of a population of laboratory test organisms.

Every chemical you have in your home, whether it be in food or cleaning solvents used in and around the home, has some level of toxicity. Acute toxicity of various pesticides and other chemicals commonly found around the home can be compared by use of the $\mathbf{LD_{50}}$ ratings of each when found in a concentrated form. These ratings change when materials are diluted by manufacturers to be sold as formulated products and are changed further when diluted by the user during mixing. The higher the $\mathbf{LD_{50}}$ rating, the lower the toxicity. In some cases, the acute oral $\mathbf{LD_{50}}$ is so high that the chemical is said to be practically non-toxic. Chemicals with very low $\mathbf{LD_{50}}$ ratings are highly toxic (see **Table 5.2**).

## TABLE 5.2

| TOXICITY OF SOME PESTICIDES | | |
|---|---|---|
| COMMON NAME | TECHNICAL $LD_{50}$ | |
| | ORAL | DERMAL |
| **FIPRONIL** | 97 mg/kg | >2,000 mg/kg |
| **IMIDACLOPRID** | 450 mg/kg | >5,000 mg/kg |
| **SULFURYL FLUORIDE** | 100 mg/kg | >5,000 mg/kg |
| **PERMETHRIN** | 2,280-3,580 mg/kg | >4,000 mg/kg |
| **CHLORPYRIFOS*** | 97 mg/kg | 504 mg/kg |
| **DIAZINON*** | 66 mg/kg | >2,000 mg/kg |

$LD_{50}$ values are only a reference figure to use in comparing the relative toxicities of different pesticides.
* Denotes pest cide that EPA approved registration only as a bait for indoor use 2006.
** Denotes pesticide EPA cancelled all indoor use in 2002.

Acute toxicity from pesticides may be expressed as flu-like symptoms or a nervous system disorder while symptoms of **chronic toxicity** may be expressed in other forms. Chronic toxicity is used to describe the potential long term effects resulting from exposure to small amounts of a toxin over an extended period of time.

**Chronic toxicity** may impact different parts of the body than acute toxicity. Pesticides have long been feared as potential causes of forms of cancer, reproductive problems, and birth defects.

There is little research to prove that these possible effects occur. Many critics point out that there is a definite correlation between pesticides and chronic effects, while there are just as many critics who argue the opposite.

You can reduce the potential harmful effects of pesticides by remembering this simple fact: A pesticide left in its orginal unopened container will cause you no harm----regardless if it is labeled **Caution, Warning** or **Danger**. But once opened, the degree of hazard to the pesticide in *any* pesticide handling situation will depend on the preventive actions *you* take to *minimize* your exposure to that pesticide.

**Exposure to Pesticides can result from:**

❑ improper use of a pesticide, such as applying greater than label rates.

❑ not wearing appropriate protective clothing when handling pesticides, or,

❑ not properly cleaning and laundering your personal protective clothing contaminated by pesticide.

Throughout this **Workbook**, you have been instructed to read and understand the pesticide label to be sure you are applying the product safely and in accordance with its directions.

There are more than 2000 words in the average pesticide label. Do not try to memorize the contents of each and every label, but refer to it *every time* you use the product.

If, after reading the label and consulting with your supervisor, you are unsure where or how a pesticide should be applied; contact any one of the following organizations for assistance in interpreting the label:

- ❑ the pesticide manufacturer,
- ❑ the pesticide manufacturer's local representive,
- ❑ North Carolina Cooperative Extension Service or
- ❑ North Carolina Department of Agriculture & Consumer Services Structural Pest Control Division

## TABLE 5.3

| TOXICITY CATEGORIES | | | | |
|---|---|---|---|---|
| | **DANGER**<br>HIGHLY TOXIC<br>CATEGORY I | **WARNING**<br>MODERATELY TOXIC<br>CATEGORY II | **CAUTION**<br>SLIGHTLY TOXIC<br>CATEGORY III | **CAUTION**<br>TOXIC<br>CATEGORY IV |
| ACUTE ORAL (LD50)[1] | Up to and including (A few drops to 1 teaspoon). | >50 thru 500 mg/kg (1 teaspoon to 2 tablespoons). | >50 thru 500 mg/kg (1 ounce to 1 pint). | >50 thru 500 mg/ (1 pint or more) |
| ACUTE DERMAL | Up to and including 200 mg/kg. | >200 thru 2000 mg/kg | >200 thru 5000 mg/kg | >5000 mg/kg |
| ACUTE INHALATION | Up to and including 0.05 mg/kg. | >0.05 thru 0.5 mg/liter | >0.5 thru 2mg/liter | >2 mg/liter |
| EYE IRRITATION | Corrosive (irreversible destruction of ocular tissue) or corneal irritation persisting for more than 21 days | Corneal irritation clearing in 8-21 days | Corneal irritation clearing in 7 days or less | Minimal effects Clearing in less than 24 hours |
| SKIN IRRITATION | Corrosive-tissue destruction and/or scarring | Severe irritation at 72 hours | Moderate irritation at 72 hours | Mild or slight irritation |

[1] The toxicity of a pesticide typically is measured with a Lethal Dose (LD50) value. This value is the dosage necessary to kill 50 percent of a laboratory population of test animals (rats, mice, or rabbits). These toxicity values may be expressed in terms of a single dosage in milligrams per kilogram (2.2 pounds) of body weight (mg/kg). A LD50 value is a useful classification tool to aid pesticide users in comparing pesticides as to their degree of hazard.

## Pesticide Label Precautionary Statements

Besides the signal word, pay close attention to any warnings included in the **Precautionary Statements** section. Precautionary labeling provides the pesticide user with information regarding the potential toxicity, irritation and **sensitization** hazard associated with the use of a pesticide. The precautionary labeling also identifies the precautions necessary to avoid exposure, any personal protective equipment (PPE) which should be used when handling a pesticide and first aid in case of accidental exposure.

These statements guide the applicator in taking proper precautions to protect humans or animals that could be exposed to the pesticide. (Sometimes these statements are listed under the heading **"Directions for Use"**).

Precautionary statements identify potential hazards and recommend ways that the risks can be minimized or avoided. Three areas of hazard that may be included on a pesticide label are:

- hazards to humans and domestic animals
- environmental hazards
- physical and chemical hazards (see **Unit 7**)

## Hazards to Humans and Domestic Animals

**PRECAUTIONARY STATEMENTS**
*HAZARDS TO HUMANS AND DOMESTIC ANIMALS*
MAY BE FATAL IF SWALLOWED. . . MAY BE ABSORBED THROUGH SKIN. . . MAY BE INJURIOUS TO EYES AND SKIN. . . Do not take internally. . . Do not get in eyes, on skin or on clothing. . . Avoid breathing vapors and spray mist. . . Wash thoroughly after handling.

The information contained in the above precautionary statement indicates which route or routes of entry (mouth, skin or lungs) are particularly hazardous. This part of the label will also provide specific actions that can prevent overexposure to the pesticide. The protective clothing and equipment required to handle or apply the pesticide will be listed under this heading.

You should now be aware that the signal word represents the formulated product's relative toxicity to humans. Even when the signal word for two different pesticides are the same, it should be understood that one pesticide may be many times more toxic than another against a particular **non-target** species. This is the case with some single dose rodenticides, which are highly toxic if accidentally eaten by pets, while other less-potent rodenticides, with a similar signal word, are much less toxic and might require a considerable amount to be consumed before signs of illness appear.

## Personal Protective Equipment

Simply understanding the hazard of the pesticide you are using is not enough. To keep yourself safe, you must use all the recommended protective equipment properly.

Pesticide absorption through the skin (dermal exposure) is the most common cause of pesticide poisoning during mixing, loading, application, and equipment maintenance. You can minimize dermal exposure by wearing a long-sleeved protective suit, such as coveralls. It should cover your entire body except feet, hands, and head. If there is a chance that the coveralls may become wet from mist, spray, splashes, or spills, use a rubber apron or other outer garment that is resistant to chemicals.

Gloves made of natural or synthetic rubber, vinyl, or plastic are a very important way to keep pesticides away from your skin. Wearing gloves should be a standard practice when handling pesticides. Replace protective gloves often, even though they may not seem worn or contaminated. Never use leather, paper, fabric or lined gloves when working with pesticides. These materials easily absorb and hold liquids and dusts, and can become a serious source of exposure. Disposable gloves are appropriate if they can resist chemical penetration and are sturdy enough to resist puncturing or tearing during use.

Likewise, wear chemical-resistant boots or footwear during mixing, loading, and application jobs. **Never wear leather or canvas shoes**.

It is also important to protect your eyes from pesticides. Use a face shield or goggles when you are using pressurized equipment or liquid concentrates; where there is a chance for mists, dusts, or splashes. Protective eyeware must be worn when the label explicitly tells you to do so!

Breathing the pesticide into your lungs (inhalation exposure) is a problem where dusts, fine spray mists, smoke, fog, or vapors are generated. An inhaled pesticide is rapidly and almost completely absorbed by the body. Protect yourself from this kind of exposure. Wear a respirator during mixing and loading or during long periods of exposure to highly toxic pesticides which create fine dusts or mists, or whenever instructed by the pesticide label.

The two most common types of air-purifying respirators are:

1) mechanical filter respirators
2) chemical cartridges or canisters.

You should understand the differences between them.

Mechanical filter respirators provide protection only against dusts. These masks are made of paper-like polymesh materials designed to be disposed of after use.

Chemical cartridge or canister respirators provide protection against pesticide gases and vapors. In addition, you can get a combination respirator which will protect you against both dusts and gases.

Sometimes the label specifies the type of respirator to use. In most cases, the label merely requires a respirator approved for pesticide use by the **National Institute for Occupational Safety and Health** (NIOSH) and the **Mine Safety and Health Administration** (MSHA). Seek advice from your state regulatory officials, county extension agent, pesticide dealer, or other authorities about selecting the right respirator for the type of work you will be doing.

Looking again at the example **Precautionary Statements** provided at the beginning of this section, the minimum personal protective equipment that must be worn by the pesticide applicator include:

- protective footwear
- coveralls or protective suit
- gloves
- safety goggles
- respirator

Many pesticide labels instruct the pesticide user to wear *chemically-resistant* PPE. It is important to mention again, that unless the pesticide label directs otherwise, **do not** use items that are made of or lined with absorbent materials such as cotton, leather, and canvas. These materials are **not** chemical resistant, and they are difficult or impossible to clean if contaminated with a pesticide. Even dry formulations can move quickly through woven materials and may remain in the fibers after several launderings.

Protective clothing and equipment are listed on many pesticide labels used in structural pest control.

In spite of the fact that some labels do not contain these statements, this doesn't mean that protective clothing or equipment is not necessary.

Long-sleeved shirts, long-legged pants, and gloves should be worn, *for minimum protection*, when applying pesticides!

The information contained in **Table 5.4** should be used a guide to determine the minimum chemically-resistant personal protective equipment requirements while handling pesticides. Again, **always** refer to the pesticide label for specific PPE recommendations! (See next page).

## TABLE 5.4

| LABELING STATEMENT | ACCEPTABLE PPE |
|---|---|
| ***Long-sleeved shirt and long-legged pants*** | ❖ long-sleeved shirt and long-legged pants woven or nonwoven coverall<br>❖ plastic or other barrier-coated coverall<br>❖ rubber or plastic suit |
| ***Coverall worn over short-sleeved shirt and short pants*** | ❖ coverall worn over short-sleeved shirt and short pants<br>❖ coverall worn over long-sleeved shirt and long legged pants<br>❖ rubber or plastic suit |
| ***Coverall worn over long-sleeved shirt and long-legged pants*** | ❖ coverall worn over long-sleeved shirt and long-legged pants<br>❖ coverall worn over another coverall<br>❖ plastic or other barrier-coated coverall<br>❖ rubber or plastic suit |
| ***Chemical-resistant protective suit*** | ❖ plastic or other barrier-coated coverall<br>❖ rubber or plastic suit |
| ***Waterproof gloves*** | ❖ any rubber or plastic gloves sturdy enough to remain intact throughout your pesticide handling activities |
| ***Chemical-resistant gloves*** | ❖ barrier-laminate gloves<br>❖ butyl gloves<br>❖ nitrile gloves |
| ***Shoes*** | ❖ leather, canvas or fabric shoes with chemical resistant shoe<br>❖ coverings (booties)<br>❖ chemical-resistant shoes<br>❖ chemical-resistant boots |
| ***Protective eyewear*** | ❖ shielded safety glasses<br>❖ face shield<br>❖ goggles<br>❖ full-face style respirator |
| ***Dust mist filtering respirator*** | ❖ dust/mist respirator<br>❖ respirator with dust/mist filtering cartridge<br>❖ respirator with organic vapor-removing cartridge and pesticide prefilter<br>❖ respirator with canister approved for pesticides<br>❖ air-supplying respirator |

## Reentry Statement

Pesticides with the signal word **DANGER** or **WARNING** will contain a "**Reentry Statement**" under the **Hazards to Humans and Domestic Animals** heading. This statement tells how long you or the building occupants must wait after a pesticide application before reentering a treated area *without the required protective clothing.* The reentry statement may be printed in a box under the heading "**Reentry**". For pesticides most likely to be used in structural pest control, it may be in a separate section with a title such as "**IMPORTANT**, "**NOTE**", or "**GENERAL INFORMATION**".

If no reentry statement appears on the label, then you must wait until the treated surface has dried (carpets treated for fleas with liquid application should be dry to the touch). Dusts and mists (the spray particles of some aerosol insecticides may remain suspended in air for several hours!) must settle out of the air before allowing people or pets to enter the area without protective clothing.

## Pets and Pesticides

One of the most sensitive issues in the structural pest control industry is the safety of a customer's pet during and after a pesticide application. Pets living in a customer's residence may include dogs, cats, birds, snakes, fish, hamsters, etc. Improper pesticide application may affect the pet directly, or indirectly; through contact with its food and water supplies, bedding and pet toys.

Animals are susceptible to pesticide injury, just as humans are. Fish and birds are among the most susceptible to pesticides. Cats are very sensitive because they are unable to detoxify (break-down) many types of pesticides. Young animals and older or sick animals may be affected by lower pesticide doses than adult or healthy animals. Cats and dogs generally lie and sleep on the ground or surfaces that may have been treated. They instinctively clean and groom themselves by licking their fur, which further increases their potential for exposure to pesticides.

To keep pets safe from pesticide contact, remove them from the area before making any pesticide application. Fish tanks should be well covered to prevent pesticide mists from drifting over and into the water. Keep them away until the spray dries and the area is well ventilated.

Before returning the animals to the treated area, flea collars, if used, should be removed. Flea collars usually contain an insecticide. Therefore, they should be removed from pets before the animals are allowed back into the treated areas. Otherwise, your application of pesticide plus the pesticide contained in the flea collar could elevate the level of pesticide(s) on the pet above the safe exposure level.

You should not make the decision whether it is safe to leave flea collars on or to continue medications; this decision should be made by the customer after having consulted with a veterinarian! Before applying a pesticide, it is important to discuss with the customer about any topical or **systemic** medications used on the pets for the control of animal parasites, such as, heart worms, fleas, mites, etc.

## Environmental Hazards

Pesticides are useful tools, but improper or careless use could be harmful to the environment. The label lists environmental precautions that will help you avoid damaging nearby streams and ponds, harming beneficial insects (for example, bees), or polluting ground water and provides practical ways to avoid harm to the environment.

These statements appear on almost every label and may warn of pesticide risks to:

- wildlife,
- birds,
- fish,
- bees,
- and other aquatic animals (shrimp, crayfish, turtles, etc).

Examples of environmental hazards that may appear on a pesticide label are:

"This pesticide is highly toxic to fish, aquatic invertebrates and wildlife. Birds in treated areas may be killed."

"Do not contaminate water by cleaning of equipment or disposal of wastes."

When reading a pesticide label, carefully review the environmental hazards section. Just because a pesticide is classified as relatively non-hazardous to humans does not mean it can not damage the environment. Some pesticides can cause significant harm to the environment, even though they are slightly or moderately hazardous to people. Sometimes the small differences in the wording of these statements for different pesticides reflects large differences in the safety of the pesticide to the environment.

For example, a pesticide which is labeled:

| Highly Toxic to fish | **Is 1,000 times more toxic Toxic to fish than one that states:** | Toxic to fish |
|---|---|---|

Environmental hazard statements help you to choose the least toxic pesticide for a particular job. They are reminders to use good common sense to avoid contaminating the environment.

## Statement of Practical Treatment

The **Statement of Practical Treatment** provides you with emergency first aid instructions in case a pesticide is swallowed, inhaled, or splashed into the eyes.

This section of the label appears on the front panel of the label. Often it will provide specific information to physicians, **"Note to Physicians**", concerning medical treatment in case of poisoning. The **Note to Physicians** provides emergency medical personnel with poison treatment information, antidotes, and often provides an emergency phone number to contact for further medical information.

All **DANGER** and some **WARNING** and **CAUTION** labels contain a note to physicians describing medical procedures for poisoning emergencies.

### READ THE RULES!

**STRUCTURAL PEST CONTROL DIVISION RULES AND REGULATIONS** regarding first aid and [pesticide] poisoning.

**Section .0403 First Aid**. First aid equipment and first aid procedures, approved by the EPA or Federal Occupational Safety and Health Administration, shall be placed in all service vehicles and in all other areas where pesticides are stored or handled.

**Section .0404 Poisoning**. In case of poisoning, the licensee or his authorized agent or the certified applicator shall, upon demand of the committee or enforcement agency, reveal upon verbal or written request, the name(s) of pesticide(s), active ingredient(s), and formulation therein as used, whether it be solid, liquid, or gas, to:

(1) the client or his authorized agent,
(2) a physician,
(3) the Committee,
(4) The Division.

**Typical statements of practical treatment found on a label are:**

*"In case of contact with skin, wash immediately with plenty of soap and water."*
*"In case of contact with eyes, flush with water for 15 minutes and get medical attention."*
*"If swallowed, drink large quantities of milk or water."*

**NOTE**: depending on the type of pesticide swallowed, the first aid instructions may state "**do not induce vomiting**" or it may recommend to "induce vomiting". Be thoroughly familiar with all first aid requirements of the label before an accident happens!

Know who to call for help in the event of a pesticide emergency:
In North Carolina, contact:
Carolinas Poison Center
Charlotte, NC
**1-800-222-2212**

In the event of suspected pesticide poisoning, you must follow the label's first aid advice and then immediately call a physician. Take the pesticide label (or SDS) with you to the physician's office. The physician will need the information on the label to prescribe the proper treatment.

## Storage of Pesticides

Directions for proper storage of the pesticide and empty pesticide containers are another important part of the label. Some pesticides have special requirements. Always consult the pesticide label for safe pesticide storage. When in doubt regarding the storage of structural pesticides, contact the **Structural Pest Control Division**.

Pesticides should be stored in a designated area, preferably a separate room. The room must be securely locked at all times when not in use and should have a sign clearly designating this area for pesticide storage:

**DANGER!**

**KEEP OUT — PESTICIDE STORAGE!**

The storage area should be kept dry and cool and well ventilated to the outside. It should have cement or some other type of floor that will not absorb spilled pesticide. **There should be no floor drains in the storage area**! A fire extinguisher, as well as spill clean-up materials, should be available nearby.

### READ THE RULES!

**Structural Pest Control Division Rules** regarding pesticide storage, Section.0401 **Public Safety: storage and handling of [pesticide] containers:**

(a) All pesticides shall be kept securely, in leakproof containers and labeled.

(b) In no case shall containers of pesticide(s) be left where pets, domestic animals, children or other unauthorized persons might remove or consume the contents.

(c) Food containers shall not be used as pesticide containers.

(d) When pesticides are stored or transported in or on a vehicle, a suitable storage space shall be provided.

If a pesticide container is damaged or leaking, immediately transfer the contents to another container with an identical label. Then clean-up any spilled pesticide according to label directions. Store all pesticides in their original labeled containers. **Never** store them in other containers.

**Benefits of proper pesticide storage:**

- protects humans and animals from accidental exposure.
- prolongs the pesticide's shelf life by eliminating excess moisture and temperature extremes.
- protects the pesticides from theft and reduces the likelihood of liability in the event of unauthorized pesticide use by vandals.
- proper pesticide storage also includes pesticides you carry in your company service vehicle

## Disposal of Pesticides

Proper disposal of unused pesticides and pesticide containers is essential to reduce human and environmental hazards. As a pesticide user, *you are responsible* for ensuring proper disposal of pesticide wastes, excess pesticides and empty pesticide containers.

All pesticide labeling must include instructions for proper disposal of pesticides and pesticide containers. These instructions cover the disposal of any unused pesticide product, any **rinsate** resulting from cleaning of pesticide application equipment, and the disposal of the empty pesticide container.

All pesticides must bear the following statement immediately under the heading "**Storage and Disposal**":

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

In all cases, it is best to prepare pesticide containers for disposal immediately upon emptying the container. Cleaning empty containers prior to disposal is **always** easier and more thorough when completed soon after emptying the container.

Typical disposal statements are found in **Table 5.5.** (See next page).

## Table 5.5

| CONTAINER TYPE | DISPOSAL STATEMENTS |
|---|---|
| Metal Containers (non-aerosol) | Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. |
| Paper and Plastic Bags | Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration. |
| Glass Containers | Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other approved State and local procedures. |
| 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 a sanitary landfill. If drum is contaminated and cannot be reused, dispose of in the same manner. |
| Plastic Containers | Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration. |

# TEST YOUR UNDERSTANDING

## MULTIPLE CHOICE.

Select the best answer of the 4 choices provided:

5.1 Some pesticide labels bear a **WARNING** statement. What does this mean to you?
a. eventually I will get sick if I use it often enough
b. I need to wear a respirator every time I use the product
c. the product requires that I exercise greater care in its use than a product with a **CAUTION** signal word
d. the active ingredient is highly toxic to the environment

5.2 What two factors determine the hazard of a pesticide to the applicator?
a. the equipment used and the pressure of the spray
b. the active ingredient and the formulation
c. toxicity of the pesticide and the length of exposure to the pesticide
d. the amount of active and inert ingredient in the pesticide

5.3 **DANGER** on a pesticide label means:
a. to be applied only by certified applicators
b. the product is twice as deadly on structural pests as one labeled **CAUTION**
c. the product is toxic to birds and fish
d. the product is highly toxic to humans

5.4 The statement "**Keep Out of Reach of Children"** appears on the labels of _____ pesticides.
a. highly toxic
b. moderately toxic
c. slightly toxic
d. all of the above

5.5 A pesticide label with a **CAUTION** signal word means the pesticide:
a. has no protective equipment requirement while handling the pesticide
b. is safe to use indoors
c. is relatively non-toxic to wildlife
d. is relatively non-toxic to humans

## FILL-IN THE BLANK

Complete each statement with the appropriate word(s).

5.6 The signal word provides the pesticide user with an *indication* of the relative _____ of the_____ product to humans and animals.

5.7 If a specific reentry period is not noted on the pesticide label, surfaces treated with liquids must _____ or dusts and mists must _____ before allowing other people or pets to enter the area, without protective clothing.

5.8 In the event of suspected poisoning from exposure to a pesticide, you must follow the label's first aid advice and then immediately_____ _____.

5.9 Pesticide absorption through the_____is the most common cause of poisoning that can occur during mixing, loading, applying, and cleaning pesticide equipment.

5.10 List the four ways pesticides can contact your body:

_____

_____

_____

_____

5.11 The word **WARNING** indicates that the product is_____ to cause acute illness from oral, dermal, or inhalation exposure.

5.12 When in doubt regarding the proper storage of structural pesticides, contact the _____.

5.13 The _____provides emergency medical personnel with poison treatment information.

5.14 The signal word on a pesticide label indicates the _____to you of *any* active ingredients, solvents, or inert ingredients contained in the formulation.

5.15 The higher the LD50 rating, the _____the toxicity of a pesticide.

## TRUE or FALSE.

Read each statement. Decide whether the statement is true (**T**) or false (**F**). Circle your answer.

5.16 The terms hazard and toxicity have the same meaning.

T F

5.17 Proper disposal of unused pesticides and pesticide containers is essential to reduce human and environmental hazards.

T F

5.18 Unlike humans, most animals are not susceptible to pesticide injury.

T F

5.19 The two types of toxicity to pesticides are acute and severe.

T F

5.20 Pesticide absorption through the eyes (ocular exposure) is the most common cause of pesticide exposure during mixing, loading, applying, and cleaning of pesticide application equipment.

T F

5.21 Pesticides that bear a **Danger** or **Warning** signal word will control a greater variety of pests than a pesticide with a **Caution** signal word.

T F

5.22 Acute toxicity is used to describe the potential long term effects which could result from exposure to small amounts of a toxin over time.

T F

5.23 Overexposure can result from improper use of a pesticide.

T F

5.24 The **Statement of Practical Treatment** provides the pesticide user with information regarding the potential toxicity, irritation and sensitization hazard associated with the use of a pesticide.

T F

5.25 In the event of suspected poisoning from exposure to a pesticide, you must immediately induce vomiting of the victim.

T F

Answer completely questions 5.26 to 5.31.

5.26 Does the pesticide label contain all the instructions and directions for use that you need to the product safely and legally? Explain.

5.27 What is the meaning of the statement: "It is a violation of Federal law to use this product in a manner inconsistent with its labeling"?

5.28 What types of hazard statements should you look for on the pesticide labeling?

5.29 Name and explain the meaning of the signal words and symbols you may see on a pesticide product?

5.30 Explain the differences between chemical name, common name, and brand name. Which of these terms should you use to most accurately identify a pesticide product?

_____
_____
_____
_____
_____
_____
_____
_____

5.31 Explain the differences between the terms "label" and "labeling."

_____
_____
_____
_____
_____
_____
_____
_____

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

| | |
|---|---|
| _____ | _____ |
| **Registered Technician Trainee** | **Date** |
| _____ | _____ |
| **Designated Trainer** | **Date** |

*NOTES:*

## TERMS TO KNOW

| | |
|---|---|
| **Active Infestation** | evidence of present activity by that organism, visible in, on, or under a structure, or in or on debris under the structure. |
| **Food** | articles used for food or drink for humans or other animals, including pet food and feed for other domestic animals. |
| **Food Areas** | this term includes areas for receiving, serving, storage, packaging (canning, bottling, wrapping, boxing), preparing (cleaning, slicing, cooking, grinding). |
| **Food Handling Establishment** | an area or place other than a private residence in which food is held, processed, prepared, and/or served. Such places includes restaurants, lunchrooms, catering facilities, cafeterias, bars and taverns. |
| **Harborage** | A site where shelter, food, and water are available to allow pest populations to thrive. |
| **Non-food Areas** | this term includes garbage room, lavatories, floor drains, offices, locker rooms, machine rooms, boiler rooms, mop closets, and storage areas. |
| **Open Porch** | any porch without fill in which the distance from the bottom of the slab to the top of the soil beneath the slab is greater than 12 inches. |
| **Slab-on-Ground** | a concrete slab in which all or part of that concrete slab is resting on or is in direct contact with the ground immediately beneath the slab. |
| **Structure** | all parts of a building, whether vacant or occupied, in all stages of construction. |

## Why Am I Using a Pesticide

No doubt, you decided to use a pesticide because you have exhausted all other pest control options, such as proper sanitation procedures, pest proofing the structure, use of baits, low impact biorationals, trapping, and other non-chemical control methods.

> **Pest management** is the science of preventing, suppressing, or eliminating undesirable pests in *the least toxic, most effective manner.* A successful pest management program requires choosing the appropriate control techniques and knowing how to use these techniques to reduce pest populations.
>
> **Pest management** programs use current, comprehensive information of the life cycles of pest and their interactions with the environment. This information, in combination with available pest control methods, is used to make pest damage with the least possible hazard to people, property and the environment.
>
> **Pest management** will include not only chemical products intended to kill pests, **pesticides;** but also non-chemical methods that can be equally effective in the reducing and eliminating pests as well.

When you have made the decision to use a pesticide, your first question should be *"Which pesticide to use?"* This is a very important question since the pesticide you select should not only control pests but also must prevent pesticide accidents to you and the environment. The **Directions for Use** found on every pesticide label can help with this decision.

Licensed, professional structural pest control operators generally make this decision on their own. As a registered technician trainee, however, the decision regarding which pesticide to use will probably be the responsibility of your supervisor. However, when in doubt about a pesticide selection, you should contact the North Carolina Cooperative Extension Service, your Structural Pest Control regulatory agency, your local trade association, pesticide dealers, or other authorities to help you choose the safest and most effective pesticide for the job.

As you are now aware, most pesticides are available in different formulations; each with specific advantages and disadvantages **(see Unit 4 – Formulations)**. You should make your selection of a particular pesticide and formulation based on both the safety and effectiveness of the pesticide.

Some pesticide formulations are more hazardous to people than others. Emulsifiable concentrates and ULV concentrates often contain solvents that are hazardous or that allow pesticide to pass through skin more quickly. It is important to remember that the best pesticide to control a pest problem should also be the *least hazardous* formulation to the people and pets who may be exposed to the pesticide during or after the application.

The **Directions for Use** on the label is usually the largest part of the text on a pesticide label and for good reasons: the instructions on how to use the pesticide are a very important part of the label for you to read and understand.

When reading a pesticide label, there may be terms used to describe when and how to use the pesticide with which you are unfamiliar. Your understanding of these terms will help you obtain maximum results from the application of pesticides. Some of these terms are explained in the **TERMS TO KNOW** at the beginning of this unit.

To emphasize the importance of *your* responsibility to read and understanding the contents of a label before applying any pesticide, the EPA requires that the **Directions for Use** section of *every* label begins with the statement:

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

The **"Directions for Use"** section of a pesticide label will provide you with the necessary information to help answer questions regarding your decision to use of a pesticide:

- What pest(s) or problems am I attempting to control?
- Where can I apply the pesticide?
- Do I need specific equipment necessary and if so, what type?
  - ❖ What are the preferred methods of application?
- How much product should I use?
  - ❖ How do I mix it?
- What special precautions must I take?
  - ❖ Does it stain? (Should it be used around certain fabrics, papers, electronic equipment or other materials?)
  - ❖ Is it phytotoxic (Can it damage plants if I apply an outside perimeter treatment?)
  - ❖ Do I need to cover food or food preparation surfaces?

The **DIRECTIONS FOR USE** section usually will be revised more frequently than any other section of the label. **Make sure you have the most current label!**

## What Is (Are) The Target Pest(s)?

Once the pest is found, it should be positively identified before selecting and applying a pesticide. Positive identification of the pest is necessary to make a thorough evaluation of the pest problem and an appropriate recommendation for control. Knowing the pest makes it much easier to inspect for other evidence of infestation, harborage areas, and the means by which the pest gained entry into the structure. The more you know about the pest and the factors that influence its development

and spread, the easier and more successful your pest control efforts will be. Your training at the **Registered Technician School** will provide you with this information.



**Sometimes, a pesticide application fails to control a pest because the pest was not identified correctly and the wrong pesticide (or wrong formulation) was chosen**.

## Where Can I Apply The Pesticide?

Pesticide products are labeled according to the site of application; e.g., one flea control product might be labeled for outdoor use on turf, another for indoor use on carpets, and yet another for use on pets. Therefore, it is essential to *identify the site* to which the pesticide will be applied.

Can I apply the pesticide to control *any* pest in that particular site? Let's imagine you want to control crazy ants in the food handling area of a restaurant. The pesticide you selected allows application to this area, however; you find that the target pest, crazy ants, is not on the label. Is it legal to apply the pesticide?

As long as the site, the food handling area, is listed on the label and the label does not specifically forbid use of this pesticide against the target pest at this site, it is permissible to use the pesticide.

Most pesticide misuse is the result of a failure of the pesticide applicator to read and understand or follow the **Directions for Use.**

Some pesticide formulations are more likely than others to cause unwanted harm to plant, animals and certain surfaces found in or around structures. Emulsifiable concentrates may tend to stain painted finishes and may injure plants when applied as an outside perimeter application. On porous surfaces, such as wood, concrete block or brick, consider using a wettable powder rather than an emulsifiable concentrate. The wettable powder formulation will leave more pesticide remaining on the surface.

Porous surfaces may absorb pesticides readily, especially liquid or gas(fumigant) formulations. If your objective is to saturate the surface with pesticide, as would be the case for control of certain wood-destroying fungi, liquid pesticide applications using water soluble formulations would be desirable.

Dusts are likely to leave a visible residue that may be objectionable to customers. When a pesticide is broadcast over a extensive area, such as home yards, gardens, and woodland areas for control of fleas and ticks, the formulation must be chosen with great care to avoid poisoning nontarget organisms in the area.

Typical pesticide label statements that should alert you to these considerations include:

*"Do not apply directly to carpet as discoloration may occur."*

*" Birds feeding on treated areas may be killed. Irrigate immediately after application."*

*" Pesticide activity on porous surfaces may be limited."*

Statements similar to these have already been mentioned in the Unit 5 - **Precautionary Statements**. They may also appear in the **Directions for Use** on the label.

A site on a label can be very broad, such as "apply pesticide as a residual spray to outside surfaces of buildings including porches, screens, window frames, eaves, patios, garages, refuse dumps and other areas"; or they can be very specific, " may be used as a crack and crevice treatment or as a spot application, not to exceed an area of 2 sq ft in non-food areas."

## How Is The Pesticide Applied?

The **Directions for Use** may recommend specific equipment for use in applying the pesticide. Before selecting a particular formulation, make sure you have the necessary equipment and that it is working properly. For example, ULV formulations are useful to control flying insect pests in enclosed spaces and are designed to be used "as is" or to be diluted with small quantities of specified solvents, such as refined petroleum oils. These formulations require specialized equipment, called foggers, to apply the pesticide.

In addition to recommendations for the type of equipment that should be used, the **Directions for Use** will often state specific methods of application (application techniques) that must be followed when applying the pesticide.

These application techniques are used to improve pesticide coverage and achieve better control of pests. Often, the amount of pesticide can be lowered without sacrificing the quality of pest control. The choice of the right pesticide application technique can also reduce human and environmental hazards.

Following are detailed descriptions of several application techniques you will encounter on pesticide labels. It is very important that you understand the exact meanings of these terms. You must apply all pesticides as specified on the label.

**KNOW THE TALK!**

The words "must", "shall" and other positive statements on a label are used to note any items and/or actions specifically required by *FIFRA*.

The word "should" is used to identify any items and/or actions, that, while not specifically required by *FIFRA*, **are preferred** for the sake of increasing consistency and quality in the application of the pesticide.

## Crack and Crevice

In a crack and crevice treatment, a small amount of insecticide is injected directly into a crack or crevice where pests may live or hide, or through which they may enter a structure. Such openings commonly occur at expansion joints, between different elements of construction (e.g., wood on concrete) and between equipment and flooring. The treatment may involve injecting an aerosol, dust or liquid insecticide into a crack.

Crack and crevice treatments are ideal because they deliver the insecticide where pests live and out of contact with people and pets. Therefore, these treatments are more effective and reduce the potential exposure to your customers and you.

Be very cautious when applying pesticides in food handling establishments. The application of insecticides for the control of pests in and around food sources requires considerable care on the part of the pest control operator. It is essential that no insecticide of any type come in contact with food products.

A typical label may state:

**Food Areas:**

***"Limited to crack and crevice treatment only. . . . applications of this pesticide in the food areas of food handling establishments, other than as a crack and crevice treatment, are not permitted."***

## Spot Treatment

A spot treatment is the application of an insecticide to an area not larger than two square feet (1' x 2' ). These areas may occur on floors, walls, or the undersides of cabinets and equipment. Spot treatments allow for precise application of pesticide against specific target pests rather than treatments being applied to the entire area. For example, cockroaches usually crowd into localized **harborages,** e.g. corners, cracks and crevices, etc. Spot treatments directed at these "hot spots" can reduce or eliminate the infestation before the roaches spread over larger areas.

**Residual insecticides** are those products applied to obtain insecticidal effects lasting several hours or longer and applied as general, spot, or crack and crevice treatments.

**Non-residual insecticides** are those products which are effective only during the time of treatment, such as space treatments, or for a short period of time after the insecticide has dried or settled from being airborne. Most non-residual insecticides decompose within an hour or two following application. Examples of non-residual insecticide applications are aerosol, ULV and fog treatments.

## Space Treatment

Space treatments include aerosols, fogs, or ultra-low dosage applications of pesticide. These devices spray fine particles of a non-residual pesticide directly into the air in a confined area. The pesticide particles remain airborne for a period of time, typically 1-2 hours. Space treatments contact and kill crawling and flying insects that are present and exposed during application. Space treatments lack crack and crevice penetration. They are not fumigants!

## Void Treatment

A void treatment is the application of an insecticide, usually a dust or foam, into a small or large void. A void may be as small as the space between two cabinets or as large as an attic. Void treatments need to be performed with a material that will spread out to cover all surfaces of the void where pests may live or hide. Dust formulations generally work best in a void.

## Broadcast Treatment (General treatment)

A broadcast or general treatment, involves the application of insecticide to large areas of a surface, such as walls, floors, attic, or crawlspace. An example of a broadcast treatment is the application of a liquid or dust residual pesticide to an entire carpet for flea or carpet beetle control.

## Barrier Treatment (band or exterior perimeter treatment)

In residential home and business environments, pesticide applications to outdoor areas, such as the foundation and adjacent soil, are called barrier or band treatments. Barrier treatments using residual sprays, dusts or granules are effective in controlling various outdoor pests, such as Subterranean termites, millipedes, sowbugs, ants, etc., which occasionally enter a structure, before they enter the structure.

## How Much Product Should I Use

One of the most important tasks for a structural pesticide applicator is making sure that the correct amount of pesticide is being applied to the target site. For each pesticide application, take the time to determine how much you need to apply. Then be sure that you apply the correct amount.

Do not use any more than the amount listed in the **"Directions for Use"** on the pesticide label. Using more product than the labeling recommends will not do a better job of controlling pests, and it is illegal. Over application may cause damage or injuries, leave illegal residues, and result in civil penalties (fines) or cause you to be sued for damages or injury.

Study the **"Directions for Use"** section on the pesticide label to find out how much pesticide you should apply. If the label lists a range of possible amounts, use the least amount of pesticide that will achieve good control of the pest.

Pesticide labeling often express application rates in terms of how much pesticide should be applied to a site.
This requires precise measurement of the site. The following basic formulae are important for you to know before beginning the pesticide treatment.
To determine the area of a room or space:

AREA (square feet) = Length X Width

To determine the volume or amount of space in a room or similiar structure:

VOLUME (cubic feet) = Length X Width X Height

Frequently, label directions may further require the diluted pesticide be applied to a specific unit of area.

*"Entire carpet may be treated. Mix 3 ounces of product per gallon of water. Apply the spray evenly"(1 gallon/800 square feet).*

## What Special Precautions Must I Take?

Whenever you apply a pesticide, you have the legal responsibility to make sure that no one is overexposed to pesticides that you or those you supervise are handling.

State certification is required to supervise others when handling restricted use pesticides.

Always inform customers about the pesticide you intend to use and how long they must stay out of treated areas. The label is your best source of information regarding reentry.

Apply pesticides that minimize movement of the pesticide (drift or runoff) away from the application site. Avoid dusts and high pressure sprays in any indoor environment where air currents are likely to carry the pesticide away from the target site.

Instruct customers to turn off air conditioners and circulation fans during the pesticide application. It is your responsibility to make sure that this is done before you begin spraying!

Some labels now require the pesticide applicator to check for leaks following application of certain pesticides. When leaks are found, they must be cleaned prior to leaving the application site.

To clean pesticide leaks or spills, it is important to keep a spill cleanup kit on hand at all times. The kit should contain not only all the items needed for prompt and complete cleanup, but also personal protective equipment to protect you while you are dealing with the spill.

## TEST YOUR UNDERSTANDING

Included within this unit are 3 pesticide labels:

**Vikane** *speciality gas fumigant*

**Boracide Borate Powder** *insecticide*

**Advion** *insecticide*

> The pesticide labels included in this Unit are intended for *training purposes only*. While up-to-date at the time of printing, these labels may change. Always refer to the most current label when performing any structural pest control activity.

This exercise will test your ability to understand and *follow* the directions provided on a label.

You must complete both sections. Your training is for both P and W registration even though you may initially work in only one area of structural pest control.

## SECTION EXERCISE 6.P HOUSEHOLD PESTS

To complete the following questions, refer to the **Advion, Vikane and Boracide** insecticide labels.

6.P.1 **Vikane** is highly toxic to humans.

T F

6.P.2 What type of pesticide formulation is **Advion**?

_____

6.P.3 What type of pesticide formulation is **Boracide**?

_____

6.P.4 **Boracide** may be use indoors in a mop solution on floors and as a dust outdoors on sewers?

T F

6.P.5 The common name of **Advion** is _____.

6.P.6 It is recommended to apply **Vikane** for insect control in enclosed structures during winter months (temperature below 40 degrees F)?

T F

6.P.7 Describe two types of applications permitted for **Boracide** in controlling cockroaches.

_____

_____

6.P.8 **Advion** is approved for use as a _____ & _____ treatment indoors for cockroach control in residential areas.

6.P.9 When applying **Vikane** to fumigate an enclosed structure it is recommended that ____ person must be present during the introduction of this fumigant.

6.P.10 Can one Registered Technician apply **Vikane** without supervision?
Y N

6.P.11 Can two Registered Technicians apply **Vikane** as a team without supervision if they have been trained in the use of fumigants?
Y N

6.P.12 What is the area of a restaurant/cafeteria that **Advion** is not approved for use?

_____

6.P.13 **Boracide** poses no threat to wildlife?
T F

6.P.14 When applying **Boracide** to control ants and cockroaches and silverfish indoors, it is recommended to apply this material in what manner? (Explain)

_____

_____

6.P.15 When applying **Advion** it is recommended that placement of the gel be near these type areas;

_____

_____

6.P.16 How much **Boracide** is used in preparing a liquid treatment for fly larvae in a dumpster _____ of **Boracide** per_____ of water.

6.P.17 **Vikane** has a nasty odor and can be easily detected.
T F

6.P.18 What is the minimum recommended amount of pressure needed when introducing **Vikane** into an enclosed structure?

_____.

6.P.19 How long does it take for **Advion** to reduce pest populations (German cockroaches) after treatment? (choose one)

a) Immediately after treatment b) slight delay after treatment

c) 2-3 days after treatment d) 14-21 days after treatment.

6.P.20 What is **Boracide's** toxicity category? (choose one)

a) highly toxic b) moderately toxic

c) slightly toxic d) toxic.

6.P.21 What is the application rate of **Advion** to control a "severe infestation of German cockroaches"?

_____

_____

6.P.22 What is the name of the warning agent used in conjunction with **Vikane**?

_____.

6.P.23 What is the toxicity category of **Advion**? _____

6.P.24 _____ and _____ and _____ are three different insect pests controlled by **Boracide** according to label recommendations.

6.P.25 What company manufactures **Vikane**? _____

6.P.26 Sulfuryl flouride is the common name of which pesticide; a) **Advion,** b) **Vikane,** c) **Boracide.**

6.P.27 Which of the three pesticides listed is recommended strictly for cockroach control?

a) **Boracide,** b) **Vikane,** c) **Advion.**

6.P.28 Which of the three pesticides listed is recommended as a dust application to control cockroaches wall voids, soffits, and subcabinet voids?

a) **Boracide,** b) **Advion,** **c) Vikane.**

6.P.29 **Boracide** is manufactured by BASF Corporation?
T F

6.P.30 To apply **Vikane** in North Carolina you have to be licensed?
T F

6.P.31 **Advion** can only be used indoors as a crack & crevice treatment in residential homes infested with cockroaches.
T F

6.P.32 Directions for control of Drywood Termites in infested wood using **Boracide** recommend you dust liberally the entire surface area of infested wood with the product.
T F

6.P.33 When introducing **Vikane** into a single apartment that is one of many apartments in the same building, the recommended procedure is to prepare the entire building as a fumigated structure and all applicable rules, regulations and label instructions apply.
T F

6.P.34 Which of the following pesticides can be applied as a bait?
a) **Boracide,** b) **Vikane,** c) **Advion.**

6.P.35 A 20lb.bag of **Boracide** contains _____ lbs. of active ingredient?

## SECTION EXERCISE 6.W Wood-Destroying Organisms

To complete the following questions, refer to the **Talstar P, Termidor 80 WG** and **Recruit HD** pesticide labels.

6.W.1 The active ingredient of **Recruit HD** is _____.

6.W.2 In one gallon of **Talstar P** there is _____ lbs. of active ingredient.

6.W.3 What is the pesticide formulation of **Termidor 80 WG?** _____

6.W.4 **Termidor 80 WG** is the primary termite control material used on the famed Augusta National Golf Course in Augusta, Georgia. Augusta National Golf Course is the home home of internationally recognized "Masters Golf Tournament".
T F

6.W.5 What is the toxicity category of **Talstar P?**
a) category I b) category II c) category III d) category IV.

6.W.6 The active ingredient in **Recruit HD** is a
a) chitin inhibitor b) insect growth regulator IGR c) dessicant d) adulticide

6.W.7 Why is it recommended to apply **Talstar P** when it is calm and no rain is predicted for the next 24 hours"? _____
_____

6.W.8 A 10 lb bag of **Termidor 80 WG** contains _____ lbs of active ingredient.

6.W.9 Which of these pesticides is applied as a bait?
a) **Talstar P** b) **Recruit HD** c) **Termidor 80 WG**

6.W.10 When applying **Termidor 80 WG** into a trench along inside of foundation walls; the recommended rate is _____.
per 10 linear feet per foot of depth.

6.W.11 Application rate of **Talstar P** for bed bugs is _____ fluid oz. per gallon of water = _____% dilution. This rate will give residual pest control in structures.

6.W.12 In a situation where the structural foundation has already been treated with a soil-applied termiticide, do not install _____ bait stations in the soil closer than _____.

6.W.13 To avoid contaminating cisterns or wells, never apply _____ within _____ of any cistern or well.

6.W.14 **Recruit HD** in bait stations is used for elimination and prevention of what structural pest? _____.

6.W.15 The rate of application of **Talstar P** in 0.02 % active ingredient" in a finished diluted spray solution is_____for 100 gallons of water.

6.W.16 _____ is the active ingredient of **Talstar P.**

6.W.17 Bait stations containing **Recruit HD** should be inspected how often (at a minimum) _____.

6.W.18 Of the three pesticides used as examples in this section, which one has the lowest percent of active ingredient _____.

6.W.19 If you mixed 4 paks of **Termidor 80 WG** per 67 gallons of water, you have a dilution of _____ %.

6.W.20 If soil conditions will not accept applications of 4 gallons of 0.05% dilution **Talstar P insecticide** per 10 linear feet it is recommended to apply ____ gallons of 0.1% solution per _____ linear feet.

6.W.21 **Recruit HD** is an acceptable substitute of a pre-construction termitcide (chemical barrier) treatment as a means of preventing termite infestation.
T F

6.W.22 What company manufactures **Talstar P?**

6.W.23 To ensure accurate detection results using **Recruit HD baits** in Sentricon baiting stations, do not allow more than _____ to elapse between inspections.

6.W.24 The lowest rate of **Termidor 80 WG** to use in pre-construction treatments and still achieve effective termite control is _____%.

6.W.25 When applying **Talstar P insecticide** as a soil treatment for subterranean termites around structures with wells or cisterns within its foundation the _____ method must be used. Describe the steps in performing this method; _____
_____

6.W.26 Describe how the IGR (*insert correct name of IGR*) in **Recruit HD** affects individual insect pests and the long term effects on colony of these pests:
_____

6.W.27 What is the label rate of **Termidor 80 WG** when applying the material to a concrete slab; _____. The label recommends spraying **Termidor 80 WG** in a fine mist to the entire surface to be covered by the slab OR in a course, low-pressure (less than 25 p.s.i.) evenly & uniformly over entire area treated (*underline correct recommendation*).

6.W.28 What is the minimum recommended label rate of **Termidor 80 WG** in Pre-Construction treatments? _____.

6.W.29 Describe the application method recommended by the label for **Talstar P Insecticide** in a crawl space;
_____
_____

6.W.30 Which of these statements accurately describes these pesticides; **Termidor 80 WG, Talstar P Insecticide, Recruit HD**
a) All three are termiticides b) All three are applied as a solution
c) These three pesticides pose no threat to aquatic invertibrates.

6.W.31 Which of these two pesticides: **Termidor 80 WG** or **Talstar P Insecticide** is a "moderately toxic - category II" material? _____.

6.W.32 Which of these pesticides; **Termidor 80 WG, Talstar P Insecticide, Recruit HD** must be used in conjunction with a monitoring service _____.

6.W.33 Which of these pesticides is a category III material; **Recruit HD** or **Talstar P Insecticide**? _____.

6.W.34 If you are following label directions in mixing **Termidor 80 WG**; you will need #_____ paks of **Termidor 80 WG** per 100 gallons of water to reach a 0.125% finished dilution of this product.

6.W.35 Preconstruction subterranean termite treatments should be made after _____ is completed and prior to the pouring of the _____?

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

| | |
|---|---|
| _____ | _____ |
| **Registered Technician Trainee** | **Date** |
| _____ | _____ |
| **Designated Trainer** | **Date** |

# Advion® Cockroach
Gel bait

syngenta®

## Insecticide

**FOR USE IN RESIDENTIAL, INSTITUTIONAL, COMMERCIAL, AND INDUSTRIAL AREAS**

Use sites include single and multi-family residential buildings, schools, commercial and industrial facilities (including warehouses, apartments, supermarkets, restaurants, motels, hotels, hospitals, food handling/storage establishments), and transportation equipment such as aircraft, trains, ships, boats, buses.

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION/ PRECAUCIÓN**

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

**DO NOT TREAT AREAS THAT ARE EASILY ACCESSIBLE TO CHILDREN AND PETS**

*Active Ingredient:*
Indoxacarb: (S)-methyl 7-chloro-2,5-dihydro-2-[[(methoxycarbonyl)[4(trifluoromethoxy) phenyl]amino] carbonyl]indeno[1,2-e][1,3,4]oxadiazine-4a-(3H) carboxylate . . . . . 0.6%

| | |
|---|---|
| *Other Ingredients* | 99.4% |
| *Total:* | 100.0% |

EPA Reg. No. 100-1484
EPA Est. 54450-IL-001ABW
EPA Est. 65335-RI-001NSP
(Superscript is first three letters of batch code on container)

Product of USA

**SCP 1484A-L1A 0414**
**4038855**

**4 x 1.06 oz. (30g) syringes**

**Net Weight**
**Non-refillable Container**

(01) 0 07 02941 53206 9



## Advion® Cockroach Gel Bait

**FIRST AID**
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

**HOT LINE NUMBER**
For 24-Hour Medical Emergency Assistance
(Human or Animal) Or Chemical Emergency Assistance
(Spill, Leak, Fire or Accident) Call **1-800-888-8372**

### PRECAUTIONARY STATEMENTS

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION:** Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**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.

**Physical and Chemical Hazards**

Do not use this product in or on electrical equipment where a possibility of shock hazard exists.

### DIRECTIONS FOR USE

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

**PRODUCT INFORMATION**

Advion® Cockroach Gel Bait is designed to control pest species of cockroaches such as German, American, Australian, Smoky-Brown, Brown, Asian, Oriental, and Brown-Banded.

**Use Instructions and Precautions:**

**Do not treat areas that are easily accessible to children and pets.**

1. Advion Cockroach Gel Bait can be used indoors or outdoors applied as a crack and crevice treatment within residential homes, industrial facilities, offices, warehouses, commercial kitchens, hospitals, schools, nursing homes, hotels, buses, trains, aircraft, retail and commercial establishments, and other areas infested with cockroaches.
2. Apply Advion Cockroach Gel Bait to areas frequented by cockroaches such as between different elements of construction, between equipment and floors, openings leading into voids and hollow spaces in floors, walls, ceilings, equipment legs and bases, around plumbing pipes, doors and windows, and behind and under appliances, cabinets, sinks, closets, and any other equipment that cockroaches are typically known to hide.
3. Do not apply Advion Cockroach Gel Bait to surfaces recently treated with residual sprays.
4. Do not apply residual sprays to surfaces treated with Advion Cockroach Gel Bait.
5. Inspect bait placements during follow-up inspections and apply fresh bait as needed.
6. Do not apply to surfaces that food contacts.
7. Do not allow open foods to contact gel material.

**Treatment Rates for All Uses**

- For heavy infestations of cockroaches, apply 3 to 5 spots of Advion Cockroach Gel Bait per 10 linear feet.
- For light to moderate infestations of cockroaches, apply 1-3 spots of Advion Cockroach Gel Bait per 10 linear feet.
- Each spot of ADVION® cockroach gel bait must equal about 0.5 grams (approx. 1/4" diameter)
- For all levels of cockroach infestations, when a bead of Advion Cockroach Gel Bait is used, apply a small thin bead that is less than 1/8" wide and approximately 2 inches long.

**Indoor Use Directions**

- Infested areas must be carefully inspected to determine overall infestation levels, locations of harborage areas, and most appropriate application points.
- Apply Advion Cockroach Gel Bait as a small spot of material, approximately 0.5 grams (approx. 1/4" in dia.), to areas not able to be contacted by children or pets.
- Several small applications distributed within an area are more effective than 1 or 2 applications of large quantities. In some cases a small thin bead (less than 1/8" wide and 2" long) may be appropriate such as between construction elements or other cracks and crevices.
- Indoor applications include cracks and crevices along walls or floors, behind or under equipment, under tables, within framing of tables or furniture, around sinks, within or near garbage collection areas, attics, crawl spaces, and cracks and crevices in cabinets.
- Inspect Advion Cockroach Gel Bait placements periodically for consumption or attractiveness and reapply as needed.

## Advion® Cockroach Gel Bait

### Applications in Nonfood/Nonfeed Handling Areas

Advion Cockroach Gel Bait is designed for use as a spot or crack and crevice treatment to control cockroaches in residential structures and the non-food /non-feed areas of commercial, industrial, public and institutional buildings/structures, including restaurants, warehouses, food processing plants, supermarkets, hospitals, nursing homes, motels, hotels, schools, laboratories, computer facilities, aircraft, buses, boats/ships, trains, pet shops and zoos.

Nonfood/non-feed areas include areas such as garbage rooms, lavoratories, floor drains (to sewers), entries, and vestibules, offices, locker rooms, machine rooms, boiler rooms, garages, mop closets and storage (after bottling or canning). Refer to section below for use directions and restrictions when making applications in food/feed handling areas of Food/Feed Handling Establishments.

### Applications in Food/Feed Handling Areas

Application to food/feed areas of food/feed handling establishments may only be made as a crack and crevice treatment only. Apply Advion Cockroach Gel Bait directly into cracks and crevices by placing the bait dispenser tip approximately 1/2 inch into cracks, crevices, holes and similar openings where cockroaches are found or are entering.

Food and feed handling areas include areas for receiving, storage, packing (canning, bottling, wrapping, boxing), preparing edible waste storage, and enclosed processing systems (mills, dairies, edible oils, syrups). Serving areas are also considered a food/feed area when food is exposed and facility is in operation.

- Do not apply Advion Cockroach Gel Bait to areas where food/feed, food utensils or food processing surfaces may come into contact and become contaminated.
- Do not apply Advion Cockroach Gel Bait to areas that are routinely washed such as cracks and crevices in tops of tables, food/feed preparation and prepared food holding surfaces as bait could be removed by the washing.
- Do not apply Advion Cockroach Gel Bait to surfaces where the temperature exceeds 120-130°F because this could cause the bait to liquefy and lose effectiveness.
- Examples include, but are not limited to, parts of stoves, ovens, grills, fume hoods, saunas, heat lamps, coffee urns, steam tables, toasters, fryers, dishwashers, and hot water pipes.
- Use good application practice to avoid movement of Advion Cockroach Gel Bait to exposed surfaces used for food preparation.
- If Advion Cockroach Gel Bait contacts an exposed surface, first remove as much of the gel bait as possible, then wash with soap and water.

### Outdoor Use Directions:

A thorough inspection around a structure may reveal areas where cockroaches are gaining access. Attempts should be made to remove the access. Advion Cockroach Gel Bait may also be applied as a spot or thin bead (see above) to pest entry sites such as along windows, doors, between construction elements, sewer areas, adjacent trees which harbor cockroaches, along walls, garbage holding areas, or suitable placement site acting as a cockroach harborage. Place baits in such a way as to reduce the potential of subsequent human contact. Inspect Advion Cockroach Gel Bait placements periodically and apply fresh bait as needed.

## STORAGE AND DISPOSAL

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

### Pesticide Storage

Store in cool, dry place inaccessible to children and pets.

### Pesticide Disposal

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

### Container Disposal

**Nonrefillable Container:** Do not reuse or refill this container. Offer for recycling if available. Place empty bait dispensers in trash. If partially filled, wrap in newspaper and discard in trash or call your local solid waste authority for disposal instructions.

## CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, LLC or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

## Advion® Cockroach Gel Bait

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of this product contrary to label instructions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and (2) Buyer and User assume the risk of any such use. TO THE EXTENT PERMITTED BY APPLICABLE LAW, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.

To the extent permitted by applicable law, in no event shall SYNGENTA be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and of Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

Advion®, the ALLIANCE FRAME
the SYNGENTA Logo and the PURPOSE ICON
are Trademarks of a Syngenta Group Company

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For non-emergency (e.g., current product information),
call Syngenta Crop Protection at 1-800-334-9481.

Manufactured for:
Syngenta Crop Protection, LLC
P.O. Box 18300
Greensboro, North Carolina 27419-8300

**SCP 1484A-L1A 0414**
**4038855**

# Specimen Label

**RESTRICTED USE PESTICIDE DUE TO INHALATION 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.

DOUGLAS PRODUCTS

**Vikane®**

SPECIALTY GAS FUMIGANT

®Trademark of Douglas Products and Packaging Company ("Douglas")

**For control of: Existing infestations of listed insects and related pests such as drywood termites, Formosan termites, powder post beetles, death watch beetles, old house borers, bedbugs, cockroaches, clothes moths, rodents (rats, mice), and the larvae and adults of carpet beetles (except egg stage), oriental, American, and brown-banded cockroaches.**

**For use in: Dwellings (including mobile homes), buildings, construction materials, furnishings (household effects), shipping containers and vehicles including automobiles, buses, surface ships, passenger railcars, and recreational vehicles (but not including aircraft).**

**When fumigating, observe local, state, and federal rules and regulations including such things as use of chloropicrin, clearing devices, positive-pressure self-contained breathing apparatus, security requirements, and placement of warning signs.**

**Application personnel must participate in Douglas Products' Sulfuryl Fluoride Training and Stewardship Plan.**

Active Ingredient
sulfuryl fluoride.....99.8%
Other Ingredients.....0.2%
Total .....100.0%

EPA Reg. No. 1015-78

## Keep Out of Reach of Children

**DANGER POISON**

**PELIGRO**

**Precaucion al usuario:** Si usted no lee inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

## Precautionary Statements

### Hazards to Humans and Domestic Animals

**Extremely Hazardous Liquid And Vapor Under Pressure • Fatal If Inhaled • May Be Fatal If Swallowed • Liquid May Cause Freeze Burns of Exposed Skin**

**Do not get in eyes, on skin, or on clothing. Vikane® specialty gas fumigant is odorless. Exposure to toxic levels may occur without warning or detection by the user.**

### First Aid

In all cases of overexposure, such as nausea, difficulty in breathing, abdominal pain, slowing of movements and speech, numbness in extremities, get medical attention immediately. Take person to a doctor or emergency treatment facility.

**If inhaled:** Get exposed person to fresh air. Keep warm and at rest. Make sure person can breathe freely. If breathing has stopped, give artificial respiration. Do not put anything in the mouth of an unconscious person. Call a poison control center or doctor for further treatment advice.
**If liquid is on skin or on clothing:** Immediately apply water to contaminated area of clothing before removing. Once area has thawed, remove contaminated clothing, shoes, and other items covering skin. Wash contaminated skin area thoroughly or shower. Call a poison control center or doctor for further treatment advice.
**If liquid is 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 or doctor for treatment advice.

**Note to Physician:** Vikane is a gas which has no warning properties such as odor or eye irritation. (However, chloropicrin is used as a warning agent and is a known lachrymator). Early symptoms of exposure to Vikane are respiratory irritation and central nervous system depression. Excitation may follow. Slowed movement, reduced awareness, and slow or garbled speech may be noted. Prolonged exposure can produce lung irritation, pulmonary edema, nausea, and abdominal pain. Repeated exposure to high concentrations can result in significant lung and kidney damage. Single exposures at high concentrations have resulted in death. Treat symptomatically.

Liquid Vikane in the eye may cause damage due to refrigeration or freezing.

**Refer to elsewhere on this label for additional precautionary information and Directions for Use.**

**Notice:** Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies elsewhere on this label. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-844-845-3129 or 1-352-323-3500.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

## Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Read all Directions for Use carefully before applying.

## Storage and Handling

Store in dry, cool, well ventilated area under lock and key. Post as a pesticide storage area. If the storage area is in an occupied building, the storage area must have either 1) a forced air ventilation system that meets required local ordinances for the storage of hazardous materials and operates continuously; or 2) be equipped with a permanently mounted and properly maintained and functioning sulfuryl fluoride monitoring device designed to alert occupants of the building if sulfuryl fluoride in the air of the storage area is greater than 1 ppm. Store cylinders upright, secured to a rack or wall to prevent tipping. Do not contaminate water, food, or feed by storage.

Cylinders must not be subjected to rough handling or mechanical shock such as dropping, bumping, dragging, or sliding beyond that which would normally occur when moving cylinders. Do not transport any cylinders in closed vehicles where they occupy the same common airspace as personnel. Transport securely only in an upright position.

Do not remove valve protection bonnet and safety cap until immediately before use. Replace safety cap and valve protection bonnet when cylinder is not in use.

When cylinder is empty, close valve, screw safety cap onto valve outlet, and replace protection bonnet before returning to supplier. Only the registrant is authorized to refill cylinders. Do not use cylinder for any other purpose. Follow registrant's instructions for return of empty or partially empty cylinders.

**Leak Procedures:** Evacuate immediate area of leak. Use a NIOSH or MSHA approved positive pressure self-contained breathing apparatus (SCBA, not SCUBA) or combination air-supplied/SCBA respirator, such as manufactured by Ranger, Survivair, Scott, or MSA, for entry into affected areas to correct problem. Move leaking or damaged cylinder outdoors or to an isolated location, observing strict safety precautions. Work upwind if possible. Do not permit entry into leakage area by

## Storage and Handling (Cont.)

unprotected persons until concentration of fumigant in the breathing zone (areas within the structure where individuals typically stand, sit or lie down) is determined to be 1 part per million (ppm) or less, as determined by a detection device with sufficient sensitivity such as an INTERSCAN, MIRAN [SapphIRe] or Spectros ExplorIR gas analyzers. For more detailed information on the source and use of air monitoring devices or respirators, consult the Vikane Gas Fumigant Structural Fumigation Manual.

**Cylinder and Product Disposal**: Promptly return all empty cylinders to your distributor of Vikane. Follow proper cylinder handling directions above.

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, consult your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

## Information

The Structural Fumigation Manual is part of the labeling for Vikane. Before using, read and follow all label precautions and directions. Prior to the parties entering into a fumigation agreement, the Fact Sheet for Vikane must be provided to an adult occupant of the structure to be fumigated.

Vikane is a highly hazardous material and must be used only by individuals knowledgeable of the hazards of this chemical and trained in the use of required respiratory equipment, fumigant detection devices, emergency procedures, and in the proper use of this fumigant.

When used for fumigation of enclosed spaces, such as houses and other structures, warehouses, vaults, chambers, trucks, vans, boxcars, ships, and other transport vehicles, 2 persons trained in the use of this product, at least one being an applicator who is licensed/certified by the state, must be present during introduction of fumigant, reentry prior to aeration, and during the initiation of the initial aeration procedure when exposure exceeds 1 ppm. **Two persons need not be present if monitoring is conducted remotely (outside the area being fumigated) and no one enters the fumigated structure**.

**If fumigating for insect pests, do not apply when temperature at site of pest activity is below 40ºF. This temperature may be measured at the slab foundation, sub-floor soil, or wherever the coolest part of the structure may be. This restriction does not apply when fumigating for rodents.**

When fumigating a single unit/room within or connected to a larger structure (such as town houses, apartments, condominiums), all units of the entire structure must be vacated during the fumigation and aeration periods.

Remove food, feed, drugs, and medicinals from the structure before the fumigation if they cannot be adequately sealed to prevent exposure to Vikane. Chloropicrin must be used as described on this label to warn of an ongoing fumigation.

## Preparation for Fumigation

**Structural Fumigation**
Remove from the structure to be fumigated all persons, domestic animals, pets, and desirable growing plants. See the Structural Fumigation Manual for instructions regarding the handling of fish tanks. For mattresses (excluding waterbeds) and pillows completely enveloped in waterproof coverings, do one of the following: 1) open the seal of the water proof covering or 2) remove the mattress or pillow from the space to be fumigated if the waterproof covering cannot be opened. Mattresses and pillows with waterproof coverings containing built-in vents designed to permit air passage are considered to have an open seal to the waterproof covering and can remain as-is in the fumigated space. Food, feed, drugs (including tobacco products), and medicinals (including those items in refrigerators and freezers) can remain in the structure if they are in plastic, glass, or metal bottles, cans, or jars with the original manufacturer's air-tight seal intact. Food, feed, drugs (including tobacco products), and medicinals (including those items in refrigerators and freezers) not in plastic, glass, or metal bottles, cans, or jars with the original manufacturer's air-tight seal intact, need to be removed from the fumigation site, or double bagged in Nylofume* bags, which are available from distributors of Vikane.

**Note: Extinguish all flames, including pilot lights of water heaters, gas refrigerators, ranges, ovens, broilers, dryers, gas fireplaces, etc. Turn off or unplug all electrical heating elements such as those in heaters, pianos, organs, etc. Shut off automatic switch controls for appliances and lighting systems which will be included in the space to be fumigated.**

Open operable internal doors, internal openings to attics and sub areas, storage chests, cabinets, drawers, closets, and appliances (such as washers, dishwashers, dryers, microwave or conventional ovens, etc.). Using electric fan(s) will help provide for forced distribution and aeration of basements and other dead air spaces to facilitate rapid dispersion of gas. Refrigerator and freezer doors may be left open if the units are turned off or disconnected and all food items have been removed. If the applicator chooses to leave sealed food items in closed refrigerators and freezers during the fumigation, the appliances must be opened when clearing the structure until the concentration of Vikane in them is 1 ppm or less.

**Multi-Unit Structures:** When fumigating a single unit/room within a larger structure (such as townhouses, apartments, condominiums), all units of the entire structure must be prepared as a fumigated structure, and all applicable rules, regulations and label instructions apply, such as occupant notification, structure preparation, posting, securing, and aeration. An adult occupant of each currently-occupied unit must be provided with the Fact Sheet for Vikane. Ensure that all exterior entranceways and exterior doors providing access to individual units are secured with secondary locks (see Securing Structure Entrances) so that only the state licensed applicator in charge can gain access. Chloropicrin need only be used in the fumigated space where Vikane is introduced. During Step (3) of Aeration Procedure 1 or 2, check all units within the fumigated structure for concentrations of Vikane with an approved clearance device. If the concentration of Vikane is greater than 1 ppm in the breathing zone (i.e., areas within the structure where individuals typically stand, sit or lie down) in a unit, ventilate the unit with operable doors and windows open and continue to measure the concentration of Vikane until it is 1 ppm or less. Structure may be reoccupied when concentrations in the breathing zones in all units is 1 ppm or less.

**Connected Structures:** A connected structure is defined as any structure connected with the structure to be fumigated by construction elements (e.g., pipes, conduits, ducts, etc.) which may allow passage of fumigant between the structures. If state rules and regulations do not describe or permit a process to isolate and seal a connected structure to prevent passage of fumigant from the fumigated structure, then the connected structure must be vacated during the fumigation. When it is necessary to vacate any connected structure, that structure shall be considered as a fumigated structure and all applicable rules, regulations and label instructions apply, such as occupant notification, structure preparation, posting, securing, and aeration. Chloropicrin need only be used in structures where Vikane is introduced. Concentration levels of Vikane must be measured in the breathing zones (areas within the structure where individuals typically stand, sit or lie down) (see Aeration and Reentry) in any connected space or structure to confirm concentrations are 1 ppm or less before structure can be reoccupied.

**Tarpaulin Fumigation**
Open operable windows as permitted by local and state regulations. When tarping, use a highly resistant material such as a vinyl coated nylon, or polyethylene sheeting of at least 4 mil thickness. Seal all seams. Seal the bottom edges of the cover to the ground using materials such as soil, sand, or weighted "snakes." To minimize escape of gas through the soil and to avoid injury to nearby plants, wet soil outward from foundation to the cover if not sufficiently moist to act as a barrier for the gas.

**Taped Fumigation**
For fumigation sites that can be sealed with plastic, paper, or tape, seal adequately around doors, windows, vents, and other openings.

**Chamber Fumigation**
For chamber fumigation use a tightly-sealed chamber with adequate circulation.

**Construction Materials, Furnishings (Household Effects), Vehicles, and Shipping Containers**
Follow preparations as appropriate in above paragraphs for chamber, taped fumigation, or tarpaulin fumigation to assure good confinement of the gas for the recommended period of exposure.

**Fumigation of Surface Ships in Port**
Surface ships in size up to and including large ocean-going ships may be fumigated with Vikane to control the various pests listed. The professional fumigator and the ship's captain (or owner) shall follow all applicable regulations including those listed in the Coast Guard, DOT, Title 46, Shipping section, Parts 147A.1-147A.43. Except for those persons involved in fumigation, no people, plants, or pets may be on board during fumigation.

The person responsible for the fumigation must notify the master of the vessel, or his representative, of the requirements relating to personal protection equipment and detection equipment. Emergency procedures, cargo ventilation, periodic monitoring and inspections, and first aid measures must be discussed with and understood by the master of the vessel or his representative.

If leakage of the fumigant is detected, the person in charge of the fumigation shall take action to correct the leakage, or shall inform the master of the vessel, or his representative, of the leakage so that corrective action can be taken.

Food, feed, drugs, and medicinals shall not be exposed to the fumigant. If not removed from the vessel they shall be protected from exposure. The vessel must not be moved during the fumigation and aeration periods. If reentry is necessary before aeration is completed, positive pressure self-contained respiratory protection must be worn.

**Warning Agent**
**Chloropicrin** is a warning agent introduced into the structure during fumigation. In order to avoid direct exposure to the fumigant being released, chloropicrin must be released within the structure at least 5 to 10 minutes prior to introduction of the fumigant. Place a handful of wicking agent (e.g., cotton) in a chloropicrin evaporation container(s). Do not use chloropicrin evaporation containers or application equipment made of magnesium, aluminum, or their alloys as chloropicrin may be severely corrosive to such metals. To enhance the distribution of chloropicrin throughout the structure, place the chloropicrin evaporation container in the air stream of a fan. Pour chloropicrin over the wicking agent. When adding chloropicrin to evaporation containers, dispense no more than 3 fl oz per container. Use 1 fl oz/10,000 to 15,000 cubic feet (30 ml/283 to 425 cubic meters) of space to be fumigated or follow dosage rate calculated by the electronic Fumiguide™ system. Establish at least one chloropicrin introduction site for each 45,000 cubic feet of space to be fumigated. When applying chloropicrin at multiple chloropicrin introduction points within a structure, start at the point farthest from the exit and work toward the exit. Removal of all chloropicrin evaporation containers from the fumigated space during the initial phase of aeration after tarp removal will aid in the dissipation of the warning agent from the structure.

Chloropicrin need not be used when fumigating passenger railcars; however, a thorough walk-through inspection must be performed of each railcar with doors being immediately locked upon leaving each car, and a guard must be posted during fumigant introduction, exposure period, and aeration.

Chloropicrin is a warning agent which causes smarting of the eyes, tears, and discomfort, and has a very disagreeable pungent odor at very low concentrations. Chloropicrin must be used by persons certified to apply Vikane or under their supervision. Applicators must observe the chloropicrin precautionary statements and personal protective equipment appearing on this label. See the Warning Agent section of the Structural Fumigation Manual.

**Protective Clothing**
Wear splash-resistant goggles (goggles designed and made of material that allows no measurable movement of the liquid pesticide being used to pass through them during use) or full face shield for eye protection during introduction of the fumigant. Do not wear gloves or rubber boots. Do not reuse clothing or shoes that have become contaminated with liquid Vikane until thoroughly aerated and cleaned.

**Respiratory Protection**
If the concentration of Vikane in the breathing zone (areas within the structure where individuals typically stand, sit or lie down) of the fumigated area (as measured by a detector device with sufficient sensitivity such as an INTERSCAN, MIRAN [SapphIRe] or Spectros ExplorIR gas analyzers) does not exceed 1 ppm (4 mg/cubic meter), no respiratory protection is required. When this concentration is exceeded, all persons in the exposed area must wear a NIOSH or MSHA approved positive pressure self-contained breathing apparatus (SCBA, not SCUBA) or combination air-supplied/SCBA respirator such as manufactured by Ranger, Survivair, Scott, or MSA. Before using any make or brand of SCBA, learn how to use it correctly. Determine that it has an adequate air supply for the job at hand, that it fits properly, providing an adequate seal around the face, and that it is in good working order. For more detailed information on the source and use of air monitoring devices and respirators, consult the Vikane Gas Fumigant Structural Fumigation Manual.

**Prefumigation Check:** Check for potential leaks.

**Securing Structure Entrances**
To secure the structure against unauthorized entry during the fumigation exposure period and Step 2 of Aeration Procedure 1 or 2, use a locking device or barricade on all exterior doors or doorways. A locking device, such as a secondary lock, or barricade must be demonstratively effective in preventing an exterior door or doorway from being opened from the exterior using normal opening or entering processes by anyone other than the certified applicator in charge of the fumigation or persons in his/her on-site direct supervision. Consult state and local regulations for any supplementary instructions and restrictions on securing against entry.

**Securing Passenger Railcars**
Follow either Procedure #1 or Procedure #2 for securing railcars.

**Procedure #1:** A thorough walk through inspection must be performed of each railcar with doors being immediately locked upon leaving each car. Post a guard during fumigation introduction, exposure period, and aeration. Because a guard is posted, application of a warning agent is not required for passenger railcars.

**Procedure #2:** A thorough walk through inspection must be performed of each railcar with doors being immediately locked upon leaving each car. If no guard is posted, then apply a warning agent following instructions per label directions. To secure the passenger railcar against unauthorized entry during the fumigation exposure period, use a locking device or barricade on all exterior doors or doorways. A locking device or barricade must be demonstratively effective in preventing an exterior door or doorway from being opened using normal opening or entering processes by anyone other than the state licensed applicator in charge of the fumigation or persons in his/her on-site direct supervision. Consult state and local regulations for any supplementary instructions and local restrictions on securing against entry.

## Dosage and Exposure Time

For fumigation to control drywood termites and non-egg stages of other insect and related structural and household pests, the Fumiguide calculator(s) is to be used for the coordination of fumigant rates with soil or slab temperature, exposure period, and fumigant loss rate measured as half-loss-time (HLT). When control of the egg stage is desired or when fumigating for Formosan termites, use the indicated multiple factor of the drywood termite dosage (as determined by Fumiguide calculator(s)) for pests listed in the following table:

| Pest | Dosage Factor (as a multiple of drywood termite dosage) |
|---|---|
| rodents[1] | 1/2X |
| carpet beetles[2], German cockroaches, and other cockroach species[2] | 1X |
| Bedbugs | 1.9X |
| furniture carpet beetles[2] | 3X |
| old house borers and Formosan termites | 4X |
| clothes moths | 6X |
| powder post beetles and death watch beetles | 10X |

These dosages apply to dwellings, buildings, construction materials, furnishings, and vehicles.

Do not use less than the specified dosage factors when treating for rodents, cockroaches, bed bugs, and termites.

[1]To determine the proper dose for rodent control, use 80°F as the calculating temperature. Unlike insects, rodents are warm blooded and do not require increased dosages at lower temperatures.

[2]More than one fumigation may be needed to control the infestation after egg hatch.

For fumigation to control rodents, use sufficient gas to accumulate at least 36 ounce-hours following equilibrium, regardless of ambient air temperature. Refer to the Vikane Gas Fumigant Structural Fumigation Manual.

The Fumiguide B Calculator is to be used for unmonitored structures to coordinate fumigant rates with temperatures, a 20- to 24-hour exposure period, and an estimated HLT.

The Fumiguide Y Calculator is used in conjunction with Fumiguide B when fumigant concentrations are monitored and/or there are measured variations in exposure time.

The Fumiguide Calculator is a hand-held microprocessor which performs the functions of both the Fumiguide B and Y calculators and includes relative humidity as a calculating factor.

Software versions of the Fumiguide Calculator may be available. Contact Douglas Products and Packaging Company or your distributor of Vikane for information on where to obtain the Fumiguides and referenced literature.

## Introducing the Fumigant

Release the fumigant from outside the structure, tarp, or vehicle. The release point(s) should be into a large open space(s) in the fumigation site(s). Release the fumigant through a suitable leak-proof tube with a minimum burst pressure of 500 pounds per square inch (psi). Direct the fumigant into the blast of air from a fan(s) having a capacity of at least 1,000 cubic feet per minute (cfm) for each pound of Vikane released per minute. Damage to household materials can occur if insufficient fan

capacity is used for the rate of Vikane released. It is recommended that protective sheeting, such as polyethylene plastic under the shooting stand, shooting hose, and shooting fan be used to further protect floors during application. **To prevent damage, do not apply fumigant directly to any surface**.

**Posting of Fumigated Areas**
The applicator must post all entrances to the fumigated areas with signs bearing, in English and Spanish:

1. The signal word DANGER/PELIGRO and the SKULL and CROSSBONES symbol.
2. The statement, "Area under fumigation, DO NOT ENTER/NO ENTRE."
3. The date of fumigation.
4. Name of fumigant used.
5. Name, address, and telephone number of the applicator.

Only a certified applicator may authorize removal of placards, and only when the concentration of Vikane within the structure where individuals typically stand, sit or lie down, is 1 ppm or less.

## Aeration and Reentry

**Structures**
No one is allowed in treated areas if the level of Vikane is above 1 ppm unless provided with a NIOSH or MSHA approved positive pressure self-contained breathing apparatus (SCBA, not SCUBA) or combination air supplied/SCBA respirator such as manufactured by Ranger, Survivair, Scott, or MSA. **Note: During the initial one hour aeration procedure, approved respiratory protection must be worn until the concentration of Vikane is confirmed not to exceed 1 ppm with an approved detection device.** Since the INTERSCAN, MIRAN [SapphIRe] and Spectros ExplorIR gas analyzers give immediate readings, respiratory protection is not required when clearing with these instruments after having completed the initial one hour aeration procedure. If a reading indicates levels in excess of 1 ppm, leave the affected area immediately.

Only an approved detection device of sufficient sensitivity, such as the INTERSCAN, MIRAN [SapphIRe] or Spectros ExplorIR gas analyzer, can be used to confirm a concentration of Vikane of 1 ppm or less. The INTERSCAN must be calibrated according to manufacturer recommendations within one month prior to use as a clearance device. All other approved detection devices must be calibrated according to manufacturer recommendations. The concentration of Vikane must be monitored in breathing zones (areas within the structure where individuals typically stand, sit or lie down). Structure must remain posted for fumigation until cleared for reentry.

Open all operable attic doors and accesses and direct a fan into the attic. If the structure has an attached garage, the door between the garage and structure should be open. If the structure has a central air handling system, the fan (or blower) should be activated for each unit if operational. As an alternative, a fan may be placed in front of a furnace inlet to blow air into central heating and cooling ducts.

Select the appropriate procedure based on the fumigation rate:

All structures fumigated at 16 oz/MCF or less may be aerated using procedures 1 or 2.

All structures fumigated at concentrations greater than 16 oz/MCF must be aerated using procedure 2.

**Aeration Procedure 1**

**These steps must be completed in sequence.**

**Step (1):** Aerate structure with all operable windows and doors open, aided by the use of one or more fans, for a minimum of 1 hour. Total fan capacity, using one or more fans, shall be capable of displacing a total of 5,000 cfm.

**Step (2):** Secure structure and do not allow reentry for a minimum of 6 hours from the start of aeration (first opening of the seal). During this time structures must remain posted.

**Step (3):** After the minimum 6-hour waiting period, measure the concentration of Vikane in breathing zones of each room. If the concentration of Vikane is greater than 1 ppm, ventilate structure with operable doors and windows open and confirm concentrations are 1 ppm or less before the structure is reoccupied.

**Aeration Procedure 2**

**These steps must be completed in sequence.**

**Step (1):** Aerate structure with all operable windows and doors open, aided by the use of one or more fans, for a minimum of 1 hour. Total fan capacity, using one or more fans, shall be capable of displacing a total of 5,000 cfm.

**Step (2):** Secure the structure and do not allow reentry for a minimum of 8 hours from the start of aeration (first opening of the seal). During this time the structure must remain posted.

**Step (3):** After the minimum 8-hour waiting period, measure the concentrations of Vikane in breathing zones of each room. If the concentration of Vikane is greater than 1 ppm, ventilate structure with operable doors and windows open and confirm concentrations are 1 ppm or less before the structure is reoccupied.

**Passenger Railcars**
Passenger railcars may be aerated using either of the following two aeration procedures (railcars must remain posted until cleared for re-occupancy):

**Aeration Procedure 1:**
If on-board railcar ventilation systems are not operable, aerate railcar for a minimum of 6 hours using the following procedure:

**Step (1):** Remove all tape, seals, and/or tarps.

**Step (2):** Open all exterior railcar doors.

**Step (3):** Open all internal doors such as cabinets, closets, appliances and sleeping berths.

**Step (4):** In sleeper cars, turn all mattresses askew to expose cavities beneath sleeping berths.

**Step (5):** Ventilate the railcars for a minimum of 1 hour with enough portable fans to provide a minimum 4000 cfm capacity per floor. A bilevel railcar would require 8000 cfm capacity or greater - 4000 cfm per floor. Direct fans in such a manner to create cross-ventilation of railcar.

**Step (6):** After the minimum 6-hour aeration time, railcars may be reoccupied when the concentration of Vikane is 1 ppm or less with all doors and windows closed and ventilation systems turned off as measured by a detection device with sufficient sensitivity such as an INTERSCAN, MIRAN [SapphIRe], or Spectros ExplorIR gas analyzers.

**Aeration Procedure 2:**
If on-board railcar ventilation systems are operable, actively ventilate the railcar for a minimum of 2 hours using the following procedures:

**Step (1):** Remove all tape, seals, and/or tarps.

**Step (2):** Open all exterior car doors.

**Step (3):** Open all internal doors such as cabinets, closets, appliances and sleeping berths.

**Step (4):** In sleeper cars, turn all mattresses askew to expose cavities beneath sleeping berths.

**Step (5):** Turn on all on-board Heating, Ventilation, Air-Conditioning (HVAC) systems and exhaust fans.

**Step (6):** In sleeper cars, turn on all operable wall or ceiling mounted fans.

**Step (7):** Ventilate the railcar with enough portable fans to provide a minimum 4000 cfm capacity per floor (in addition to on-board systems). A bilevel railcar would require 8000 cfm capacity or greater - 4000 cfm per floor. Direct fans in such a manner to create cross-ventilation of railcar.

**Step (8):** After the minimum 2 hours active ventilation/aeration, the railcar may be reoccupied when the concentration of Vikane is 1 ppm or less with all doors and windows closed and ventilation systems turned off as measured by a detection device with sufficient sensitivity such as an INTERSCAN, MIRAN [SapphIRe], or Spectros ExplorIR gas analyzers.

For more detailed information on the source and use of air monitoring devices or respirators, consult the Vikane Gas Fumigant Structural Fumigation Manual. Do not reoccupy fumigation site, i.e., building, ship, vehicle or chamber, or move vehicle until aeration is complete. Warning signs must remain posted until aeration is determined to be complete.

## Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

## Warranty Disclaimer

Douglas Products and Packaging Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. TO THE EXTENT PERMITTED BY LAW, DOUGLAS PRODUCTS MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

## Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as low temperature, soil conditions, etc.), abnormal conditions (such as excessive wind, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Douglas Products or the seller. All such risks shall be assumed by buyer.

## Limitation of Remedies

To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Douglas Products' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

Douglas Products shall not be liable for losses or damages resulting from handling or use of this product unless Douglas Products is promptly notified of such loss or damage in writing. In no case shall Douglas Products be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Doulgas Products or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or Limitation of Remedies in any manner.

®Trademark of Douglas Products and Packaging Company ("Douglas")

**Produced for**
**Douglas Products and Packaging Company**
**1550 East Old 210 Highway**
**Liberty, MO 64068-9459**

A-3-LBL-VKUSA-00S-20151125

EPA accepted 11/25/15

**Revisions:**

1. Change company name, address, emergency number and EPA registration number.
2. Updated warranty.

# Boracide™

## Borate Powder

**For the Control of Ants, Carpenter Ants, Cockroaches, Dampwood Termites, Drywood Termites, Earwigs and Silverfish**

**For Use In and Around Homes, Apartments, Garages, Schools, Offices, Hotels, Motels, Hospitals, Aircraft, Trains, Boats, Trucks, Kennels, Zoos, Veterinary Areas, Factories, Warehouses, Supermarkets, Restaurants, Food Processing Plants and Other Listed Structures**

**Active Ingredient:**
Pentahydrate Borax ..... 100%

**EPA Reg. No. 64405-7** **EPA Est. 64405-TN-1**

**Keep Out of Reach of Children**
**CAUTION**
**See other panels for additional precautionary statements.**

### PRECAUTIONARY STATEMENTS

**Hazards to Humans and Domestic Animals**

**CAUTION:** Harmful if swallowed or inhaled. Causes moderate eye irritation. Avoid contact with eyes or clothing. Avoid breathing dust. Thoroughly wash with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

1

### First Aid
### Borate Insecticide

| | |
|---|---|
| **If Swallowed** | • Immediately call a poison control center or doctor for treatment advice.<br>• Have person sip a glass of water if able to swallow.<br>• Do not induce vomiting unless told to do so by the poison control center or doctor.<br>• Do not give anything by mouth to an unconscious person. |
| **If Inhaled** | • Move person to fresh air.<br>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.<br>• Call a poison control center or doctor for further treatment advice. |
| **If in Eyes** | • Hold eye open and rinse slowly and gently with water for 15-20 minutes.<br>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.<br>• Call a poison control center or doctor for treatment advice. |
| **If on Skin or Clothing** | • Take off contaminated clothing.<br>• Immediately rinse skin with plenty of water for 15-20 minutes.<br>• Call a poison control center or doctor for treatment advice. |
| Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information. | |

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### Environmental Hazards

This product 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 cleaning equipment or disposing of equipment washwaters.

**Notice**
**Read and understand the entire label before using.**
**Use only according to label directions.**

Before buying or using this product, read ***Warranty Limitations and Disclaimer*** statement found elsewhere on this label. If terms are unacceptable, return unopened package to seller for full refund of purchase price. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under ***Warranty Limitations and Disclaimer***.

**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 food or feed by storage or disposal.
**Storage:** Store in a cool, dry (preferably locked) storage area inaccessible to children and pets.
**Disposal: If empty:** Do not reuse this container. Place in trash or, if available, offer for recycling. **If partly filled:** Call your local solid waste agency or 1-800-CLEANUP for disposal instructions. Never place unused product down any indoor or outdoor drain.

**General Information**

Do not use in edible product areas of food handling establishments, restaurants or other places where food is commercially prepared. Do not use in serving areas while food is exposed. Do not contaminate feed and foodstuffs.

Use this product in homes, restaurants, markets, schools, warehouses, factories, offices, hotels, motels, hospitals, nursing homes, garages, grocery stores, apartment buildings, new construction, industrial plants, theaters, ships, boats, trains, trucks, yachts, camps, mobile homes, buses, zoos, kennels, military bases, libraries, utilities and sewers.

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**Personal Protective Equipment***

For new construction applications, applicators and other handlers must wear normal work clothing (e.g. long-sleeved shirt and long pants and shoes plus socks) and a NIOSH/MSHA-approved dust mask respirator. *Only in California.

**Application Instructions**

***To Control Ants, Cockroaches and Silverfish,*** apply liberally, scattering under and behind refrigerator, stove, sink, dishwasher, washing machine and dryer tubs; into openings around drains, water pipes and electrical conduits; and in cracks and crevices along baseboards and corners of cabinets, cupboards and closets. Remove all lower drawers in kitchen and bathroom cabinets, bedroom dressers and chests of drawers, then scatter liberally in drawer wells.

***Directions for Applying in New and Existing Construction to Control Cockroaches:*** When treating large areas, such as wall voids, soffit and subcabinet voids in new and existing construction, dust liberally using dusting application equipment.

***Directions for Applying in New and Existing Construction to Control Carpenter Ants, Drywood Termites and Cockroaches:*** When treating areas such as wall voids and electrical lines for carpenter ants, and attics and areas over soffits, out to the gutter plate, for the control and prevention of drywood termites and cockroaches, dust liberally using dusting application equipment. Apply dust directly into insect galleries and cracks and crevices in infested wood.

***Directions for Controlling Fly Larvae in Refuse Containers:*** Apply liberally to trash cans or dumpsters as a dust or liquid spray (1 cup of powder per gallon of water).

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***Directions for Applying in Sewers and Manhole Cavities:*** Apply as a dust at a rate not to exceed 12 oz. per 250 square feet using a blower or air pressure equipment.

***Directions for the Control of Drywood Termites in Infested Wood:*** Add 1 cup of powder (approximately four ounces) to each gallon of water and stir until dissolved. Inject solution directly into Drywood termite galleries.

***Directions for the Control of Cockroaches as a Spray Solution:*** Add 1 cup of powder (approximately four ounces) to each gallon of water and stir until dissolved. Spray solution directly onto floors, baseboards and other non-food contact areas where insects are prevalent.

***Directions for the Control of Drain Flies in Drains:*** Add 1 cup (approximately four ounces) of powder to each gallon of water and stir until dissolved. Pour one quart of solution into each drain at the end of working day.

***Directions for Applying as a Mop Solution to Control Cockroaches:*** Add 1 cup (approximately four ounces) of powder to each gallon of rinse water. Apply only to floor areas. Make only enough for each application. This is only a supplemental treatment.

Reapply as necessary. Any powder visible after application must be brushed into cracks and crevices or removed. Apply only in areas inaccessible to children and pets. Do not use in edible product areas of food handling establishments, restaurants or other areas where food is commercially prepared or processed. Do not use in serving areas while food is exposed.

**Crack and Crevice Treatment**

**Food and Feed Handling Establishments:** Places other than private residences in which food or feed is held, processed, prepared or served.

**Food Area Application Limited to Crack and Crevice Treatment Only:** Includes areas for receiving, storage, packing (canning, bottling, wrapping, boxing), preparing edible waste storage and enclosed processing systems (mills, dairies, edible oils, syrups). Serving areas (when food

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is exposed and facility is in operation) also would be considered a food area.

Apply in small amounts directly into cracks and crevices using a bulbous duster or other suitable equipment capable of applying insecticide directly into cracks and crevices, in points between different elements of construction, between equipment and floors, openings leading to voids and hollow spaces in walls, equipment legs and bases, conduits, motor housing and electrical switch boxes where cockroaches hide.

Avoid depositing the product onto exposed surfaces or introducing the material into the air. Avoid contamination of food or food processing surfaces.

**Applications of this product in the food areas of food handling establishments, other than as a crack and crevice treatment, are not permitted.**

**Serving Areas:** Facilities where prepared foods are served, such as dining rooms, but excluding areas where food may be prepared or held. Apply as a spot treatment to selected surfaces such as baseboards, under elements of construction into cracks and crevices. Do not treat surfaces likely to be contacted by food. Do not apply when facility is in operation or foods are exposed.

**Non-Food Areas:** Including garbage rooms, lavatories, floor drains (to sewer), entries, vestibules, offices, locker rooms, machine rooms, boiler rooms, garages, closets and storage areas (after canning or bottling). Apply to baseboard areas, around water pipes, surfaces behind and beneath sinks, lockers, tables, pallets and similar areas where insects hide or through which they may enter.

**Cleanup:** Use soap and water to clean up tools.

**Warranty Limitations and Disclaimer**

Because of varying conditions affecting use and application, manufacturer warns buyer that these may impair or vary the results or effects of the use of this product. Neither the manufacturer nor seller shall be liable in respect to any injury or damage suffered by reason of the use of this product for a purpose not indicated by the label or when

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used contrary to the directions or instructions hereon or with respect to breach of any warranty not expressly specified herein. Buyer accepts this material subject to these terms and assumes all risk of usage and handling except when used or handled in accordance with this label.

**Nisus Corporation**
**100 Nisus Drive • Rockford, TN 37853**
**(800) 264-0870**
**www.nisuscorp.com**

**Made in the U.S.A.**
**© 2004**

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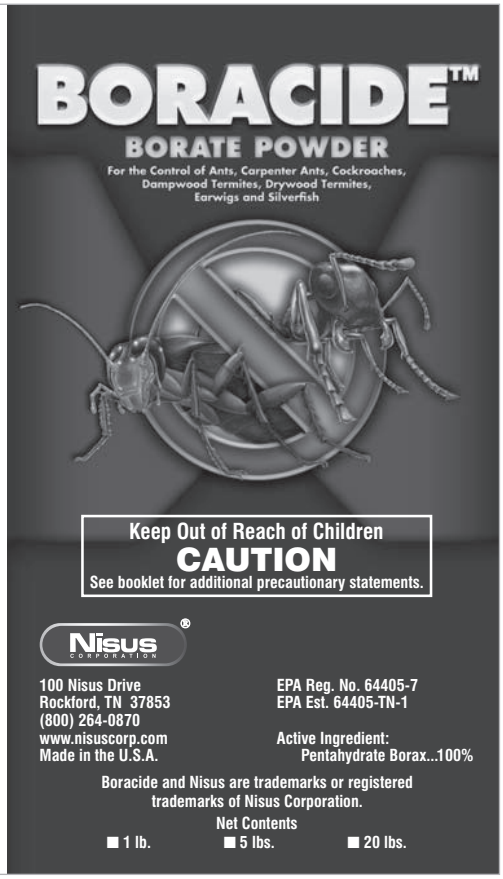

# Boracide™

## Borate Powder

**For the Control of Ants, Carpenter Ants, Cockroaches, Dampwood Termites, Drywood Termites, Earwigs and Silverfish**

**For Use In and Around Homes, Apartments, Garages, Schools, Offices, Hotels, Motels, Hospitals, Aircraft, Trains, Boats, Trucks, Kennels, Zoos, Veterinary Areas, Factories, Warehouses, Supermarkets, Restaurants, Food Processing Plants and Other Listed Structures**

**Active Ingredient:**

Pentahydrate Borax ..... 100%

**EPA Reg. No. 64405-7** **EPA Est. 64405-TN-1**

**Keep Out of Reach of Children**

**CAUTION**

**See inside booklet for Directions for Use and additional precautionary statements.**

**Storage and Disposal**

Do not contaminate food or feed by storage or disposal.

**Storage:** Store in a cool, dry (preferably locked) storage area inaccessible to children and pets.

**Disposal: If empty:** Do not reuse this container. Place in trash or, if available, offer for recycling. **If partly filled:** Call your local solid waste agency or 1-800-CLEANUP for disposal instructions. Never place unused product down any indoor or outdoor drain.

**PRECAUTIONARY STATEMENTS**

**Hazards to Humans and Domestic Animals**

**CAUTION:** Harmful if swallowed or inhaled. Causes moderate eye irritation. Avoid contact with eyes or clothing. Avoid breathing dust. Thoroughly wash with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

**NISUS CORPORATION**

100 Nisus Drive • Rockford, TN 37853

(800) 264-0870

www.nisuscorp.com

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**Net Contents**

☐ **1 lb.** ☐ **5 lbs.** ☐ **25 lbs.**

# Talstar® P PROFESSIONAL INSECTICIDE

**To control pests indoors and outdoors on residential, institutional, public, commercial, and industrial buildings, greenhouses, animal confinement facilities/livestock premises, kennels, food handling establishments, and lawns, ornamentals, parks, recreational areas and athletic fields.**

**When used as a termiticide, individuals/firms must be licensed by the state to apply termiticide products. States may have more restrictive requirements regarding qualifications of persons using this product. Consult the pest control regulatory agency of your state prior to use of this product.**

**Provides up to 1 month residual control of house flies**
**Kills fleas for up to 3 months**

**EPA Reg. No. 279-3206** **EPA Est. 279-NY-1**

| **Active Ingredient:** | **By Wt.** |
|---|---|
| Bifenthrin* | 7.9% |
| **Other Ingredients:** | 92.1% |
| | 100.0% |

Talstar® P Professional Insecticide contains ⅔ pound active ingredient per gallon.
*Cis isomers 97% minimum, trans isomers 3% maximum.

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

FMC

FMC Corporation
Agricultural Products Group
1735 Market Street
Philadelphia PA 19103

**Net Contents: 1 Gallon**

04/17/13

## FIRST AID

| | |
|---|---|
| **If swallowed** | • Call poison control center or doctor immediately for treatment advice.<br>• Have person sip a glass of water if able to swallow.<br>• Do not induce vomiting unless told to do so by the poison control center or doctor.<br>• Do not give anything by mouth to an unconscious person. |
| **If inhaled** | • Move person to fresh air.<br>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.<br>• Call a poison control center or doctor for further treatment advice |
| **If on skin or clothing** | • Take off contaminated clothing.<br>• Rinse skin immediately with plenty of water for 15-20 minutes.<br>• Call a poison control center or doctor for treatment advice. |
| **If in eyes** | • Hold eye open and rinse slowly and gently with water for 15-20 minutes.<br>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.<br>• Call a poison control center or doctor for treatment advice. |

## HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-(800)-331-3148 for Emergency Assistance.

## NOTE TO PHYSICIAN

This product is a pyrethroid. If large amounts have been ingested, the stomach and intestine should be evacuated. Treatment is symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and so should be avoided.

**For Information Regarding the Use of this Product Call 1-800-321-1FMC (1362).**

## PRECAUTIONARY STATEMENTS

### Hazards to Humans (and Domestic Animals)

**CAUTION**

Harmful if swallowed, inhaled or absorbed through skin. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove contaminated clothing and wash before reuse.

All pesticide handlers (mixers, loaders and applicators) must wear long-sleeved shirt and long pants, socks, shoes and chemical-resistant gloves. After the product is diluted in accordance with label directions for use, and/or when mixing and loading using a closed spray tank transfer system (such as U-Turn®), or an in-line injector system, shirt, pants, socks, shoes and waterproof gloves are sufficient. In addition, all pesticide handlers must wear a respiratory protection device[1] when working in a non-ventilated space. All pesticide handlers must wear protective eyewear when working in non-ventilated space.

[1]Use one of the following NIOSH approved respirator with any R, P or HE filter

or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE prefilter.

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.

**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 outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.



## Environmental Hazards

This pesticide is extremely toxic to fish and aquatic invertebrates. Drift and run-off from treated areas may be hazardous to aquatic organisms in neighboring areas. Care should be used when spraying to avoid fish and reptile pets in/around ornamental ponds.

To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to ensure that wind or rain does not blow or wash pesticide off the treatment area. Rinsing application equipment over the treated area will help to avoid run off to water bodies or drainage systems.

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 to drift to blooming crops if bees are visiting the treatment area.

## Physical and Chemical Hazards

Do not apply water-based dilutions of Talstar® P Professional Insecticide to electrical conduits, motor housings, junction boxes, switch boxes or other electrical equipment because of possible shock hazard.

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## DIRECTIONS FOR USE

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

Do not apply a broadcast application to interior surfaces of homes.

Do not apply by air.

Do not apply in plant nurseries.

Do not apply this product through any kind of irrigation system.

Not for use on sod farm turf, golf course turf, or grass grown for seed.

Do not water treated area to the point of run-off.

Do not make applications during rain.

Application is prohibited directly into sewers or drains, or to any area like a gutter where drainage to sewers, storm drains, water bodies, or aquatic habitat can occur. Do not allow the product to enter any drain during or after application.

Additional Application Restrictions for Residential Outdoor Surface and Space Sprays:

All outdoor applications, if permitted elsewhere on this label, must be limited to spot or crack-and-crevice treatments only, except for the following permitted uses, if allowed elsewhere on this label:

1.–Applications to soil or vegetation, as listed on this label, around structures;

2. Applications to lawns, turf, and other vegetation, as listed on this label;

3. Applications to the side of a building, up to a maximum height of 3 feet above grade;

4. Applications to underside of eaves, soffits, doors, or windows permanently protected from rainfall by a covering, overhang, awning, or other structure;

5. Applications around potential pest entry points into buildings, when limited to a surface band not to exceed one inch in width;

6. Applications made through the use of a coarse, low pressure spray to only those portions of surfaces that are directly above bare soil, lawn, turf, mulch or other vegetation, as listed on this label, and not over an impervious surface, drainage or other condition that could result in runoff into storm drains, drainage ditches, gutters or surface waters, in order to control occasional invaders or aggregating pests.

### AGRICULTURE USE REQUIREMENTS*

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

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 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
- Chemical-resistant gloves, such as barrier laminate or butyl rubber or nitrile rubber or neoprene rubber or polyvinyl chloride or viton.
- Shoes plus socks

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 requirement specific to your State or Tribe, consult the State/Tribal agency responsible for pesticide regulation.

### For California

**Greenhouse Applicators must wear:**
- Full body chemical-resistant protective suit (such as barrier laminate, butyl rubber, nitrile rubber, polyvinyl chloride, or equivalent).

**Reapplication Interval:** Reapplications to greenhouses must be at intervals of 30 days or longer.

**Greenhouse Harvesters must wear:**
- Regular length gloves plus a long sleeved shirt or elbow-length (gauntlet type) gloves during the 30 days following application.

*These requirements apply only to the greenhouse uses on this label

### NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standards for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries and greenhouses.

Do not allow people or pets on treated surfaces until the spray has dried.

**These requirements apply to all other non-greenhouse uses on this label

### Use Directions for Container

1. Remove the measuring chamber cap and induction seal. Replace the cap and securely tighten. Tip container until liquid fills measuring chamber.
2. Return container to level position. No adjustment is needed.
3. Remove measuring chamber cap and dispense into proper application equipment.

For multiple dose measuring: Remove fill chamber cap and dispense according to markings on side of bottle.

### Use Directions for Squeeze-N-Measure Container

1. Remove the measuring chamber cap and induction seal.
2. Replace cap loosely on measuring chamber to allow venting.
3. Squeeze container gently until liquid fills measuring chamber.
4. Remove measuring chamber cap and dispense into proper application equipment.
5. Replace cap onto measuring chamber and **Securely Tighten**.

## STORAGE AND DISPOSAL

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

**Pesticide Storage:** Keep out of reach of children and animals. Store in original containers only. Store in a cool, dry place and avoid excess heat. Carefully open containers. After partial use replace lids and close tightly. Do not put concentrate or dilute material into food or drink container.

**In case of spill, avoid contact, isolate area and keep out animals and unprotected persons. Confine spills. Call CHEMTREC (Transportation and Spills): (800) 424-9300.**

**To Confine Spill:** If liquid, dike surrounding area or absorb with sand, cat litter or commercial clay. If dry material, cover to prevent dispersal. Place damaged package in a holding container. Identify contents.

**Pesticide Disposal:** Pesticide wastes are toxic. Do not contaminate water, food or feed by storage or disposal. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. Dispose of excess or waste pesticide by use according to label directions, or contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**Container Disposal:**
**Plastic Container: Non-refillable container**. Do not reuse or refill this container. Triple rinse as follows: Empty the contents into application equipment or a mix tank and drain for 10 seconds after flow begins to drip. Fill container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling, if available or reconditioning, if appropriate, 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.

**Returnable/Refillable Sealed Container:** Refill this container with pesticide only. Do not reuse this container for any other purpose. Do not rinse container. Do not empty remaining formulated product. Do not break seals. Return intact to point of purchase. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

## General Information on the Use of this Product

Talstar® P Professional Insecticide controls a wide spectrum of insects and mites on trees, shrubs, foliage plants, non-bearing fruit and nut trees, and flowers in greenhouses, interiorscapes including hotels, shopping malls, office buildings, etc., and outdoor plantscapes, such as around residential dwellings, parks, institutional buildings, recreational areas, athletic fields and home lawns. Non-bearing crops are perennial crops that will not produce a harvestable raw agricultural commodity during the season of application. Talstar® P Professional Insecticide may also be used in feed and food handling establishments, animal confinement facilities, kennels, confined animal feeding operations, livestock premises, and in/around/under structures.

**Resistance:** Some insects are known to develop resistance to products used repeatedly for control. Because the development of resistance cannot be predicted, the use of this product should conform to resistance management strategies established for the use area. Consult your local or state pest management authorities for details.

If resistance to this product develops in your area, this product, or other products with a similar mode of action, may not provide adequate control. If poor performance cannot be attributed to improper application or extreme weather conditions, a resistant strain of insect may be present. If you experience difficulty with control and suspect that resistance is a reasonable cause, immediately consult your local company representative or pest management advisor for the best alternative method of control for your area.

### Talstar® P Professional Insecticide Dilution Chart

| | | | Fluid Ounces of Talstar P Professional Diluted to these Volumes of Finished Spray | | | |
|---|---|---|---|---|---|---|
| Applic. Volume: | | Applic. Rate: | 1 Gallon | 5 Gallons | 10 Gallons | 100 Gallons |
| % a.i. | Gal/ 1000 sq. ft. | Fl. oz./ 1000 sq. ft. | fl. oz. | fl. oz. | fl. oz. | fl. oz. |
| 0.008 | 1.0 | 0.125 | 0.125 | 0.63 | 1.25 | 12.5 |
| 0.011 | 1.0 | 0.18 | 0.18 | 0.90 | 1.8 | 18.0 |
| 0.015 | 1.0 | 0.25 | 0.25 | 1.25 | 2.5 | 25.0 |
| 0.020 | 1.0 | 0.33 | 0.33 | 1.67 | 3.33 | 33.3 |
| 0.031 | 1.0 | 0.5 | 0.5 | 2.5 | 5.0 | 50.0 |
| 0.041 | 1.0 | 0.67 | 0.67 | 3.33 | 6.67 | 66.7 |
| 0.046 | 1.0 | 0.75 | 0.75 | 3.75 | 7.5 | 75.0 |
| 0.062 | 1.0 | 1.0 | 1.0 | 5.0 | 10.0 | 100.0 |
| 0.004 | 2.0 | 0.125 | - | 0.31 | 0.63 | 6.3 |
| 0.006 | 2.0 | 0.18 | - | 0.45 | 0.90 | 9.0 |
| 0.008 | 2.0 | 0.25 | 0.13 | 0.63 | 1.25 | 12.5 |
| 0.010 | 2.0 | 0.33 | 0.17 | 0.83 | 1.65 | 16.5 |
| 0.015 | 2.0 | 0.5 | 0.25 | 1.25 | 2.5 | 25.0 |
| 0.021 | 2.0 | 0.67 | 0.33 | 1.67 | 3.35 | 33.5 |
| 0.023 | 2.0 | 0.75 | 0.38 | 1.88 | 3.75 | 37.5 |
| 0.031 | 2.0 | 1.0 | 0.5 | 2.5 | 5.0 | 50.0 |
| 0.003 | 3.0 | 0.125 | - | 0.21 | 0.42 | 4.2 |
| 0.004 | 3.0 | 0.18 | - | 0.30 | 0.60 | 6.0 |
| 0.005 | 3.0 | 0.25 | - | 0.42 | 0.83 | 8.3 |
| 0.007 | 3.0 | 0.33 | 0.11 | 0.55 | 1.10 | 11.0 |
| 0.010 | 3.0 | 0.5 | 0.17 | 0.83 | 1.67 | 16.7 |
| 0.014 | 3.0 | 0.67 | 0.22 | 1.11 | 2.23 | 22.3 |
| 0.015 | 3.0 | 0.75 | 0.25 | 1.25 | 2.5 | 25.0 |
| 0.021 | 3.0 | 1.0 | 0.33 | 1.67 | 3.33 | 33.3 |
| 0.002 | 4.0 | 0.125 | - | 0.16 | 0.31 | 3.1 |
| 0.003 | 4.0 | 0.18 | - | 0.23 | 0.45 | 4.5 |
| 0.004 | 4.0 | 0.25 | - | 0.31 | 0.63 | 6.3 |
| 0.005 | 4.0 | 0.33 | - | 0.41 | 0.83 | 8.3 |
| 0.008 | 4.0 | 0.5 | 0.13 | 0.63 | 1.25 | 12.5 |
| 0.010 | 4.0 | 0.67 | 0.17 | 0.84 | 1.67 | 16.7 |
| 0.012 | 4.0 | 0.75 | 0.19 | 0.94 | 1.88 | 18.8 |
| 0.015 | 4.0 | 1.0 | 0.25 | 1.25 | 2.5 | 25.0 |
| 0.002 | 5.0 | 0.125 | - | 0.13 | 0.25 | 2.5 |
| 0.002 | 5.0 | 0.18 | - | 0.18 | 0.36 | 3.6 |
| 0.003 | 5.0 | 0.25 | - | 0.25 | 0.5 | 5.0 |
| 0.004 | 5.0 | 0.33 | - | 0.33 | 0.67 | 6.7 |
| 0.006 | 5.0 | 0.5 | 0.1 | 0.5 | 1.0 | 10.0 |
| 0.008 | 5.0 | 0.67 | 0.13 | 0.67 | 1.33 | 13.3 |
| 0.009 | 5.0 | 0.75 | 0.15 | 0.75 | 1.5 | 15.0 |
| 0.012 | 5.0 | 1.0 | 0.2 | 1.0 | 2.0 | 20.0 |
| 0.001 | 10.0 | 0.125 | - | - | 0.13 | 1.3 |
| 0.001 | 10.0 | 0.18 | - | - | 0.18 | 1.8 |
| 0.002 | 10.0 | 0.25 | - | 0.13 | 0.25 | 2.5 |
| 0.002 | 10.0 | 0.33 | - | 0.17 | 0.33 | 3.3 |
| 0.003 | 10.0 | 0.5 | - | 0.25 | 0.5 | 5.0 |
| 0.004 | 10.0 | 0.67 | - | 0.33 | 0.67 | 6.7 |
| 0.005 | 10.0 | 0.75 | - | 0.38 | 0.75 | 7.5 |
| 0.006 | 10.0 | 1.0 | 0.1 | 0.5 | 1.0 | 10.0 |

**1 fluid oz. = 29.57 ml = 2 tablespoons = 6 teaspoons**
**Do not use household utensils to measure Talstar® P Professional Insecticide.**
**Note: Higher finished volume should be applied to penetrate thatch, mulch, brush, and porous surfaces. Lower finished volumes can be used indoors and for non-porous surfaces. Do not apply more than 1 oz. Talstar Professional per 1,000 square feet.**

### General Application Instructions

Talstar® P Professional Insecticide formulation mixes readily with water and other aqueous carriers.

Talstar® P Professional Insecticide may be tank-mixed with adjuvants, and with other pesticides, including insect growth regulators. When tank mixing Talstar® P Professional Insecticide with other pesticides, observe all precautions and limitations on each separate product label. The physical compatibility of Talstar® P Professional Insecticide may vary with different sources of pesticide products, and local cultural practices. Any tank mixture which has not been previously tested should be prepared on a small scale (pint or quart jar), using the proper proportions of pesticides and water to ensure the physical compatibility of the mixture.

**The following procedure is recommended for preparation of a new tank mix, unless specified otherwise in label directions: (1) Add wettable powders to tank water, (2) Agitate, (3) Add liquids and flowables, (4) Agitate, (5) Add emulsifiable concentrates, and (6) Agitate. If a mixture is found to be incompatible following this order of addition, try reversing the order of addition, or increase**



**the volume of water. Note: If the tank-mixture is found to be compatible after increasing the amount of water, then the sprayer will need to be recalibrated for a higher volume application. Do not allow tank mix to stand overnight.**

**Formula for Determining the Active Ingredient Content of the Finished Spray Mixture:** The following formula may be used to determine the percent active ingredient that is in the spray tank after mixing Talstar® P Professional Insecticide:

$$\frac{(7.9)(\text{Fl. Oz. of Talstar P Professional added to tank})}{(\text{Gallons of finished spray mix})(128)} = \text{Percent Active Ingredient of spray mix}$$

## APPLICATION DIRECTIONS
## ANT CONTROL

**Nuisance Ants Indoors:** For best results, locate and treat ant nests. Dilute 0.5 to 1.0 fluid oz. of Talstar® P Professional Insecticide per gallon of water and apply at the rate of one gallon of dilution per 1,000 square feet as a general surface, crack and crevice or spot treatment to areas where ants have been observed or are expected to forage. These areas include, but are not limited to, baseboards, in and behind cabinets, under and behind dishwashers, furnaces, refrigerators, sinks and stoves, around pipes, cracks and crevices and in corners. Particular attention should be given to treating entry points into the home or premises such as around doors and windows. When using Talstar® P Professional Insecticide in combination with baits, apply Talstar® P Professional Insecticide as instructed above, and use baits in other areas that have not been treated with Talstar® P Professional Insecticide

**Nuisance Ants Outdoors:** For best results, locate and treat ant nests. Apply Talstar® P Professional Insecticide to ant trails around doors and windows and other places where ants have been observed or are expected to forage. Apply a perimeter treatment using either low or high volume applications described in the "Pest Control on Outside Surfaces and Around Buildings" section of this label. The higher dilutions and/or application volumes, as well as more frequent applications, may be necessary when treating concrete surfaces for ant control. Maximum control is generally achieved using the following procedure:

The following procedure must be followed to help achieve maximum control of the pest:

1) Treat non-porous surfaces only in areas protected from rainfall and spray from sprinklers with low volume applications using 0.5 to 1.0 fluid oz. of Talstar® P Professional Insecticide per gallon of water and applying this dilution at the rate of one gallon per 1,000 square feet.
2) Treat porous surfaces and vegetation with high volume applications (usually 5 to 10 finished gallons per 1,000 square feet) using dilutions that are calculated to deliver 0.5 to 1.0 fluid oz. of Talstar® P Professional Insecticide per 1,000 square feet ( refer to the Talstar® P Professional Insecticide Dilution Chart).
3) For maximum residual control, dilute 1.0 fluid oz of Talstar P Professional in up to 10 gallons of water and apply 1 to 10 gallons per 1,000 square feet.

**Carpenter Ants Indoors:** Dilute 0.5 to 1.0 fluid oz. of Talstar® P Professional Insecticide per gallon of water and apply at the rate of one gallon of dilution per 1,000 square feet as a general surface, crack and crevice or spot treatment to areas where carpenter ants have been observed or are expected to forage. These areas include, but are not limited to, baseboards, in and behind cabinets, under and behind dishwashers, furnaces, refrigerators, sinks, and stoves, around pipes, cracks and crevices and in corners. Particular attention should be given to treating entry points into the home or premises such as around doors and windows. Spray or foam into cracks and crevices or drill holes and spray, mist or foam into voids where carpenter ants or their nests are present. When using Talstar® P Professional Insecticide in combination with baits, apply Talstar® P Professional Insecticide as instructed above, and use baits in other areas that have not been treated with Talstar® P Professional Insecticide.

**Carpenter Ants Outdoors:** Apply Talstar® P Professional Insecticide to carpenter ant trails around doors and windows and other places where carpenter ants have been observed or are expected to forage. For best results, locate and treat carpenter ant nests. Apply a perimeter treatment using either low or high volume applications described in the "Pest Control on Outside Surfaces and Around Buildings" section of this label. The higher dilutions and/or application volumes, as well as more frequent applications, may be necessary when treating concrete surfaces for carpenter ant control. Maximum control is generally achieved using the following procedure:

The following procedure must be followed to help achieve maximum control of the pest:

1) Treat non-porous surfaces only in areas protected from rainfall and spray from sprinklers with low volume applications using 0.5 to 1.0 fluid oz. of Talstar® P Professional Insecticide per gallon of water and applying this dilution at the rate of one gallon per 1,000 square feet
2) Treat the trunks of trees that have carpenter ant trails, or upon which carpenter ants are foraging, using 0.5 to 1.0 fluid oz. of Talstar® P Professional Insecticide per gallon of water and applying this dilution to thoroughly wet the bark from the base of the tree to as high as possible on the trunk
3) Treat porous surfaces and vegetation with high volume applications (usually 5 to 10 finished gallons per 1,000 square feet) using dilutions that are calculated to deliver 0.5 to 1.0 fluid oz. of Talstar® P Professional Insecticide per 1,000 square feet (refer to the Talstar® P Professional Insecticide Dilution Chart)
4) For maximum residual control, dilute 1.0 fluid oz. of Talstar® P Professional Insecticide in up to 10 gallons of water and apply 1 to 10 gallons per 1000 square feet.

To control carpenter ants inside trees, utility poles, fencing or deck materials and similar structural members, drill to locate the interior infested cavity and inject or foam a 0.06% dilution (1.0 fluid oz. of Talstar® P Professional Insecticide per gallon of water) into the cavity using a sufficient volume and an appropriate treatment tool with a splashback guard.

To control carpenter ants that are tunneling in the soil, dilute 0.5 to 1.0 fluid ounces of Talstar® P Professional Insecticide per gallon of water and apply as a drench or inject the dilution or foam at intervals of 8 to 12 inches. Establish a uniform vertical barrier at the edges of walls, driveways or other hard surfaces where ants are tunneling beneath the surfaces.

To protect firewood from carpenter ants ( and termites), dilute 1.0 fluid oz. of Talstar® P Professional Insecticide per gallon of water and apply to the soil beneath where the firewood will be stacked at the rate of one gallon of dilution per 8 square feet

For wood piles and stored lumber apply a 0.06% dilution. Use a hose-end sprayer or sprinkling can to deliver a coarse drenching spray. Treated wood can be burned as firewood or used for lumber one month after treatment. Do not use in structures.

**For Ant and Fire Ant Mounds** control is optimized by combining broadcast applications that will control foraging workers and newly mated fly-in queens with mound drenches that will control existing colonies. If the soil is not moist, then it is important to irrigate before application or use a high volume application. Apply broadcast treatments at 0.5 to 1 fluid oz. per 1,000 square feet. Use enough finished volume to penetrate thatch or sod. Treat mounds by applying 1 oz Talstar Professional per mound in 1 to 2 gallons water by sprinkling the mound until it is wet and treat 3 feet out around the mound. Use the higher volume for mounds larger than 12". Treat mounds with sufficient force to break their apex and allow the insecticide solution to flow into the ant tunnels. For best results, apply in cool weather (65 - 80˚F) or in early morning or late evening hours.

### Pest Control on Outside Surfaces and Around Buildings

Talstar® P Professional Insecticide will provide up to 1 month residual control of house flies. Length of residual control is dependant upon rate and surface treated.

Follow Additional Application Restrictions for Outdoor Surface and Space Sprays under DIRECTIONS FOR USE

Applications to vertical exterior surfaces (e.g., foundations) are permitted to a maximum height of 3 feet from ground level. Sections of vertical exterior surfaces that abut non-porous horizontal surfaces can only be treated if either 1) these sections are protected from rainfall and spray from sprinklers or 2) they do not drain into a sewer, storm drain, or curbside gutter (e.g., not to sections that abut driveways or sidewalks that drain into streets).

For control of Ants, Carpenter Ants, Fire Ants, Armyworms, Lady Beetle, Bees, Beetles[1], Biting Flies, Boxelder Bugs, Centipedes, Chiggers, Chinch Bugs, Cicadas, Clover Mites, Cockroaches, Crickets, Cutworms, , Dichondra Flea Beetles, Earwigs, Elm Leaf Beetles, Firebrats, Fleas, Flies, Gnats, Grasshoppers, Hornets, Japanese Beetles[1], Midges, Millipedes, Mosquitoes, Moths, Scorpions, Silverfish, Sod Webworms, Sowbugs (Pillbugs), Spider Mites, Spiders (including Black Widow, Brown Recluse and Hobo Spiders), Springtails, Stink Bugs, Ticks (including Brown Dog Ticks), Vinegar (Fruit) Flies, and Wasps.

[1]Not for use in California.

Apply Talstar® P Professional Insecticide using a 0.02 to 0.06% dilution as a residual spray to outside surfaces of buildings including, but not limited to, exterior siding, foundations, porches, window frames, eaves, patios, garages, refuse dumps, lawns such as grass areas adjacent or around private homes, duplexes, townhouses, condominiums, house trailers, apartment complexes, carports, garages, fence lines, storage sheds, barns, and other residential and non-commercial structures, soil, trunks of woody ornamentals and other areas where pests congregate or have been seen. Do not apply more than 1 oz. Talstar P Professional per 1000 square feet. (Refer to the Talstar P Professional Dilution Chart.). Higher application volumes may be used to obtain the desired coverage of dense vegetation or landscaping materials.

**Mixing Directions:** For 0.02% dilution, mix 0.33 fluid oz. of Talstar® P Professional Insecticide per gallon of water. For 0.06% dilution, mix 1 fluid oz. Talstar® P Professional Insecticide per gallon of water (1 fluid oz. = 2 tablespoons). Do not use household utensils to measure Talstar® P Professional Insecticide. Use the higher rate for heavy pest infestation, quicker knockdown or longer residual control. Retreatment may be nec-

essary to achieve and/or maintain control during periods of high pest pressure. Repeat application is necessary only if there are signs of renewed insect activity. Repeat application should be limited to no more than once per seven days.

**Perimeter Treatment:** Apply to a band of soil and vegetation 6 to 10 feet wide around and adjacent to the structure. Also, treat the foundation of the structure to a height of 2 to 3 feet. Apply 0.33 to 1.0 fluid oz. of Talstar® P Professional per 1,000 square feet in sufficient water to provide adequate coverage (refer to Talstar® P Professional Insecticide Dilution Chart). For sections of foundation that abut non-porous horizontal surfaces, the treated areas must be protected from rainfall and spray from sprinklers or they do not drain into a sewer, storm drain, or curbside gutter (e.g. not to sections that abut driveways or sidewalks that drain into streets).

**Broadcast Treatment of Wood for the Control of Wood-infesting Insects and Nuisance Pests Outside of Structure**
Apply a 0.06% dilution with a fan spray using a maximum pressure of 25 psi. Treatment should be made to thoroughly and uniformly cover the surface but limit excess runoff.

To control wood-infesting insects active inside trees, utility poles and/or fence posts, drill to find the interior infested cavity and inject a 0.06% dilution. To control Bees, Wasps, Hornets, and Yellow-Jackets, apply in late evening when insects are at rest. Aim spray at nest openings in ground, bushes and in cracks and crevices which may harbor nests, saturating nest openings and contacting as many insects as possible.

**Pests Under Slabs**
Infestations of Arthropods, such as Ants, Cockroaches and Scorpions inhabiting under slab area may be controlled by drilling and injecting or horizontal rodding and then injecting 1 gallon of a 0.06% ½ gallon of a 0.12% dilution per 10 square feet (or 2 gallons of a 0.06% dilution or 1 gallon of a 0.12% dilution per 10 linear feet).

## MOSQUITO CONTROL

To control adult mosquitoes outdoors on residential, institutional, public, commercial and industrial buildings, and lawns, ornamentals, parks, recreational areas and athletic fields.

Apply Talstar® P Professional Insecticide for mosquito control at an application rate of 0.33 to 1.0 fluid oz. Talstar® P Professional Insecticide per gallon of water (0.07 to 0.22 lbs bifenthrin/acre), and apply at the rate of one gallon of dilution per 1,000 square feet as a general spray (refer to the Talstar® P Professional Insecticide Dilution Chart). Use the high rate for residual control of mosquitoes. Use this product for control of urban mosquitoes that may potentially transmit malaria and arboviruses (West Nile fever, dengue fever, Eastern equine encephalitis, and St. Louis encephalitis).

Apply as a residual spray to outside surfaces of buildings including but not limited to, exterior siding, foundations, porches, window frames, eaves, patios, garages, refuse dumps, lawns such as grass areas adjacent to or around private homes, duplexes, townhouses, condominiums, house trailers, apartment complexes, carports, fence lines, storage sheds, barns, and other commercial, residential and non commercial structures, soil, trunk of woody ornamentals, trees, shrubs, ground cover, bedding plants, foliage plants, flowers, non-bearing fruit and nut trees urban areas, parks, campsites, athletic fields, playgrounds, recreational and overgrown waste areas, roadsides and other areas where mosquitoes are found. May also be applied to non-bearing crops or perennial crops that will not produce harvestable raw agricultural commodities during the season of application.

Use the high rate for heavy pest infestation, quicker knockdown, or longer residual control. Retreatment may be necessary to achieve and/or maintain control during periods of high pest pressure, or if there are signs of renewed insect activity. For the lower use rates, repeat application should be limited to no more than once per seven days. For the high use rate of 1.0 fluid oz. Talstar® P Professional Insecticide per gallon of water, do not apply more than once per four weeks.

Apply with hand-held and back pack sprayers or mist blowers, ground sprayers, power sprayers, truck mounted hydraulic sprayers or mist blowers. Do not apply by air or with hand held or truck mounted cold aerosol ULV sprayers and thermal fogging devices. For best results apply when the mosquitoes are most active. Application during the cooler hours of the night or early mornings is recommended.

Do not apply more than 1.0 fluid oz. of Talstar® P Professional Insecticide per 1,000 square feet (equivalent to 0.22 lbs. bifenthrin/acre) per application

Do not apply when wind speed exceeds 10 MPH.

## INDOOR USE

For control of Ants, Carpenter Ants, Bedbugs, Bees, Beetles, Biting Flies, Boxelder Bugs, Centipedes, Cicadas, Cockroaches, Crickets, Earwigs, Firebrats, Fleas, Flies, Gnats, Millipedes, Mosquitoes, Moths, Scorpions, Silverfish, Sowbugs (Pillbugs), Spider Mites, Spiders (including Black Widow, Brown Recluse and Hobo Spiders), Springtails, Stink Bugs, Ticks (including Brown Dog Ticks), Vinegar (Fruit) Flies, and Wasps.

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.

Use a 0.02% to 0.06% dilution (0.33 to 1 fluid oz. per gallon of water) for residual pest control in buildings and structures and on modes of transport. Apply either as a crack and crevice, pinstream, spot, coarse, low pressure spray (25 psi or less) or with a paint brush.

Apply as a coarse, low pressure, crack and crevice or spot spray to areas where pests hide, such as baseboards, corners, storage areas, closets, around water pipes, doors and windows, attics and eaves, behind and under refrigerators, cabinets, sinks, furnaces, stoves, the underside of shelves, drawers and similar areas. Do not use as a space spray. Pay particular attention to cracks and crevices.

**Mixing Directions:** See mixing directions in "Pest Control on Outside Surfaces and Around Buildings" section.

Talstar® P Professional Insecticide is to be diluted with water for spray or brush application. Fill sprayer with the desired volume of water and add Talstar® P Professional Insecticide. Close and shake before use in order to insure proper mixing. Mix only the amount of solution needed for the application. Retreatment may be necessary to achieve and/or maintain control during periods of high pest pressure. Repeat application is necessary only if there are signs of renewed insect activity. Limit repeat application to no more than once per seven days.

Talstar® P Professional Insecticide may be converted to a foam and used to treat void spaces, or as a spot spray on vertical or horizontal surfaces where visual marking of application is desired. Use of a foaming agent increases a.i. surface contact time on challenging surfaces and provides visual marking of the application.

**Bedbugs:** Thorough application should be made to crack and crevices where evidence of bed bugs occurs. This includes bed frames, box springs, inside empty dressers and clothes closets and carpet edges, high and low wall moldings and wallpaper edges. Do not use this product on bed linens, pillows, mattresses or clothes. Remove all clothes and other articles from dressers or clothes closets before application. Allow all treated areas to thoroughly dry before use. Not recommended for use as sole protection against bedbugs. If evidence of bedbugs is found in/on mattresses, use products approved for this use.

Use a 0.06% dilution (1 fluid oz. per gallon of water) for residual pest control in buildings and structures and on modes of transport. Apply either as a crack and crevice, pinstream, spot, coarse, low pressure spray (25 psi or less) or with a paint brush.

**Cockroaches, Crickets, Firebrats, Flies, Gnats, Moths, Mosquitoes, Scorpions, Silverfish, Spiders, Ticks**

| |
|---|
| Talstar® P Professional Insecticide will provide up to 1 month residual control of house flies. Length of residual control is dependant upon rate and surface treated. |

Apply as a coarse, low pressure spray to areas where these pests hide, such as baseboards, corners, storage areas, closets, around water pipes, doors and windows, attics and eaves, behind and under refrigerators, cabinets, sinks, furnaces, and stoves, the underside of shelves, drawers and similar areas. Pay particular attention to cracks and crevices.

**Ants:** Apply to any trails, around doors and windows and other places where ants may be found.

**Fleas:**

| |
|---|
| Talstar® P Professional Insecticide will kill fleas for up to 3 months |

Apply as a coarse, low pressure spot or crack and crevice treatment to areas frequented by pets, such as under bedding, rugs, next to furniture. Do not apply Talstar® P Professional Insecticide dilution directly to pets. Treatment must be dry before pet re-entry. Vacuum prior to treatment.

**Boxelder Bugs, Centipedes, Cicadas, Earwigs, Beetles, Millipedes, Pillbugs, Sowbugs, Springtails, and Stink Bugs:** Apply around doors and windows and other places where these pests may be found or where they may enter premises. Check damp areas and drains for pest access. Spray baseboards, storage areas and other locations.

**Spider Mites:** Treat houseplants thoroughly but do not allow run off to occur. Make sure to treat underside of leaves.

**Bees and Wasps**
To control Bees, Wasp, Hornets, and Yellow-Jackets apply a 0.06% dilution. Application should be made in the late evening when insects are at rest. Thoroughly spray nest and entrance and surrounding areas where insects alight. Spray liberally into hiding and breeding places, especially under attic rafters, contacting as many insects as possible. Retreatment may be necessary to achieve and/or maintain control during periods of high pest pressure. Repeat application is necessary only if there are signs of renewed insect activity.

**Important:** Do not apply dilution until location of heat pipes, ducts, water and sewer lines and electrical conduits are known and identified. Caution must be taken to avoid puncturing and injection into these structural elements. Do not apply into electrical fixtures, switches, or sockets.

In the home, all food processing surfaces and utensils in the treatment area should be covered during treatment or thoroughly washed before re-use. Remove pets, birds, and cover aquariums before spraying. Do not permit humans or pets to contact treated surfaces until the spray has dried.



During any overhead applications to overhead interior areas of structures, cover surfaces below with plastic sheeting or similar materials.

Wear protective clothing, unvented goggles, gloves and respirator, when applying to overhead areas or in poorly ventilated areas. Avoid touching sprayed surfaces until spray has completely dried.

## FOR CONTROL OF STORED PRODUCTS PESTS

Including Indian Meal Moths, Rice Moths, Tobacco Moths, Flour Beetles, Lesser Grain Borers, Merchant Grain Beetles, Sawtoothed Grain Beetles, Grain Weevils, Warehouse Beetles, Cigarette Beetles, and Dermestid Beetles, Psocids, and other similar pests. Inspect to locate and remove infested food sources, remove or cover any food items or food serving dishes or utensils prior to treatment. Apply Talstar P Profedssional using a 0.02 to 0.06% dilution, Apply as a coarse, low pressure spray to areas where these pests hide, such as baseboards, corners, storage areas, closets, around water pipes, doors and windows, attics and eaves, behind and under refrigerators, cabinets, sinks, furnaces, and stoves, the underside of shelves, drawers and similar areas. Pay particular attention to cracks and crevices. Do not apply directly to food.

**WAREHOUSES and GROCERY/PET STORES:** Talstar® P Professional Insecticide dilution may be applied as a general surface, spot or crack and crevice treatment in food and nonfood storage warehouses and stores. Apply to all areas that may harbor pests, including under and between pallets, bins, and shelves. Do not apply directly to food, grain bins (interior), or animals.

## FOOD/FEED HANDLING ESTABLISHMENT APPLICATIONS

Applications of this product are permitted in both food/feed and nonfood areas of food/feed handling establishments as a general surface, spot, or crack and crevice treatment.

Food/feed handling establishments are defined as places other than private residences in which exposed food/feed is held, processed, prepared or served. Included also are areas for receiving, storing, packing (canning, bottling, wrapping, boxing), preparing, edible waste storage and enclosed processing systems (mills, dairies, edible oils, syrups) of food. Serving areas where food is exposed and the facility is in operation are also considered food areas.

Permitted non-food areas of use include, garbage rooms, lavatories, entries and vestibules, offices, locker rooms, machine rooms, garages, mop closets and storage (after canning or bottling).

Permitted use sites include: Aircraft (Do not use in aircraft cabins), bakeries, bottling facilities, breweries, buses, cafeterias, candy plants, canneries, dairy product processing plants, food manufacturing plants, food processing plants, food service establishments, granaries, grain mills, hospitals, hotels, industrial buildings, laboratories, meat/poultry/egg processing plants, mobile/motor homes, nursing homes offices, railcars, restaurants, schools, ships, trailers, trucks, vessels, warehouses and wineries.

**General Surface Application:** Do not use this application method in food/feed handling establishments when the facility is in operation or foods/feeds are exposed. Do not apply directly to food products. Cover or remove all food processing and/or handling equipment during application. After application in food processing plants, bakeries, cafeterias and similar facilities, wash all equipment, benches, shelving and other surfaces which food will contact. Clean food handling or processing equipment and thoroughly rinse with clean, fresh water.

**Spot, Crack and Crevice Application:** Spot or crack and crevice applications may be made while the facility is in operation; however, food should be covered or removed from area being treated. Do not apply directly to food. For this application a "spot" will not exceed 2 ft²

## ANIMAL CONFINEMENT FACILITIES, LIVESTOCK PREMISES CONFINED ANIMAL FEEDING OPERATIONS, and KENNELS

Controls pests of poultry/livestock facilities and kennels, including biting flies, filth-breeding flies, fleas, litter beetles, hide beetles, bed bugs, mites, and ticks. Apply as a general surface (including directed spray) and/or crack and crevice treatment. Control is enhanced when interior and exterior perimeter applications are made in and around the livestock, poultry, or pet housing structures. Normal cleaning practices of the structure also must be followed along with applications of Talstar P Professional Insecticide to effectively control crawling and flying insect pests.

For occupied areas of poultry/livestock facilities and kennels, apply to indoor cracks and crevices only. Exterior applications to walls and foundation perimeters can help prevent interior infestations of flying and crawling insect pests. Apply Talstar P Professional Insecticide at a rate equivalent to 0.33 to 1 fl. oz per 1000 sq. feet.

For unoccupied areas of poultry/livestock facilities and kennels, apply to floors, vertical and overhead surfaces where crawling or flying insect pests may be present. Feeders, waterers, and feed carts should be covered before application to prevent contamination. Do not apply to milk rooms. Pay attention to animal areas including stanchions, pipes, windows, doors, and areas where insect pests hide or congregate. Exterior applications to walls and foundation perimeters can help prevent interior infestations of flying and crawling insect pests. Apply Talstar P Professional Insecticide at a rate equivalent to 0.33 to 1 fl. oz per 1000 sq. feet. Use sufficient finished volume to penetrate leaf litter, thatch, mulch, or porous surfaces.

To control bed bugs, mites and ticks in animal facilities, treat cracks/crevices, walls, posts, nest boxes, and mobile side curtains. Do not apply Talstar P Professional Insecticide directly to animals. To control bedbugs, use 0.5 to 1 fl. oz per 1000 sq. ft. Use the higher rate of application on painted and non-porous surfaces.

For adult fly control in and around animal facilities, spray application should target areas where flies will rest, such as the ceiling, rafters, and trusses. Also treat windows, interior and exterior walls and supports, fences, and vegetation. Talstar P Professional Insecticide dilution may be sprayed on manure in areas where fly larvae are abundant and the area cannot be cleaned.

For poultry houses, apply to floor area (birds grown on litter) or to walls, posts, and cage framing (birds grown in cages). Application should also be made into cracks and crevices around insulation. Reapply after each growout or sanitization procedure, but not more frequently than every 8 weeks. Indoor control can be enhanced by making perimeter treatments around the outside of building foundations to prevent immigrating adult beetles. Apply in a uniform band 2 to 3 feet up and 6 to 10 feet out from the structure. Maintaining a year-round treatment program will prevent background populations from reaching problem levels.

To control beetles in houses containing birds grown on litter, apply Talstar P Professional Insecticide at a rate equivalent to 0.33 to 1 fl. oz per 1000 sq. feet to litter after birds are removed and during tilling. If litter is removed and replaced with fresh litter, apply Talstar P Professional Insecticide at a rate equivalent to 0.33 to 1 fl. oz per 1000 sq. feet to bare soil or concrete, and treat new litter after it is spread. Apply spray to inside walls, posts, and exterior perimeter. Reapply between each flock.

To control beetles in broiler-breeder houses, apply as directed above for litter and soil/floor treatment.

To control beetles in caged-layer houses, do not treat accumulated manure, as it will likely disrupt natural enemies that control fly breeding. Instead, treat the perimeter of the manure at a rate equivalent to 0.33 to 1 fl. oz Talstar P Professional Insecticide per 1000 sq. feet. Pit walls, posts, and exterior of structure should also be sprayed. Reapply between each flock.

Allow Talstar P Professional Insecticide treatment to dry before applying disinfectants.

**DO NOT** apply Talstar P Professional Insecticide as a general surface spray when animals are present in the facility. Allow applications to dry before restocking the facility. Treatment may be made to cracks and crevices when animals are present.

**DO NOT** apply Talstar P Professional Insecticide to any animal feed, water, or watering equipment.

**DO NOT** contaminate any animal feed, food, or water in and around livestock, poultry, or pet housing when making applications.

## Foam Applications

Talstar® P Professional Insecticide may be converted to a foam and used to treat void spaces, or as a spot spray on vertical or horizontal surfaces where visual marking of application is desired. Use of a foaming agent increases a.i. surface contact time on challenging surfaces and provides visual marking of the application. Ensure that the foaming agent is approved for food surface/area contact use.

# Specific Pest Control Applications

**Underground Services** such as: wires, cables, utility lines, pipes, conduits, etc. Services may be within structures or located outside structures, in right-of-ways or to protect long range (miles) of installations of services.

Soil treatment may be made using 0.06 to 0.12% Talstar® P Professional Insecticide dilution to prevent attack by Termites and Ants.

Apply 2 gallons of dilution per 10 linear feet to the bottom of the trench and allow to soak into the soil. Lay services on the treated soil and cover with approximately 2 inches of fill soil. Apply another 2 gallons per 10 linear feet over the soil surface to complete the treatment barrier. In wide trenches, only treat the soil in the area near the services. It is important to establish a continuous barrier of treated soil surrounding the services.

Where soil will not accept the above labeled volume, 1 gallon of 0.12% Talstar® P Professional Insecticide may be used per 10 linear feet of trench both to the bottom of the trench and over the soil on top of the services.

Finish filling the trench with treated fill soil. The soil where each service protrudes from the ground may be treated by trenching/rodding of no more than 1 to 2 gallons of dilution into the soil.

**Precautions:**
Do not treat electrically active underground services.

**Posts, Poles, and Other Constructions**
Create an insecticidal barrier in the soil around wooden constructions such as signs, fences and landscape ornamentation by applying a 0.06% dilution.

Previously installed poles and posts may be treated by sub-surface injection or treated by gravity-flow through holes made from the bottom

of a trench around the pole or post. Treat on all sides to create a continuous insecticidal barrier around the pole. Use 1 gallon of dilution per foot of depth for poles and posts less than six inches in diameter. For larger poles, use 1.5 gallons of dilution per foot of depth. Apply to a depth of 6 inches below the bottom of the wood. For larger constructions, use 4 gallons per 10 linear feet per foot of depth.

**Treatment of Wood-in-Place for Control of Wood-Infesting Insects:** (Localized Areas in Structure) For the control of insects such as Termites, Ants, Carpenter Ants, and wood-infesting beetles such as Old House Borer and Powder Post in localized areas of infested wood in and around structures, apply a 0.06% dilution to voids and galleries in damaged wood and in spaces between wooden members of a structure and between wood and foundations where wood is vulnerable. Paint on or fan spray applications may also be used. Plastic sheeting must be placed immediately below overhead areas that are spot treated except for soil surfaces in crawl spaces. Application may be made to inaccessible areas by drilling, and then injecting dilution with a crack and crevice injector into the damaged wood or void spaces. This type of application is not intended to be a substitute for soil treatment, mechanical alteration or fumigation to control extensive infestation of wood-infesting insects.

Termite carton nests in trees or building voids may be injected with 0.06% dilution. Multiple injection points to varying depths may be necessary. It is desirable to physically remove carton nest material from building voids when such nests are found.

**Pest Control in Crawlspaces and Voids:** Broadcast Talstar® P Professional Insecticide at 0.02% to 0.06% to all surfaces in crawlspace and/or void to control ants, fleas, roaches, scorpions, or other arthropods. This treatment is not intended as a substitute for termite control. Treatment should be made to thoroughly and uniformly cover the surface but limit excess runoff. Keep children and pets off surface until dry.

## SUBTERRANEAN TERMITE CONTROL
### Directions For Use

All pesticide handlers (mixers, loaders and applicators) must wear long-sleeved shirt and long pants, socks, shoes and chemical-resistant gloves. After the product is diluted in accordance with label directions for use, and/or when mixing and loading using a closed spray tank transfer system (such as an in-line injector system) , shirt, pants, socks, shoes and waterproof gloves are sufficient. In addition, all pesticide handlers must wear a respiratory protection device[1] when working in a non-ventilated space. All pesticide handlers must wear protective eyewear when working in non-ventilated space or when applying termiticide by rodding or sub-slab injection.

[1]Use one of the following NIOSH approved respirator with any R, P or HE filter

or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE prefilter.

When treating adjacent to an existing structure, the applicator must check the area to be treated, and immediately adjacent areas of the structure, for visible and accessible cracks and holes to prevent any leaks or significant exposures to persons occupying the structure. People present or residing in the structure during application must be advised to remove their pets and themselves from the structure if they see any signs of leakage. After application, the applicator is required to check for leaks. All leaks resulting in the deposition of termiticide in locations other than those prescribed on this label must be cleaned up prior to leaving the application site. Do not allow people or pets to contact contaminated areas or to reoccupy contaminated areas of the structure until the clean-up is completed

The use of this product prevents and controls termite infestations in and around structures and constructions.

The insecticidal dilution must be adequately dispersed in the soil to establish a barrier between the wood and the Termites in the soil. As a good practice: 1) all non-essential wood and cellulose containing materials, should be removed from around foundation walls, crawl spaces, and porches; 2) eliminate termite access to moisture by repairing faulty plumbing and/or construction grade. Soil around untreated structural wood in contact with soil should be treated as described below.

To establish an effective insecticidal barrier with this product the service technician must be familiar with current termite control practices such as: trenching, rodding, sub-slab injection, coarse fan spraying of soil surfaces, crack and crevice (void) injection, excavated soil treatment, and brush or spray applications to infested or susceptible wood. These techniques must be correctly employed to prevent or control infestations by subterranean termites such as: *Coptotermes, Heterotermes, Reticulitermes* and *Zootermopsis*. The biology and behavior of the species involved should be considered by the service technician in determining which control practices to use to control or prevent the termite infestation.

Choice of appropriate procedures should include consideration of such variable factors as the design of the structure, location of heating, ventilation, and air conditioning (HVAC) systems, water table, soil type, soil compaction, grade conditions, and location and type of domestic water supplies and utilities.

For advice concerning current control practices with relation to specific local conditions, consult resources in structural pest control and state cooperative extension and regulatory agencies.

**Important:** Contamination of public and private water supplies must be avoided by following these precautions: Use anti-backflow equipment or procedures to prevent siphonage of insecticide into water supplies. Do not contaminate cisterns or wells. Do not treat soil that is water saturated or frozen or in any conditions where runoff or movement from the treatment area (site) is likely to occur. Consult state and local specifications for recommended distances of wells from treated areas, or if such regulations do not exist, refer to Federal Housing Administration Specifications (H.U.D.) for guidance.

**Note:** Crawl spaces are considered inside of the structure.

**Critical Areas:** Critical areas include areas where the foundation is penetrated by utility services, cracks and expansion joints, bath traps and areas where cement constructions have been poured adjacent to the foundation such as stairs, patios and slab additions.

**Structures with Wells/Cisterns Inside Foundations**
Structures that contain wells or cisterns within the foundation of a structure can only be treated using the following techniques:

1. Do not treat soil while it is beneath or within the foundation or along the exterior perimeter of a structure that contains a well or cistern. The treated backfill method must be used if soil is removed and treated outside/away from the foundation. The treated backfill technique is described as follows:
   a. Trench and remove soil to be treated onto heavy plastic sheeting or similar material or into a wheelbarrow.
   b. Treat the soil at the rate of 4 gallons of dilution per 10 linear feet per foot of depth of the trench, or 1 gallon per 1.0 cubic feet of soil. See "Mixing Directions section of the label. Mix thoroughly into the soil taking care to contain the liquid and prevent runoff or spillage.
   c. After the treated soil has absorbed the dilution, replace the soil into the trench.
2. Treat infested and/or damaged wood in place using an injection technique such as described in the "Control of Wood Infesting Insects" section of this label.

**Structures with Adjacent Wells/Cisterns and/or Other Water Bodies**
Applicators must inspect all structures with nearby water sources such as wells, cisterns, surface ponds, streams, and other bodies of water and evaluate, at a minimum, the treatment recommendations listed below prior to making an application

1. Prior to treatment, if feasible, expose the water pipe(s) coming from the well to the structure, if the pipe(s) enter the structure within 3 feet of grade.
2. Prior to treatment, applicators are advised to take precautions to limit the risk of applying the termiticide into subsurface drains that could empty into any bodies of water. These precautions include evaluating whether application of the termiticide to the top of the footer may result in contamination of the subsurface drain. Factors such as depth to the drain system and soil type and degree of compaction should be taken into account in determining the depth of treatment.
3. When appropriate (i.e., on the water side of the structure), the treated backfill technique (described above) can also be used to minimize off-site movement of termiticide.

Prior to using this technique near wells or cisterns, consult state, local or federal agencies for information regarding approved treatment practices in your area.

**Application Rate:**
Use a 0.06% dilution for subterranean termites. For other pests on the label use specific listed rates.

**Mixing Directions:** Mix the termiticide use dilution in the following manner: Fill tank 1/4 to 1/3 full. Start pump to begin by-pass agitation and place end of treating tool in tank to allow circulation through hose. Add appropriate amount of Talstar® P Professional Insecticide. Add remaining amount of water. Let pump run and allow recirculation through the hose for 2 to 3 minutes.

Talstar® P Professional Insecticide may also be mixed into full tanks of water, but requires substantial agitation to insure uniformity of the dilution.

To prepare a 0.06% water dilution, ready to use, dilute 3 quarts of Talstar® P Professional Insecticide with 99.25 gallons of water.

**Mixing:**
For the desired application rate, use the chart below to determine the amount of Talstar® P Professional Insecticide for a given volume of finished dilution:



**Amount of Talstar® P Professional Insecticide**
(Gallons except where noted)

| Dilution Concentration | Amount of Talstar P Professional | Amount of Water | Desired Gallons of Finished Dilution |
|---|---|---|---|
| **0.06%** | 1 oz | 127 oz. | 1 |
| | 5 oz | 4.9 | 5 |
| | 10 oz. | 9.9 | 10 |
| | 25 oz. | 24.8 | 25 |
| | 1.5 qt. | 49.6 | 50 |
| | 2.25 qt. | 74.4 | 75 |
| | 3 qt | 99.25 | 100 |
| **0.12%*** | 2 oz | 126 oz. | 1 |
| | 10 oz | 4.9 | 5 |
| | 19.5 oz. | 9.8 | 10 |
| | 1.5 qt. | 24.6 | 25 |
| | 3 qt. | 49.2 | 50 |
| | 4.5 qt. | 73.8 | 75 |
| | 6 qt | 98.5 | 100 |

Common units of measure:
1 pint = 16 fluid ounces (oz.)
1 quart = 2 pints = 4 cups = 32 fluid ounces (oz.)

*For termite applications, only use this rate in conjunction with the application volume adjustments as listed in the section below or in the foam or underground service application sections.

**Application Volume:** To provide maximum control and protection against termite infestation apply the specified volume of the finished water dilution and active ingredient as set forth in the directions for use section of this label. If soil will not accept the labeled application volume, the volume may be reduced provided there is a corresponding increase in concentration so that the amount of active ingredient applied to the soil remains the same.

Note: Large reductions of application volume reduce the ability to obtain a continuous barrier. Variance is allowed when volume and concentration are consistent with label directed rates and a continuous barrier can still be achieved.

Where desirable for pre and post construction treatments, the volume of the 0.12% dilution may be reduced by ½ the labeled volume. See Volume Adjustment Chart below.

**Note:** When volume is reduced, the hole spacing for subslab injection and soil rodding may require similar adjustment to account for lower volume dispersal of the termiticide in the soil.

**Volume Adjustment Chart**

| Rate (% dilution) | 0.06% | 0.12% |
|---|---|---|
| Volume allowed | | |
| Horizontal (gallons dilution/10 $ft^2$) | 1.0 gallons | 0.5 gallons |
| Vertical (gallons dilution/10 lin. ft.) | 4.0 gallons | 2.0 gallons |

**After Treatment:** All holes in commonly occupied areas into which Talstar® P Professional Insecticide has been applied must be plugged. Plugs must be of a non-cellulose material or covered by an impervious, non-cellulose material.

## Pre-Construction Subterranean Termite Treatment

The treatment site must be covered prior to a rain event in order to prevent run-off of the pesticide into non-target areas.

The applicator must either cover the soil him/herself or provide written notification of the above requirement to the contractor on site and to the person commissioning the application (if different than the contractor). If notice is provided to the contractor or the person commissioning the application, then they are responsible under FIFRA to ensure that: 1) if the concrete slab cannot be poured over the treated soil within 24 hours of application the treated soil is covered with a waterproof covering (such as polyethylene sheeting), and 2) the treated soil is covered if precipitation is predicted to occur before the concrete slab is scheduled to be poured.

Do not treat soil that is water-saturated or frozen.

Do not treat when raining.

Do not allow treatment to runoff from the target area.

Do not apply within 10 feet of storm drains. Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds).

Do not make on-grade applications when sustained wind speeds are above 10 mph (at application site) at nozzle end height.

**Pre-Construction Treatment: Do not apply at a lower dosage and/or concentration than specified on this label for applications prior to the installation of the finished grade.**

When treating foundations deeper than 4 feet, apply the termiticide as the backfill is being replaced, or if the construction contractor fails to notify the applicator to permit this, treat the foundation to a minimum depth of 4 feet after the backfill has been installed. The applicator must trench and rod into the trench or trench along the foundation walls and around pillars and other foundation elements, at the rate prescribed from grade to a minimum depth of 4 feet. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing. However, in no case should a structure be treated below the footing.

Effective pre-construction subterranean termite control is achieved by the establishment of vertical and/or horizontal insecticidal barriers using 0.06% dilution of Talstar® P Professional Insecticide.

**Horizontal Barriers**
Create a horizontal barrier wherever treated soil will be covered by a slab, such as footing trenches, slab floors, carports, and the soil beneath stairs and crawl spaces.

For a 0.06% rate apply 1 gallon of dilution per 10 square feet, or use 1 fluid ounce of Talstar® P Professional Insecticide per 10 square feet in sufficient water (no less than 1/2 gallon or more than 2 gallons) to provide thorough and continuous coverage of the area being treated.

If the fill is washed gravel or other coarse material, it is important that a sufficient amount of dilution be used to reach the soil substrate beneath the coarse fill.

Applications shall be made by a low pressure spray (less than 50 p.s.i.) using a coarse spray nozzle. If slab will not be poured the same day as treatment, cover treated soil with a water-proof barrier such as polyethylene sheeting. This is not necessary if foundation walls have been installed around the treated soil.

**Vertical Barriers**
Vertical barriers must be established in areas such as around the base of foundations, plumbing, utility entrances, back-filled soil against foundation walls and other critical areas.

For a 0.06% rate, apply 4 gallons of dilution per 10 linear feet per foot of depth or 4 fluid ounces of Talstar® P Professional Insecticide 10 linear feet per foot of depth from grade to top of footing in sufficient water (not less than 2 gallons or more than 8 gallons) to ensure complete coverage.

a. When trenching and rodding into the trench, or trenching, it is important that dilution reaches the top of the footing. Rod holes must be spaced so as to achieve a continuous termiticide barrier, but in no case more than 12 inches apart.
b. Care should be taken to avoid soil wash-out around the footing.
c. Trenches need not be wider than 6 inches. Dilution should be mixed with the soil as it is being replaced in the trench.
d. For a monolithic slab, an inside vertical barrier may not be required.

Hollow block voids may be treated at a rate of 2 gallons of dilution per 10 linear feet so that the dilution will reach the top of the footing.

Prior to each application, applicators must notify the general contractor, construction superintendent, or similar responsible party, of the intended termiticide application and intended sites of application and instruct the responsible person to notify construction workers and other individ-

## Post Construction Subterranean Termite Treatment

Use a 0.06% dilution for post-construction treatment. Post-construction soil applications shall be made by injection, trenching and rodding into the trench or trenching, or coarse fan spray with pressures not exceeding 25 p.s.i. at the nozzle. Care should be taken to avoid soil wash-out around the footing.

Do not apply dilution until location of wells, radiant heat pipes, water and sewer lines and electrical conduits are known and identified. Caution must be taken to avoid puncturing and injection into these elements.

**Foundations:** For applications made after the final grade is installed, the applicator must trench and rod into the trench or trench along the foundation walls and around pillars and other foundation elements, at the rate prescribed from grade to the top of the footing. When the footing is more than four (4) feet below grade, the applicator must trench and rod into the trench or trench along the foundation walls at the rate prescribed to a minimum depth of four feet. The actual depth of treatment will vary depending on soil type, degree of compaction, and location of termite activity. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing. However, in no case should a structure be treated below the footing.

**Slabs**
Vertical barriers may be established by sub-slab injection within the structure and trenching and rodding into the trench or trenching outside at the rate of 4 gallons of dilution per 10 linear feet per foot of depth. Special care must be taken to distribute the treatment evenly. Treatment should not extend below the bottom of the footing.

Treat along the outside of the foundation and where necessary beneath the slab on the inside of foundation walls. Treatment may also be required beneath the slab along both sides of interior footing-supported walls, one side of interior partitions and along all cracks and expansion joints. Horizontal barriers may be established where necessary by long-rodding or by grid pattern injection vertically through the slab.

a. Drill holes in the slab and/or foundation to allow for the application of a continuous insecticidal barrier.

**Recruit HD termite bait must be used in conjunction with a service provided by a pest management professional licensed by the state to apply termite control products.**

Dow AgroSciences

# Recruit® HD

**Termite Bait**

**A durable termite bait for use in an integrated management system for protection of structures against subterranean termites**

EPA Reg. No. 62719-608
900-018048 / 00331614

**Refer to label booklet for Directions for Use.**

®Trademark of Dow AgroSciences LLC

**Produced for**
**Dow AgroSciences LLC**
**9330 Zionsville Road**
**Indianapolis, IN 46268**

Active Ingredient: noviflumuron ..... 0.5%
Other Ingredients ..... 99.5%
Total ..... 100.0%

## Keep Out of Reach of Children

**Notice:** Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994.

## Environmental Hazards

This product is highly toxic to aquatic invertebrates and possibly to fish. Do not allow the bait or its noviflumuron contents to be washed into a body of water containing aquatic life, such as a pond or stream. Do not use, handle or tamper with the bait in a manner inconsistent with this label.

## Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

### Storage and Disposal

Do not contaminate water, food or feed by storage or disposal.
**Pesticide Storage:** Store in original container in a dry storage area.
**Pesticide Disposal:** Product not disposed of by use according to label directions shall be wrapped in paper and placed in a trash can.
**Container Handling:** Do not break open, cut into or remove protective wrapper from product until ready for use.

## General Information

Recruit® HD termite bait contains an insect growth regulator (IGR) noviflumuron that prevents successful molting and development of subterranean termites. This disruption of development causes a decline of the termite colony to the point where the colony can no longer sustain itself and is eliminated.

Recruit HD is used in the Sentricon® Colony Elimination System for prevention and elimination of subterranean termite colonies, including *Coptotermes*, *Reticulitermes*, and *Heterotermes* spp., and is intended to form the basis of an on-going program providing structural protection against subterranean termites. Use of this termite baiting system involves the installation of Recruit HD for delivery of noviflumuron coupled with concurrent monitoring and baiting of the site. When Recruit HD is inspected and replenished per label instructions, it provides on-going prevention and elimination of termite colonies.

Target sites for this system can include buildings, fences, utility poles, decking, landscape plantings and trees, or other features that could be damaged by termite feeding and foraging activity. Recruit HD can be used on the inside or outside of foundation walls of crawl space areas, or through access holes made through concrete and asphalt if adequate soil is not accessible and such action is warranted. Recruit HD may be used in lieu of a pre-construction termiticide (chemical barrier) treatment as a means of preventing termite infestation of new structures.

## Installation of Recruit HD

Install Sentricon stations around the target site at intervals not to exceed 20 feet where soil access is not restricted. If the structural foundation is known to have been previously treated with a soil-applied termiticide, do not install Sentricon stations in the soil closer than 18 inches from the foundation.

Based upon the professional evaluation of the installer, install additional Sentricon stations in areas conducive to termite activity in proximity to the structure. Examples of areas to be evaluated include:

- locations near visible termite activity (foraging tubes; termite infested plants, wood, and other materials)
- bath traps
- moist soil in shaded areas
- irrigation sprinkler heads
- roof downspouts and other moist areas
- planting beds or other areas with plant root systems

If present, remove shrink wrap from Recruit HD. Place Recruit HD in each Sentricon station upon station installation. Recruit HD may also be placed in previously installed Sentricon stations upon removal of the existing monitoring device or bait.

## Service of Recruit HD

The purpose of the service phase is to detect the presence of subterranean termites or signs of termite activity in Recruit HD to monitor for termites, to aid Recruit HD replacement, and to confirm colony elimination. This procedure does not attract termites from other locations.

Recruit HD is inspected manually for detection of termites, termite activity, or to identify the need to replace Recruit HD. If Recruit HD is more than 1/3 depleted, replace it with new Recruit HD. If possible, gently tap the termites from the used Recruit HD into the Sentricon station containing the new Recruit HD, being careful to not injure the termites. Introduce these termites after the new Recruit HD has been installed into the Sentricon station.

Sentricon stations containing Recruit HD are inspected and serviced on at least an annual basis. When annual service is being provided, an annual inspection date must be assigned for each structure. Stations must be inspected and serviced at intervals not exceeding 30 days beyond the annual inspection date unless unfavorable conditions exist. Unfavorable conditions include frozen or water-saturated soil or normal seasonal decline in subterranean termite foraging activity that may temporarily disrupt feeding on Recruit HD. Do not allow more than fifteen months to elapse between inspections. Seasonal effects on termite activity vary geographically, but feeding activity typically declines during periods when the local historical average daily temperature falls below 50°F. Inspection and servicing may be suspended during these periods; however, do not allow more than fifteen months to elapse between inspections. Refer to National Weather Service data or contact Dow AgroSciences for information regarding local historical average daily temperature.

## Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, to the extent permitted by law, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

## Warranty Disclaimer

Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. To the extent permitted by law, Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

## Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Lack of performance or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. To the extent permitted by law, all such risks shall be assumed by buyer.

## Limitation of Remedies

To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

To the extent permitted by law, Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. To the extent permitted by law, in no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or Limitation of Remedies in any manner.

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EPA accepted 04/27/11

NOTES:

## TERMS TO KNOW

| | |
|---|---|
| **Acute Toxicity** | a rapid response of the body, often within minutes or hours, to a single sufficiently high exposure of a pesticide or other chemical, and which brings about rapid symptoms of poisoning. |
| **ANSI** | a coordinating organization of various trade, technical, professional, and consumer groups who develop voluntary standards for hazardous industrial chemicals. |
| **Chronic Toxicity** | injury or illness that can result from repeated exposures, over time, to doses of some pesticides. |
| **Hazard** | is the risk of harmful effects from pesticides. The hazard of a pesticide depends on the toxicity of the pesticide (highly toxic, very toxic, slightly toxic) and the length of time, exposure, that the pesticide is in, or, on your body. |
| **Hazardous Substance** | any material that poses a threat to human health and/or the environment. |
| **Incompatibility** | pesticides that should be kept apart due to hazards involved if they come into direct contact with each other. |
| **OSHA** | The federal agency responsible for enforcing the regulations related to safety and health in the workplace. |

## Physical and Chemical Hazards

This part of the pesticide label will inform you of any special fire, explosion or chemical hazards the product may have. This information is especially valuable when storing pesticides as it will indicate whether the pesticide is likely to explode or burn rapidly if stored near an electric heater or gas furnace. This section will also provide instructions about the best conditions to store the pesticide and if it should be stored apart from other pesticides or chemicals**.**

Detailed information on physical and chemical hazards, as well as other hazards of pesticides can be found on Safety Data Sheets.

## Safety Data Sheets (SDS)

If there are pesticides in your workplace, you need to know about **Safety Data Sheets (SDS).**

Safety Data Sheets provide valuable information about pesticide hazards. These sheets are prepared by manufacturers and must be made available to every person selling, storing, or handling pesticides. **YOUR LICENSEE OR SUPERVISIOR MUST HAVE AN SDS FOR EACH PESTICIDE YOU HANDLE.**

SDS are available for every labeled pesticide and are available from the pesticide manufacturer or pesticide supplier.

Several years age the **Occupational and Safety Administration (OSHA)** adopted a single form for the SDS developed by the **American National Standards Institute (ANSI)** and it is recognized internationally. This form includes 16 - sections as outlined in this unit.

## Pesticide Hazards Information

Several pesticide manufacturers currently use the new **ANSI** format because it is easier to find and use information regarding the potential hazards of pesticides. It is also the form used for instruction in this unit.

**OSHA developed the SDS form as part of the Hazard Communication Standard, or Right to Know regulation. They wanted to make sure you had one easy reference for every sort of information on a hazardous substance.**

The sections of the **ANSI** SDS are discussed below. As you read about the different sections of a SDS, refer to the **SAGA** insecticide SDS at the end of this unit.

Here are the sections of the SDS format.

**Section 1.**
**Chemical Product and Company Identification**
The SDS begins with the pesticide's brand name (same as on its label) plus the name, address, and phone number of the company that makes or distributes the pesticide.
The phone number is very useful should you need additional information regarding the pesticide or require assistance in an emergency.

**If the active ingredient has a common name, you'll find it in Section 1.**

**Section 2.**
**Composition and Information on Ingredients**
This section lists any ingredients that **OSHA** has identified as hazardous.

**Section 3. lists specific possible health hazards that could happen to you if you're exposed to the pesticide.**

**Section 3.**
**Hazards Identifications**
Working with pesticides may present the risk of exposure to that pesticide. The SDS identifies these possible health hazards.

| POSSIBLE HEALTH HAZARDS | |
|---|---|
| **Typical exposure route:** | A pesticide can enter your body through contact with your eyes, skin, by inhaling a pesticide vapor, or by ingestion. This may happen when someone handles a pesticide and fails to wash their hands before eating or using tobacco.<br>**Acute health effects:** these show up right after exposure to the pesticide. Examples include eye or skin irritation.<br>**Chronic health effects:** such as cancer or some skin conditions, can result from exposure long ago, or repeated exposures over time. |
| **Length of exposure:** | Defines safe exposure limits, without PPE, when handling the pesticide. |
| **Body organs affected:** | Medical conditions that can be made worse by exposure, such as high blood pressure or asthma, and how specific organs of the body may be affected. |

**Section 4.**
**First Aid Measures**
This section provides information on what to do if someone is exposed to the pesticide. The SDS may suggest basic first aid measures until medical help arrives.

**If the pesticide could make an existing medical condition like asthma worse, Section 4.0 will state that, too. If the pesticide is believed to be a carcinogen, that will also be listed.**

**Section 5.**
**Fire Fighting Measures**
This section explains how likely the pesticide is to catch fire --- and under which circumstances. It may cover the flash point (temperature at which the substance could give off vapors that would burn), reactions that could cause a fire or explosion, and how likely fires are to start or spread quickly.

**Section 5.0 also tells you what type of fire extinguisher to use --- ABC, CO2, foam, etc., to put out a fire and if there are any special hazards or fire-fighting procedures to follow**.

**Section 6.**
**Accidental Release**
This section helps prevent harm to people or the environment in case the substance spills, leaks, or is released into the air. In this section, you will be instructed on how to contain a spill or leak, what cleanup procedures are required, and what safety precautions should be taken.

**Section 7.**
**Handling and Storage**
This section provides information on how to handle and store pesticides to reduce the risk of accidents or exposure. Depending on the chemical, it may include tips such as avoiding contact with skin or eyes, using only in a well-ventilated area, or to store in a dry place.

**Section 8.**
**Exposure Controls / Personal Protection**
This section focuses on which personal protective clothing and equipment will prevent exposure to the pesticide. It details the eye and face protection (glasses, goggles, face shield, etc.), skin protection (gloves, chemical-resistant suits), and respiratory protection (respirator) you need. Things like taking a shower after working with the pesticide, or washing work clothes may be recommended to lower your risk of exposure to the pesticide.

**Guidelines and/or requirements specifying the correct type(s) of protective equipment are found in Section 8. Although not required to be on every label, protective clothing and equipment guidelines are commonly found on an SDS for the safety of the applicator. The toxicity of the pesticide influences the selection of the protective clothing and equipment.**

**Section 9.**
**Physical and Chemical Properties**
The physical and chemical properties listed in this section help you identify the type and degree of hazard to the pesticide. Table 7.1 lists some of the physical and chemical properties.

## Table 7.1

| Physical and Chemical Properties | |
|---|---|
| **Normal appearance** | Changes in appearance may indicate decomposition. |
| **Appearance / Odor** | Changes in appearance and odor may indicate decomposition. This information will help you recognize anything different and possible dangerous if stored for long periods. |
| **Physical state** | Solid, liquid or gas. |
| **Vapor pressure** | The higher the vapor pressure, the faster the pesticide will evaporate and put vapors into the air. |
| **Boiling, melting, and freezing points** | The temperature at which a potentially dangerous change in the pesticide's state can take place, such as a liquid to a solid or liquid to a gas. |
| **Solubility in water** | How much of the pesticide will dissolve in water (insoluble, slightly soluble, or highly soluble.) |
| **Specific gravity or density** | Water has a density of 1.0. Pesticides with a density below 1.0 will float on top of the water, and those above 1.0 will sink. |
| **Flammability** | Some pesticides catch fire easily. Fire fighting measures may be found in this section. |

**Section 10.**
**Stability and Reactivity**
Section 10 alerts you to conditions that could cause the chemicals to have a potentially hazardous reaction. You will find out about the pesticide stability, and its incompatibility to other pesticides or to air or water.

**Certain pesticides are listed under Stability and Reactivity as "incompatible in alkaline media". This means that a pesticide mixed in water having a pH greater than 7.6, as an example, may result in loss of efficacy and a possible loss of pesticidal activity against pests.**

**Section 11.**
**Toxicological Information**
This section explains the procedures and results of the pesticide's tests for the pesticide's health hazards.

**Section 12.**
**Ecological Information**
This section focuses on the effects of the pesticide when released into the environment. You may learn about the chemical's effect on fish, plants, and birds or how long the pesticide remains hazardous once it's released in the environment.

**Section 13.**
**Disposal Consideration**
This section explains how the chemical is classified and identified for proper disposal. Any special instructions or limitations about disposal are provided here.

**Section 14.**
**Transport Information**
This section provides essential shipping information. You will find the **Department of Transportation (DOT)** substance name and description, hazard class, identification number, etc.

**Section 15.**
**Regulatory Information**
This section discusses **OSHA, US EPA,** or other regulations that apply to the pesticide.

**Section 16.**
**Other Information**
The SDS may contain any other information about the pesticide that could be useful. This may include information on SDS revisions and on the health, flammability, and reactivity hazards associated with this pesticide.

As can be readily seen, a SDS can provide significant information that you need to know to work safely with pesticides. *But it can't do it all!* **You** must know where the SDS's are kept, to read them, and follow their instructions whenever in doubt on how to protect yourself and others**.**

# TEST YOUR UNDERSTANDING

## MULTIPLE CHOICE

Refer to the **Premise Pro Insecticide** SDS to answer questions 7.1 - 7.5.

7.1 The Hazards Identifications section of a SDS provides information on:
a. essential shipping information
b. compatibility with other pesticides
c. possible health hazards
d. how long the pesticide remains hazardous once it's released in the environment.

7.2 The common name of **Premise Pro Insecticide** is:
a. carbaryl
b. carbofuran
c. imidacloprid
d. permethrin

7.3 Which of the following is a physical property of **Premise Pro Insecticide**?
a. has an irritating odor
b. white or light beige in color
c. forms a very alkaline solution
d. may cause a milk skin rash

7.4 Which of the following statements about **Premise Pro Insecticide** is accurate?
a. rapidly breaks down in direct sunlight
b. poses no threat to health of aquatic invertebrates
c. can accumulate in soil if applied repeatedly to same area
d. moderately mobile in soils

7.5 The acute oral LD50 of **Premise Pro Insecticide** indicates it is:
a. an extremely hazardous material
b. an insect growth inhibitor
c. moderately toxic
d. corrosive

## FILL-IN THE BLANK

Complete each statement with the appropriate word(s).

7.6 SDS stands for S_____ D_____ S_____.

7.7 Pesticide manufacturers must provide an SDS for each _____.

7.8 The licensee must have an SDS for each pesticide you _____.

7.9 You can be exposed to a pesticide by skin or eye contact, swallowing, or _____ the pesticide.

7.10 Always read the _____ before starting any job involving a new pesticide or pesticide formulation.

## TRUE OR FALSE

Read each question. Decide if the statement is true (**T**) or false (**F**). Circle your answer.

7.11 Pesticide manufacturers are required to report all physical and health hazards of any pesticide they make. T F

7.12 The label and the SDS will tell you if certain personal protective equipment should be worn when an pesticide is being used. T F

7.13 Each SDS contains information on emergency first-aid treatment for exposure victims.
T F

7.14 Chronic effects from exposure to a pesticide occur immediately.
T F

7.15 An SDS does not provide spill control instructions.
T F

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

| | |
|---|---|
| _____ | _____ |
| **Registered Technician Trainee** | **Date** |
| _____ | _____ |
| **Designated Trainer** | **Date** |

# PREMISE® PRO Insecticide

**For use by individuals/firms licensed or registered by the state to apply termiticide products. States may have more restrictive requirements regarding qualifications of persons using this product. Consult the structural pest control regulatory agency of your state prior to use of this product.**

**For prevention or control of subterranean termites, drywood termites, dampwood termites, carpenter ants, and other wood-infesting insects.**

**ACTIVE INGREDIENT:**
Imidacloprid, 1-[(6-Chloro-3-pyridinyl) methyl]-N-nitro-2-imidazolidinimine ..... 42.8%
**INERT INGREDIENTS:** ..... 57.2%
**TOTAL:** ..... 100.0%
Contains 4.38 pounds of imidacloprid per gallon, or 526 grams AI/liter. Shake well before using.
**EPA Reg. No. 432-1449**

## STOP - READ THE LABEL BEFORE USE. KEEP OUT OF REACH OF CHILDREN.

## CAUTION

**PARA EL USUARIO: Si usted no lee o entiende inglés, no use este producto hasta que le hayan explicado completamente las instrucciones que figuran en la etiqueta.**
**(TO THE USER: If you cannot read or understand English, do not use this product until the label has been fully explained to you.)**

**For MEDICAL and TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7577**
**For PRODUCT USE Information Call 1-800-331-2867**

| FIRST AID | |
|---|---|
| **If swallowed:** | • Call a poison control center or doctor immediately for treatment advice.<br>• Have person sip a glass of water if able to swallow.<br>• Do not induce vomiting unless told to do so by the poison control center or doctor.<br>• Do not give anything by mouth to an unconscious person. |
| **If on skin or clothing:** | • Take off contaminated clothing.<br>• Rinse skin immediately with plenty of soap and water for 15-20 minutes.<br>• Call a poison control center or doctor for treatment advice. |
| **If In eyes:** | • Hold eyelids open and rinse slowly and gently with water for 15-20 minutes.<br>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.<br>• Call a poison control center or doctor for treatment advice. |
| **HOT LINE NUMBER** | |
| Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-334-7577 for emergency medical treatment. | |
| **NOTE TO PHYSICIAN:** No specific antidote is available. Treat the patient symptomatically. | |

BACKED by BAYER™

**Net Contents**
**123 fl oz**
**79102976**
**05973286D 140108AV1**

Produced for:
Bayer Environmental Science
A Division of Bayer CropScience LP
2 T. W. Alexander Drive
Research Triangle Park, NC 27709

Bayer Environmental Science
SAFETY DATA SHEET

**PREMISE® PRO INSECTICIDE**
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## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

| | |
|---|---|
| **Product identifier** | |
| **Trade name** | PREMISE® PRO INSECTICIDE |
| **Product code (UVP)** | 79037554 |
| **SDS Number** | 102000016236 |
| **EPA Registration No.** | 432-1449 |
| **Relevant identified uses of the substance or mixture and uses advised against** | |
| **Use** | Insecticide |
| **Restrictions on use** | See product label for restrictions. |
| **Information on supplier** | |
| **Supplier** | Bayer Environmental Science<br>2 T.W. Alexander Drive<br>Research Triangle PK, NC 27709<br>United States |
| **Responsible Department** | Email: SDSINFO.BCS-NA@bayer.com |
| **Emergency telephone no.** | |
| **Emergency Telephone Number (24hr/ 7 days)** | 1-800-334-7577 (24 hours/day) |
| **Product Information Telephone Number** | 1-800-331-2867 |

## SECTION 2: HAZARDS IDENTIFICATION

**Classification in accordance with regulation HCS 29CFR §1910.1200**
Acute toxicity (Oral, Inhalation): Category 4

**Signal word**: Warning

**Hazard statements**
Harmful if swallowed or if inhaled.

**Precautionary statements**
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Avoid breathing mist/ vapours.
Use only outdoors or in a well-ventilated area.

IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.
Rinse mouth.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER/doctor/physician if you feel unwell.
Dispose of contents/container in accordance with local regulation.

**Other hazards**
No other hazards known.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Hazardous Component Name | CAS-No. | Concentration % by weight |
|---|---|---|
| Imidacloprid | 138261-41-3 | 42.8 |
| Ethoxylated polyarylphenol | 99734-09-5 | 1.5 |

## SECTION 4: FIRST AID MEASURES

**Description of first aid measures**

**General advice** When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

**Inhalation** Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

**Skin contact** Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.

**Eye contact** 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 physician or poison control center immediately.

**Ingestion** Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

**Most important symptoms and effects, both acute and delayed**

**Symptoms** To date no symptoms are known.

**Indication of any immediate medical attention and special treatment needed**

**Treatment** Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

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## SECTION 5: FIREFIGHTING MEASURES

**Extinguishing media**

| | |
|---|---|
| **Suitable** | Foam, Dry chemical, Water spray |
| **Unsuitable** | None known. |
| **Special hazards arising from the substance or mixture** | Dangerous gases are evolved in the event of a fire. |

**Advice for firefighters**

| | |
|---|---|
| **Special protective equipment for fire-fighters** | Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing. |
| **Further information** | Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. |
| **Flash point** | > 100 °C |
| **Autoignition temperature** | no data available |
| **Lower explosion limit** | no data available |
| **Upper explosion limit** | no data available |
| **Explosivity** | not applicable |

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

| | |
|---|---|
| **Precautions** | Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces. |

**Methods and materials for containment and cleaning up**

| | |
|---|---|
| **Methods for cleaning up** | Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations. |
| **Additional advice** | Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal. |
| **Reference to other sections** | Information regarding safe handling, see section 7.<br>Information regarding personal protective equipment, see section 8.<br>Information regarding waste disposal, see section 13. |

## SECTION 7: HANDLING AND STORAGE

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**Precautions for safe handling**

**Advice on safe handling** Handle and open container in a manner as to prevent spillage. Use only in area provided with appropriate exhaust ventilation.

**Hygiene measures** Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.
Remove Personal Protective Equipment (PPE) immediately after handling this product. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

**Conditions for safe storage, including any incompatibilities**

**Requirements for storage areas and containers** Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

| Components | CAS-No. | Control parameters | Update | Basis |
|---|---|---|---|---|
| Imidacloprid | 138261-41-3 | 50ug/m3 (ST ESL) | 07 2011 | TX ESL |
| Imidacloprid | 138261-41-3 | 5ug/m3 (AN ESL) | 07 2011 | TX ESL |
| Imidacloprid | 138261-41-3 | 0.7 mg/m3 (TWA) | | OES BCS* |
| Glycerine (Respirable fraction.) | 56-81-5 | 5 mg/m3 (PEL) | 02 2006 | OSHA Z1 |
| Glycerine (Total dust.) | 56-81-5 | 15 mg/m3 (PEL) | 02 2006 | OSHA Z1 |
| Glycerine (Total dust.) | 56-81-5 | 10 mg/m3 (TWA) | 1989 | OSHA Z1A |
| Glycerine (Respirable fraction.) | 56-81-5 | 5 mg/m3 (TWA) | 1989 | OSHA Z1A |
| Glycerine (Total dust and mist.) | 56-81-5 | 10 mg/m3 (TWA) | 06 2008 | TN OEL |
| Glycerine (Respirable fraction and dust or fume.) | 56-81-5 | 5 mg/m3 (TWA) | 06 2008 | TN OEL |
| Glycerine (Vapor.) | 56-81-5 | 1000ug/m3 (ST ESL) | 02 2013 | TX ESL |
| Glycerine (Particulate.) | 56-81-5 | 50ug/m3 (ST ESL) | 02 2013 | TX ESL |
| Glycerine (Vapor.) | 56-81-5 | 100ug/m3 (AN ESL) | 02 2013 | TX ESL |

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| | | | | |
|---|---|---|---|---|
| Glycerine (Particulate.) | 56-81-5 | 5ug/m3 (AN ESL) | 02 2013 | TX ESL |

*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

**Exposure controls**

**Personal protective equipment**
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

**Respiratory protection** When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

**Hand protection** Chemical resistant nitrile rubber gloves

**Eye protection** Safety glasses with side-shields

**Skin and body protection** Wear long-sleeved shirt and long pants and shoes plus socks.

**General protective measures** Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water.
Keep and wash PPE separately from other laundry.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| **Appearance** | white to light beige |
| **Physical State** | liquid |
| **Odor** | characteristic |
| **Odour Threshold** | no data available |
| **pH** | no data available |
| **Vapor Pressure** | no data available |
| **Vapor Density (Air = 1)** | no data available |
| **Density** | 1.23 g/cm³ at 20 °C |
| **Evapouration rate** | no data available |
| **Boiling Point** | no data available |
| **Melting / Freezing Point** | no data available |
| **Water solubility** | dispersible |
| **Minimum Ignition Energy** | not applicable |
| **Decomposition temperature** | no data available |
| **Partition coefficient: n-octanol/water** | not applicable |
| **Viscosity** | 450 - 1,000 cps |

| | |
|---|---|
| **Flash point** | > 100 °C |
| **Autoignition temperature** | no data available |
| **Lower explosion limit** | no data available |
| **Upper explosion limit** | no data available |
| **Explosivity** | not applicable |

## SECTION 10: STABILITY AND REACTIVITY

| | |
|---|---|
| **Reactivity** | |
| **Thermal decomposition** | no data available |
| **Chemical stability** | Stable under normal conditions. |
| **Possibility of hazardous reactions** | No hazardous reactions when stored and handled according to prescribed instructions. |
| **Conditions to avoid** | no data available |
| **Incompatible materials** | no data available |
| **Hazardous decomposition products** | No decomposition products expected under normal conditions of use. |

## SECTION 11: TOXICOLOGICAL INFORMATION

| | |
|---|---|
| **Exposure routes** | Ingestion, Eye contact, Skin Absorption, Skin contact |
| **Immediate Effects** | |
| **Eye** | May cause mild irritation to eyes. |
| **Skin** | May cause slight irritation. Harmful if absorbed through skin. |
| **Ingestion** | Harmful if swallowed. |
| **Inhalation** | May be harmful if inhaled. |
| **Information on toxicological effects** | |
| **Acute oral toxicity** | LD50 (male/female combined rat) 609 mg/kg |
| **Acute inhalation toxicity** | LC50 (male rat) 2.5 mg/l<br>Exposure time: 4 h<br>Determined in the form of liquid aerosol.<br><br>LC50 (male rat) 10.0 mg/l<br>Exposure time: 1 h<br>Determined in the form of liquid aerosol.<br>Extrapolated from the 4 hr LC50.<br><br>LC50 (female rat) > 1.02 - < 2.02 mg/l |

| | |
|---|---|
| | Exposure time: 4 h<br>Determined in the form of liquid aerosol. |
| | LC50 (female rat) > 4.1 - < 8.1 mg/l<br>Exposure time: 1 h<br>Determined in the form of liquid aerosol.<br>Extrapolated from the 4 hr LC50. |
| **Acute dermal toxicity** | LD50 (rat) > 2,000 mg/kg |
| **Skin irritation** | Slight irritation (rabbit) |
| **Eye irritation** | Minimally irritating. (rabbit) |
| **Sensitisation** | Non-sensitizing. (guinea pig) |

**Assessment repeated dose toxicity**

Imidacloprid did not cause specific target organ toxicity in experimental animal studies.

**Assessment mutagenicity**

Imidacloprid was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.

**Assessment carcinogenicity**

Imidacloprid was not carcinogenic in lifetime feeding studies in rats and mice.

**ACGIH**

None.

**NTP**

None.

**IARC**

None.

**OSHA**

None.

**Assessment toxicity to reproduction**

Imidacloprid caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. The reproduction toxicity seen with Imidacloprid is related to parental toxicity.

**Assessment developmental toxicity**

Imidacloprid caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Imidacloprid are related to maternal toxicity.

**Further information**

Acute toxicity studies have been bridged from a similar formulation(s).
The non-acute information pertains to the active ingredient(s).

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## SECTION 12: ECOLOGICAL INFORMATION

| | |
|---|---|
| **Toxicity to fish** | LC50 (Oncorhynchus mykiss (rainbow trout)) 211 mg/l<br>Exposure time: 96 h<br>The value mentioned relates to the active ingredient imidacloprid. |
| **Toxicity to aquatic invertebrates** | EC50 (Daphnia magna (Water flea)) 85 mg/l<br>Exposure time: 48 h<br>The value mentioned relates to the active ingredient imidacloprid.<br><br>LC50 (Chironomus riparius (non-biting midge)) 0.0552 mg/l<br>Exposure time: 24 h<br><br>The value mentioned relates to the active ingredient imidacloprid. |
| **Toxicity to aquatic plants** | EC50 (Desmodesmus subspicatus (green algae)) > 10 mg/l<br>Growth rate; Exposure time: 72 h<br>The value mentioned relates to the active ingredient imidacloprid. |
| **Biodegradability** | Imidacloprid:<br>not rapidly biodegradable |
| **Koc** | Imidacloprid: Koc: 225 |
| **Bioaccumulation** | Imidacloprid:<br>Does not bioaccumulate. |
| **Mobility in soil** | Imidacloprid: Moderately mobile in soils |
| **Environmental precautions** | Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark.<br>Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water.<br>Do not apply when weather conditions favor runoff or drift.<br>Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.<br>Apply this product as specified on the label. |

## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste treatment methods**

| | |
|---|---|
| **Product** | Pesticide, spray mixture or rinse water that cannot be used according to label instructions may be disposed of on site or at an approved waste disposal facility. |
| **Contaminated packaging** | Do not re-use empty containers.<br>Triple rinse containers. |

| | |
|---|---|
| | Puncture container to avoid re-use.<br>Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning.<br>If burned, stay out of smoke.<br>Follow advice on product label and/or leaflet. |
| **RCRA Information** | Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply. |

## SECTION 14: TRANSPORT INFORMATION

| | |
|---|---|
| **49CFR** | Not dangerous goods / not hazardous material |
| **IMDG** | |
| UN number | **3082** |
| Class | 9 |
| Packaging group | III |
| Marine pollutant | YES |
| Proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(IMIDACLOPRID SOLUTION) |
| **IATA** | |
| UN number | **3082** |
| Class | 9 |
| Packaging group | III |
| Environm. Hazardous Mark | YES |
| Proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.<br>(IMIDACLOPRID SOLUTION ) |

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

| | |
|---|---|
| Freight Classification: | INSECTICIDES OR FUNGICIDES, N.O.I., OTHER THAN POISON |

## SECTION 15: REGULATORY INFORMATION

**EPA Registration No.** 432-1449
**US Federal Regulations**
**TSCA list**
None.
**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**
None.

Bayer Environmental Science
SAFETY DATA SHEET

**PREMISE® PRO INSECTICIDE**
Version 2.0 / USA
102000016236

**10/11**
Revision Date: 06/03/2015
Print Date: 07/09/2015

**SARA Title III - Section 302 - Notification and Information**
None.
**SARA Title III - Section 313 - Toxic Chemical Release Reporting**
None.
**US States Regulatory Reporting**
**CA Prop65**
This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

**US State Right-To-Know Ingredients**
None.

**Canadian Regulations**
**Canadian Domestic Substance List**
None.

**Environmental**
**CERCLA**
None.
**Clean Water Section 307 Priority Pollutants**
None.
**Safe Drinking Water Act Maximum Contaminant Levels**
None.

**EPA/FIFRA Information:**
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

| | |
|---|---|
| **Signal word:** | Caution! |
| **Hazard statements:** | Harmful if swallowed or absorbed through skin.<br>Avoid contact with skin, eyes and clothing.<br>Wash thoroughly with soap and water after handling. |

## SECTION 16: OTHER INFORMATION

**Abbreviations and acronyms**

| | |
|---|---|
| 49CFR | Code of Federal Regulations, Title 49 |
| ACGIH | US. ACGIH Threshold Limit Values |
| CAS-Nr. | Chemical Abstracts Service number |
| EINECS | European inventory of existing commercial substances |
| ELINCS | European list of notified chemical substances |
| IARC | US. IARC Monographs on Occupational Exposures to Chemical Agents |
| IATA | International Air Transport Association |

Bayer Environmental Science
SAFETY DATA SHEET

**PREMISE® PRO INSECTICIDE** **11/11**
Version 2.0 / USA Revision Date: 06/03/2015
102000016236 Print Date: 07/09/2015

| | |
|---|---|
| IMDG | International Maritime Dangerous Goods |
| N.O.S. | Not otherwise specified |
| NTP | US. National Toxicology Program (NTP) Report on Carcinogens |
| OECD | Organization for Economic Co-operation and Development |
| TDG | Transportation of Dangerous Goods |
| TWA | Time weighted average |
| UN | United Nations |
| WHO | World health organisation |

**NFPA 704 (National Fire Protection Association):**
Health - 2 Flammability - 1 Instability - 0 Others - none

**HMIS (Hazardous Materials Identification System, based on the Third Edition Ratings Guide)**
Health - 1 Flammability - 1 Physical Hazard - 0 PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

**Reason for Revision:** Revised according to the current OSHA Hazard Communication Standard (29CFR1910.1200)

**Revision Date:** 06/03/2015

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.

***NOTES:***

## TERMS TO KNOW

| | |
|---|---|
| **Commercial Certified Applicator** | Any structural pest control certified applicator employed by a licensed individual. |
| **Licensee** | Any person engaged in the business of controlling, destroying, curbing, mitigating, preventing, repelling, offering advice on control methods and procedures, inspecting and identifying infestations and populations of insects, rodents, fungi, and other pests within, under and on structures of any kind, or the nearby surrounding ground areas or where people may assemble or congregate. |
| **Registered Technician** | Any individual who is required to be registered with the Structural Pest Control Division. |
| **CCU** | A Continuing Certification Unit (CCU) is a unit of recertification training credit awarded by the Structural Pest Control Committee upon satisfactory completion of one clock hour of instruction in an approved course. |
| **SPCD** | The Structural Pest Control Division. |
| **Noncommercial Certified Applicator** | A certified applicator not employed by a licensed structural pest control individual. |

## Purpose of Pesticide and Structural Pest Control Laws

It is essential that pesticides be regulated, in order to protect the public health and welfare and to prevent adverse effect on the environment. The purpose of both federal and state pesticide laws is to regulate the labeling, sale, distribution, storage, transportation, use, application, and disposal of pesticides in the best public interest.

## Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)

A law passed by Congress and one of the most important Federal laws that all **registered technicians** should be aware of is the **Federal Insecticide, Fungicide, and Rodenticide Act,** commonly referred to as **FIFRA**. *FIFRA* governs the registration of pesticide products in the United States. No pesticide may be marketed until the EPA reviews an application for registration, approves each use of a pesticide, and assigns a product registration number.

The purpose of this law is protect the public health and the environment. It affects pest control registered technicians and **certified applicators** in several ways. For example, *FIFRA* provides that:

- ❑ all pesticides must be registered by the US EPA prior to sale or use in the United States.
- ❑ all pesticides must be used only as directed on the labeling.
- ❑ pesticides must be categorized either as general-use or restricted-use pesticides.
- ❑ **persons who buy or use restricted-use pesticides must be certified as competent pesticide applicators or must be directly supervised by a certified applicator**,
- ❑ persons who use pesticides in a manner that is *inconsistent with the pesticide labeling are subject to penalties.*
- ❑ States may establish stricter standards governing pesticides than Federal law.

**Unless otherwise stated by its labeling, a pesticide shall be considered to be applied under the direct supervision of a certified applicator or licensee if it is applied by a competent person acting under the instructions and control of a certified applicator or licensee who is available if and when needed, even though such certified applicator or licensee is not physically present at the time and place the pesticide is applied**.

Failure to comply with Federal or State pesticide laws and regulations will subject the violator to fines and/or imprisonment, as well as possible loss of an applicator's registration, certification or license.

## Use Classification Statement

As part of the registration process, FIFRA requires the EPA to classify all pesticides as either restricted use or general use. The classification is based on the potential of the pesticide to cause harm to humans, animals or the environment. Restricted use pesticides have a greater potential for causing harm to the environment than general use pesticides. These pesticides require special care and attention to protect users, the public and the environment. Every pesticide product classified as restricted use must carry the following statement at the top of the front panel of the pesticide label:

> **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.**

There may also be a statement giving the reason for the restricted-use classification immediately following the restricted-use statement. For example:

- ❑ **"restricted-use due to ground water contamination"**
- ❑ **"restricted-use due to acute toxicity to humans and birds"**

The purpose of the restricted use classification is to ensure that individuals applying these pesticides receive adequate training and /or supervision. There will be more discussion of this later in this unit.

General-use pesticides may be purchased and used by any responsible individual. They are typically found in garden centers, hardware and home improvement stores. Manufacturers sometimes add other "restrictive" statements to the labels of general use pesticides. These statements include language such as ***for use by professionals only*** or ***professional strength*** Most of these statements are not enforceable and do not affect the sale or use of the product.

Most pesticides that you will use in both household pest (P-phase) and wood-destroying organisms (W-phase) structural pest control are classified as general use. All pesticides used in structural pest control fumigation (F-phase) are classified as restricted-use pesticides due to acute inhalation toxicity of the fumigant gas.

## North Carolina Structural Pest Control Law

The North Carolina Structural Pest Control Law (**SPCL**) regulates persons, corporations and firms engaged in structural pest control in the state of North Carolina in order to ensure a high quality of workmanship and in order to prevent deception, fraud and unfair practices. This includes applicators performing structural pest control for hire and on those working on their own property or the property of their employer.

The **SPCL** divides structural pest control into the following three phases according to the type of work performed (*FIFRA* refers to these as applicator categories). A person may be registered, certified or licensed in any or all phases:

**Phase P** The control of household pests such as cockroaches, fleas, ants, silverfish, carpet beetles, rats, mice, flies, bees, wasps, etc., by any means other than fumigation.

**Phase W** The control of wood-destroying organisms such as subterranean termites, drywood termites, powderpost beetles, roundheaded borers, flatheaded borers, wood-decay fungi, etc., by any means other than fumigation.

**Phase F** The control of any structural pest by fumigation; the application of pesticides that kill as a gas. This phase is not required for aerosol insecticides, insecticide fogs or insecticide impregnated strips.

## Structural Pest Control Registration, Certification and Licensing

In addition to establishing the three "phases" of structural pest control, the **SPCL** establishes three different types of applicators for which credentials can be obtained. It is important to understand these applicator categories. The structural pest control activities permitted by each category differ considerably. Each category is discussed in detail below.

**Registered Technicians**

The Registered Technician is the entry level position in structural pest control. Within 75 days of employment, the licensee or certified applicator shall apply to the Structural Pest Control Division for the issuance of a Registered Technician's Identification Card for each employee who is either an estimator, salesman, serviceman, or solicitor. Prior to being eligible for the Registered Technician Identification Card, the applicant must complete the Registered Technician Training Program outlined in the Forward of this workbook. The Registered Technician Program (i.e. RT School) has a $ 25.00 registration fee. The applicant will receive an RT Workbook upon completing the registration process. The workbook needs to be completed and brought to the RT school where it will be inspected. Once the applicant has completed the RT School they can apply for a Registered Technician's Identification card. The applicant must send in RT card application accompanied by a fee of $ 40.00 for each Registered Technician Identification Card. These cards expire on June 30 each year and are renewable annually for $40.00

A licensee or non-commercial certified applicator applying for the issuance or renewal of a Registered Technician's Identification Card for his/her employee must certify to the Division that the employee has completed employee training approved by the Committee in structural pest control work.

It is **unlawful** for a registered technician to perform structural pest control work for the general public unless employed by a structural pest control licensee.

**Certification**

The North Carolina Structural Pest Control Law and *FIFRA* require the certification of all persons who use or supervise the use of restricted use pesticides in and around structures. A person who performs structural pest control for the general public must obtain a structural pest control license or be employed by a **licensee**. A certified applicator, or registered technician, may **not** perform structural pest control for the general public unless employed by a licensee.

A person cannot perform structural pest control with restricted use pesticides on his/her own property or on property his/her employer controls unless he/she or his/her supervisor is certified. These certified applicators are referred to as **non-commercial certified applicators**. It is **unlawful** for a non-commercial certified applicator to perform structural pest control work for the general public. Certified applicators who are employed by a licensee are called commercial certified applicators and may perform structural pest control work for the general public under the license of their employer.

An applicant who seeks certification must attend the Registered Technician School and demonstrate a practical knowledge of proper pest control techniques by passing both a "core" or general knowledge exam and separate exams for each phase in which certification is desired. The exam is based on study materials produced by North Carolina State University.

The general knowledge standards for certified applicators in all categories include:

- ❑ Label and labeling comprehension
- ❑ Pesticide equipment
- ❑ The impact of pesticides in the environment
- ❑ Application techniques
- ❑ Pesticide safety
- ❑ Federal and State laws
- ❑ Common features of pests

Examinations are administered by the **Structural Pest Control Division** of the North Carolina Department of Agriculture & Consumer Services. An exam fee of $25.00 per phase is charged each applicant. There is no charge for the core exam. You must preregister with the Structural Pest Control Division at least 10 days prior to taking an examination.

After passing the appropriate exam(s), a certified applicator's identification card is issued to the applicant upon payment of $50.00, regardless of the number of phases covered on the card. The certified applicator's identification card expires each June 30 and must be renewed annually to remain in effect. The annual renewal fee is $50.00. If the card is not renewed by December 31, the applicant must retake the core exam and all appropriate phases before a new card will be issued.

Certification training schools are held periodically in Raleigh and throughout the state by the

North Carolina Cooperative Extension Service. Contact your local county extension office, usually located at your county seat, for a training school schedule, or contact:

Pesticide Educational Specialist
North Carolina State University
Department of Horticultural Science
Box 7609
Raleigh, NC 27695-7609
Telephone: (919) 515-3113

**Recertification**

Once certified, structural pest control applicators are eligible to hold their certification for a five-year period upon payment of annual renewal fees. A certified applicator, at his/her discretion, may be recertified for another five-year period by choosing one of these options:

a) successfully completing a recertification exam for each phase an individual is certified and desires to keep certification.

b) earning Continuing Certification Units (**CCU's**) of formal training approved by the Structural Pest Control Committee and received by the certified applicator during the five years immediately preceding the expiration date of his/her certification.

**A CCU means a unit of credit awarded by the Structural Pest Control Division upon satisfactory completion of one clock hour of instruction in an approved course. CCU's cannot be carried forward beyond the five-year recertification period.**

| NUMBER CCU'S REQUIRED FOR RECERTIFICATION | | |
|---|---|---|
| NUMBER OF PHASES | TOTAL CCU'S NEEDED | |
| ONE (1) | 10 CCU'S. 5 CCU'S ARE REQUIRED THAT APPLY TO THE PHASE IN WHICH YOU ARE CERTIFIED. | REMAINING 5 CCU'S CAN BE EARNED IN ANY TRAINING PHASE. |
| TWO (2) | 15 CCU'S. 5 CCU'S ARE REQUIRED THAT APPLY TO EACH OF THE 2 STRUCTURAL PHASES YOU HOLD | REMAINING 5 CCU'S CAN BE EARNED IN ANY TRAINING PHASE. |
| THREE (3) | 20 CCU'S. 5 CCU'S ARE REQUIRED THAT APPLY TO EACH OF THE 3 STRUCTURAL PHASES YOU HOLD. | REMAINING 5 CCU'S CAN BE EARNED IN ANY TRAINING PHASE. |

NON-COMMERCIAL CERTIFIED APPLICATORS AND LICENSEES MUST EARN AT LEAST ONE OF THE REQUIRED CCU'S IN EACH OF FOUR YEARS OF THE FIVE-YEAR RECERTIFICATION PERIOD.

COMMERCIAL CERTIFIED APPLICATORS MUST EARN AT LEAST ONE OF THE REQUIRED CCU'S IN EACH OF THREE YEARS OF THE FIVE-YEAR CERTIFICATION PERIOD.

The contact for recertification opportunities is:

Certification and Training Coordinator
North Carolina Department of Agriculture & Consumer Services
Structural Pest Control Division
1090 Mail Service Center,
Raleigh, NC 27699-1090
Telephone: (919)733-6100

A certified structural pest control applicator or registered technician must follow the appropriate regulations specified by the North Carolina Structural Pest Control Law. An applicator who is adjudged to have violated any part of this Law or who uses a registered pesticide in a manner inconsistent with its labeling shall be guilty of a misdemeanor. For each violation an applicator may be liable for a criminal penalty of not less than $100 but not more than $1,000 and/or shall be imprisoned for not less than 60 days nor more than 6 months. The Committee may also take civil action against a certified applicator as described previously.

**Under no conditions shall any certified structural pest control applicator perform pest control work for the general public unless employed by a North Carolina licensed structural pest control operator**.

**Licensing**

An applicant for a license first must be certified in those phases for which a license is desired. The applicant also must document two years of practical experience in the phase or phases of structural pest control in which they wish to become licensed. Normally, this experience is gained as an employee of a licensed structural pest control operator. Under certain conditions, specialized pest control training or an appropriate degree from a college or university may be substituted for part of the practical experience requirement. The Secretary of the Structural Pest Control Committee reviews each license application.

Following approval of the application to take the license examination, the applicant must pass license exam(s) in the desired phases. The examination fee is $50 per phase.

After satisfactorily passing the exam(s), a license can be issued for $200 per year for the first phase and an additional $75 per year for each additional phase. Licenses shall expire on June 30 each year and must be renewed annually by paying the above fee. However, since licensed individuals are also certified, they must also follow recertification requirements.

A licensed structural pest control operator must maintain sufficient financial responsibility coverage. Minimum insurance requirements include property damage of $100,000 and bodily injury of $300,000 for each occurrence or a combined single limit of $300,000. In addition, the licensee must provide satisfactory proof of coverage for any pesticide pollution and contamination of the environment occurring as a result of the use or application of any pesticide. A license expires at the expiration or cancellation of the policy, or upon reduction of the coverage below minimum requirements.

## Structural Pest Control Committee

The **SPCL** establishes the Structural Pest Control Committee. The Committee is made- up of nine members. This Committee meets periodically throughout the year to:

- ❑ review settlement agreements of structural pest control applicators who have
- ❑ violated any part of the North Carolina Structural Pest Control Law
- ❑ review structural pest control license applications
- ❑ review recertification training courses
- ❑ conduct administrative hearings
- ❑ adopt or amend structural pest control rules

A structural pest control license, certification or registered technician identification card may be denied, revoked, modified, or suspended for due cause after a majority vote by this Committee after notice and hearing. In addition, the Committee may assess a civil penalty of up to $2,000 against any licensee, certified applicator or registered technician.

In determining the amount of any penalty, the Committee shall consider the degree and extent of harm caused by the violation(s). No civil penalty may be assessed unless the person has been given an opportunity for a hearing before the Committee.

## Structural Pest Control Division

Day-to-day administration and enforcement of the Structural Pest Control Law and Rules is provided by the Structural Pest Control Division of the North Carolina Department of Agriculture and Consumer Services. The Division headquarters are in Raleigh, NC, with inspectors working in assigned areas located throughout the state.

In addition to the administration of all examinations mentioned previously, the Structural Pest Control Division performs routine inspections of all structural pest control licensees and non-commercial certified applicators. The Division also investigates all complaints from consumers concerning structural pest control.

## Civil Penalties

The Structural Pest Control Committee may revoke or suspend any license, certified applicator or registered technician card or assess a civil penalty of not more than $2,000 against any person for any one or more of the following causes:

(1) Misrepresentation for the purpose of defrauding; deceit or fraud; the making of a false statement with knowledge of its falsity for the purpose of inducing others to act thereon to their damage; or the use of methods or materials which are not reasonably suitable for the purpose contracted.

(2) Failure of the licensee or certified applicator to give the Committee, the Commissioner, or their authorized representatives, upon request, true information regarding methods and materials used, or work performed.

(3) Failure of the licensee or certified applicator to make registrations herein required or failure to pay the registration fees.

(4) Any misrepresentation in the application for a license or a certified applicator's identification card or registered technician's identification card.

(5) Willful violation of any rule or regulation adopted pursuant to this Article.

(6) Aiding or abetting a licensed or unlicensed person or a certified applicator or a registered technician to evade the provisions of this Article, combining or conspiring with such a licensed or unlicensed person or a certified applicator or registered technician to evade the provisions of this Article, or allowing one's license or certified applicator's identification card or registered technician's identification card to be used by an unlicensed or noncertified person.

(7) Impersonating any state, county or city inspector or official.

(8) Storing or disposing of containers or pesticides by means other than those prescribed on the label or adopted regulations.

(9) Using any registered pesticide in a manner inconsistent with its labeling.

(10) Payment, or the offer to pay, by any licensee to any party to a real estate

transaction of any commission, bonus, rebate, or other thing of value as compensation or inducement for the referral to such licensee of structural pest control work arising out of such transaction.

(11) Falsification of records required to be kept by this Article or the rules and regulations of the Committee.

(12) Failure of a licensee or certified applicator to pay the original or renewal license or identification card fee when due and continuing to operate as a licensee or a certified applicator.

(13) Conviction of a felony or conviction of a violation of G.S.106-65.28 within five years preceding the date of application for a license or a certified applicator's identification card or conviction of any said crimes while such license or card is in effect.

In determining the amount of any penalty, the Committee shall consider the degree and extent of harm caused by the violation(s). No civil penalty may be assessed unless the person has been given an opportunity for a hearing before the Committee.

## Criminal Penalties

Any person performing structural pest control, including licensees, certified structural pest control applicators or registered technicians must follow the appropriate regulations specified by the North Carolina Structural Pest Control Law. An applicator who is ruled to have violated any part of this Law or who used a registered pesticide in a manner inconsistent with its labeling may be convicted of a misdemeanor.

A criminal violation of the North Carolina Structural Pest Control Law subjects the individual to misdemeanor penalties of $100 to $1,000 and/or a 60-day to 6-month imprisonment. As mentioned earlier, the Structural Pest Control Committee may suspend or revoke the person's license by majority vote and may also take civil action against a licensee.

## North Carolina Pesticide Law of 1971

While persons doing pest control in and around structures are mainly governed by the North Carolina Structural Pest Control Law of 1955, they must also observe rules of the 1971 Law since it regulates the registration, labeling and disposal of pesticides held for sale in North Carolina.

The North Carolina Pesticide Law of 1971 was designed to regulate, in the publics's interest, the use, application, sale, disposal and registration of insecticides, fungicides, herbicides, defoliants, desiccants, plant growth regulators, nematicides, rodenticides and any other pesticides designated by the North Carolina Pesticide Board.

Therefore, structural pest control operators must handle pesticides in a way consistent with the applicable sections of the 1971 Law.

# TEST YOUR UNDERSTANDING

## MULTIPLE CHOICE

Select the **best** answer of the 4 choices provided.

8.1 The purpose of *FIFRA* is to:
- a. develop new pesticides
- b. protect the public health and the environment
- c. design safer pesticide formulations
- d. create new and improved pesticide packaging

8.2 Persons who use pesticides in a manner that is *inconsistent with the pesticide labeling:*
- a. will receive a stern warning after the second violation
- b. are subject to penalities which may include fines and imprisonment
- c. will immediately have certification or license cards revoked
- d. must retake and pass certification exams

8.3 Administration and enforcement of the North Carolina Structural Pest Control Law and Rules is provided by:
- a. United States Environmental Protection Agency
- b. FIFRA
- c. the Structural Pest Control Division of the North Carolina Department of Agriculture and Consumer Services
- d. Structural Pest Control Committee

8.4 Restricted use pesticides have a greater potential for causing:
- a. acute heath effects
- b. harm to the environment than general use pesticides
- c. chronic health effects
- d. high insect mortality

8.5 A certified structural pest control applicator may perform pest control work for the general public:
- a. if the pesticides applied to structures are all general use pesticides
- b. only when repellant type pesticides are used to control pests
- c. if s/he holds all 3 certification phases in structural pest control
- d. only if employed by a North Carolina licensed structural pest control operator.

## FILL-IN THE BLANK

Complete each statement with the appropriate word(s).

8.6 Persons who buy or use_____ _____ must be certified as competent pesticide applicators or must be directly supervised by a certified applicator.

8.7 The purpose of the restricted use classification is to ensure that individuals applying these pesticides receive _____ and/or _____.

8.8 Certification examinations are administered by the _____ _____ _____ _____.

8.9 The_____ _____ _____ _____ reviews settlement agreements of structural pest control applicators who have violated any part of the North Carolina Structural Pest Control Law.

8.10 The North Carolina Structural Pest Control Law (**SPCL**) _____ persons, corporations and firms engaged in structural pest control in the state of North Carolina

8.11 The SPCL divides structural pest control into the following three phases according to the type of work performed:
1)_____ 2)_____3)_____

8.12 A_____is any structural pest control certified applicator employed by a licensed individual.

8.13 The Structural Pest Control Division performs _____ inspections of all structural pest control licensees and non-commercial certified applicators.

8.14 Provide an example of a willful violation of the Structural Pest Control Committee Law which may revoke or suspend any license, certified application or registered technician card or assess a civil penalty. Choose example from "**Civil Penalties**".
_____
_____
_____

8.15 Registered technician, certification and license cards expire on _____ each year and must be renewed _____.

## TRUE OR FALSE

Read each statement . Decide if the statement is true (**T**) or false (**F**). Circle your answer.

8.16 States may establish stricter standards governing pesticides than Federal law.
T F

8.17 The control of wood-destroying organisms such as subterranean termites, drywood termites, powderpost beetles, etc., requires a P-phase structural pest control license.
T F

8.18 Within 75 days of employment by a licensee or non-commercial certified applicator, each employee who is either an estimator, salesman, serviceman, or solicitor, the licensee or certified applicator shall apply to the Structural Pest Control Division for the issuance of a registered technician's identification card for such employee.
T F

8.19 Restricted-use pesticides may be purchased and used by any responsible individual.
T F

8.20 Structural pest control applicators are eligible to hold their certification for a three-year period upon payment of annual renewal fees.
T F

Upon completion of each unit in the **Registered Technician Introductory Training Workbook**, the unit must be signed and dated by the designated trainer and the registered technician trainee.

When all units of the **Registered Technician Introductory Training Workbook** are completed by the registered technician trainee, the signature of the licensee at the end of Unit 8 will verify successful completion of the **Workbook**.

| | |
|---|---|
| _____ | _____ |
| **Registered Technician Trainee** | **Date** |
| _____ | _____ |
| **Designated Trainer** | **Date** |
| _____ | _____ |
| **Licensee** | **Date** |

*NOTES:*

## GLOSSARY

**Active Infestation** evidence of present activity by that organism, visible in, on, or under a structure, or in or on debris under the structure.

**Active Ingredient** active ingredient, abbreviated "a.i.", is the material(s) in a pesticide formulation that actually controls (prevents, destroys, repels) the target pest.

**Acute Toxicity** a rapid response of the body, often within minutes or hours, to a single sufficiently high exposure of a pesticide or other chemical, and which brings about rapid symptoms of poisoning.

**ANSI** a coordinating organization of various trade, technical, professional, and consumer groups who develop voluntary standards for hazardous industrial chemicals.

**Botanical Pesticide** a pesticide produced from naturally occurring chemicals found in some plants. Examples are nicotine, pyrethrum, and rotenone.

**Carbamate Insecticide** one of a class of insecticides derived from carbamic acid.

**CCU** a Continuing Certification Unit (CCU) is a unit of recertification training credit awarded by the Structural Pest Control Division upon satisfactory completion of one clock hour of instruction in an approved course.

**Chemical Name** the scientific name(s) of the active ingredient(s) found in the formulated product. The name is derived from the chemical structure of the active ingredient.

**Chronic Toxicity** injury or illness that can result from repeated exposures, over time, to doses of some pesticides.

**Commercial Certified Applicator** any structural pest control certified applicator employed by a licensed individual.

**Common Name** a common chemical name given to a pesticide by a recognized committee on pesticide nomenclature. Many pesticides are known by a number of trade or brand names but have only one recognized common name.

**Degradation** the breakdown of a pesticide, by environmental factors or microorganisms, into an inactive or less active form(s).

**Dermal** pertaining to the skin. One of the major ways pesticides can enter the body to possibly cause harm.

**Diluent** anything used to dilute a pesticide. The most commonly used diluent is water.

**Dilute** to make less concentrated.

**Emulsifier** a chemical that aid in suspending one liquid in another.

**Emulsion** a mixture in which one liquid is suspended as very small drops in another liquid, such as oil in water. As an example, when concentrated pesticide active ingredient is dissolved in an oil then mixed with emulsifiers, they form emulsifiable concentrates. When emulsifiable concentrates are then mixed in water within a spray tank, they form an emulsion. Emulsions are typically milky-white in appearance.

**Environment** is everything that is around us. It includes all living organisms, such as man and other animals, insects, plants, air, soil, and water. As a registered technician trainee, you must be aware that this definition also includes homes, office, factories, schools, and all that which is contained within these structures.

**EPA** a Federal government agency responsible for the review of a pesticide manufacturers' application for product registration. The Agency determines that the use of the pesticide will not present an unreasonable risk to humans or the environment.

**Exposure** coming in contact with a pesticide.

**Formulation** a mixture of active ingredient(s) combined during manufacture with inert ingredients. The inert ingredients are added to improve the mixing and handling qualities of the pesticide.

**Food** articles used for food or drink for humans or other animals, including pet food and feed for other domestic animals.

**Food Areas** this term includes areas for receiving, serving, storage, packaging (canning, bottling, wrapping, boxing), preparing (cleaning, slicing, cooking, grinding).

**Food Handling Establishment** an area or place other than a private residence in which food is held, processed, prepared, and/or served. Such places includes restaurants, lunchrooms, catering facilities, cafeterias, bars and taverns.

**Ground Water** ground water is water located beneath the earth's surface. Often, it is water trapped in pools, called aquifers. Ground water is one of the primary sources of water for drinking and irrigation.

**Harborage** A site where shelter, food and water are available to allow pest populations to thrive.

**Hazard** is the risk of harmful effects from pesticides. The hazard of a pesticide depends on the toxicity of the pesticide (highly toxic, very toxic, slightly toxic) and the length of time, exposure, that the pesticide is in, or, on your body.

**Hazardous Substance** any material that poses a threat to human health and/or the environment.

**Incompatibility** pesticides that should be kept apart due to hazards involved if they come into direct contact with each other.

**Inert Ingredient** material(s) in a pesticide formulation that are not active ingredients. The inert ingredient(s) are added to dilute the a.i. and improve the mixing and handling qualities of the pesticide. Inert ingredients may be hazardous to humans, animals, and plants.

**Inorganic** a compound lacking carbon in its structure. Sometimes called "minerals" because they are generally mined from earthen deposits before being refined and formulated for use.

**Insecticide** a pesticide used for the control of insects. Some insecticides are also labeled for control of ticks, mites, spiders, and other arthropods.

**Label** the written, printed, or graphic matter on or attached to the pesticide or device or any of its containers or wrappers. This includes label instructions that "refer" the pesticide user to other labeling documents intended for the safe use of the pesticide.

**Labeling** all labels and all other written, printed, or graphic matter accompanying the pesticide or device at any time or to which reference is made on the label or in literature accompanying the pesticide or device. Labeling is not necessarily attached to or part of the pesticide container.

**Leaching** the movement of pesticide in water downward through the soil, usually by being dissolved in water, with the possibility of reaching groundwater.

**Licensee** any person engaged in the business of controlling,destroying, curbing, mitigating, preventing, repelling, offering advice on control methods and procedures, inspecting and identifying infestations and populations of insects, rodents, fungi, and other pests within, under and on structures of any kind, or the nearby surrounding ground areas or where people may assemble or congregate.

**Noncommercial Certified Applicator** a certified applicator not employed by a licensed structural pest control individual.

**Nonfood Areas** this term includes garbage room, lavatories, floor drains, offices, locker rooms, machine rooms, boiler rooms, mop closets, and storage areas.

**Non-target Organism** any plants or animals within a pesticide treated area that are not intended to be controlled by a pesticide application.

**Open Porch** any porch without fill in which the distance from the bottom of the slab to the top of the soil beneath the slab is greater than 12 inches.

**Organism(s)** any living thing(s).

**Organophosphate** a class of insecticides derived from phosphoric acid esters.

**OSHA** — the federal agency responsible for enforcing the regulations related to safety and health in the workplace.

**Persistence** — a pesticide that remains active in the environment for long periods of time because it is not easily broken down by microorganisms or other environmental factors.

**Pesticide** — chemical substances or preparations used to kill, control or manage pest populations.

**Pest(s)** — a pest means any living organism, including but not limited to, insects, rodents, birds, and fungi that:

a) competes with humans and domestic animals for food and water.
b) injures humans, animals, structures, or possessions.
c) spreads disease to humans and domestic animals
d) annoys humans or domestic animals

**PPE** — equipment designed to prevent pesticides from contacting your body or clothing. This equipment also protects your eyes and prevents inhaling pesticides.

**Pyrethroid** — a synthetic (man-made) pesticide that mimics pyrethrin, a botanical pesticide derived from certain species of chrysanthemum flowers.

**Registered Technician** — any individual who is required to be registered with the Structural Pest Control Division.

**Registration (federal)** — A pesticide registered by the US EPA for use in all states.

**Registration (state)** — a pesticide must be registered with the appropriate state agency before it can be sold in the state.

**Residue** — traces of the active ingredient or breakdown product of a pesticide that remain and can be detected in crops, soil, water or the environment following the use of a pesticide.

**Resistance** the measurable lessening effectiveness of a pesticide as a result of previous exposure(s) of a pest population to that pesticide or related types.

**Rinsate** the liquid which results from rinsing empty pesticide containers or pesticide spray equipment.

**Sensitization** substances, such as pesticides, which may cause harmful allergic reactions in certain people to exposures to some pesticides.

**Signal Word** the word **DANGER**, **WARNING**, or **CAUTION**, that appears on a pesticide label that signifies how toxic the pesticide is and what toxicity category it belongs to.

**Slab-on-Ground** a concrete slab in which all or part of that concrete slab is resting on or is in direct contact with the ground immediately beneath the slab.

**Solution** a liquid that contains dissolved substances; (example, table salt dissolved in water).

**Solvent** a liquid, such as water, kerosene, xylene, or alcohol that will dissolve a substance to form a solution.

**SPCD** the Structural Pest Control Division.

**Structure** all parts of a building, whether vacant or occupied, in all stages of construction.

**Suspension** a substance that contains undissolved particles mixed throughout a liquid; (example, ground pepper mixed with water).

**Systemic** a chemical, such as a pesticide, that is taken up into the tissues of an organism and transported to other locations where it will affect pests.

**Toxicity** the potential for a pesticide to cause harm to humans and animals.

**Vertebrate(s)** animals that have an internal skeleton and segmented spine, such as fish, birds, reptiles, and mammals. Insects have an exoskeleton (the hard covering on the outside of their bodies) with no internal skeleton.

# INTRODUCTION

**I.1** The best source of information on how to use a pesticide can be found by:
**b** reading the label

**I.2** The directions for use on a pesticide label:
**c** require that all pesticide use activities be made in strict accordance to the directions

**I.3** Who has the responsibility to apply a pesticide according to the directions on the label?
**a** the applicator of the pesticide

**I.4** When using a pesticide, how often should you refer to and "read the pesticide label"?
**d** as often as necessary to apply the pesticide correctly and safely

**I.5** When is it permissible to bury or burn excess pesticide?
**c.** never

**II.6** or To comply with the requirements of the RTTP, on-site supervision must be conducted for a minimum of 3 days until the **Registered Technician Introductory Training Workbook** has been completed.

**I.7** The Structural Pest Control Division is the regulatory agency responsible for the administration of the North Carolina **Registered Technician Training Program.**

**I.8** Equipment designed to prevent pesticides from contacting your body or clothing is called personal protective equipment or PPE.

**I.9** A substance or mixture of substances that is intended to prevent, destroy, repel, or mitigate any pest is called a pesticide.

**I.10** A label is the written, printed, or graphic matter on or attached to the pesticide or device or any of its containers or wrappers.

**I.11** An EPA registration number must appear on all pesticide labels.

**I.12** The pesticide label gives you instructions on how to use the product safely and correctly.

**I.13** Failure to apply a pesticide properly can result in legal action against the violator if the instructions on a pesticide label are not followed.

**I.14** Pesticide applicators are required by law to comply with all the instructions and directions that appear on a pesticide label.

**I.15** The pesticide label is a document which provides instructions on:

- ❑ how to mix the pesticide
- ❑ how to apply the pesticide
- ❑ where not to apply the pesticide
- ❑ the proper storage of the pesticide
- ❑ how to properly dispose of the pesticide container when it is empty
- ❑ how to dispose of excess pesticide
- ❑ what to do in case anyone has been exposed to the pesticide

**I.16** An EPA registration number indicates that the pesticide has been registered and its label approved by the EPA.
**True.**

**I.17** The establishment number appears on either the pesticide label or pesticide container.
**True.**

**I.18** The labeling may include brochures, leaflets, and other information that accompanies the pesticide product.
**True**.

**I.19** It is a violation of Federal and State regulations to burn, bury, or dump excess pesticide or pesticide containers.
**True**.

**1.20** The safe use of pesticides can only come through strict adherence to label directions.
**True**.

# UNIT ONE

**1.1** Chemicals used in structural pest control are collectively known as:
**c.** pesticides

**1.2** A pesticide manufacturer's primary responsibility to the environment in developing a pesticide is to:
**a**. ensure the safety of the product under a wide range of environmental conditions

**1.3** Pesticides must be registered with the United States:
**d.** EPA

**1.4** Every pesticide label shall bear on the front panel the statement:
**b.** keep out of reach of children

**1.5** To register a pesticide with the US EPA, the manufacturer must:
**d.** all the above

**1.6** Safety is the most important factor in pesticide research and development.

**1.7** To the manufacturer, the label means the pesticide may be legally sold and distributed in the United States.

**1.8** The hazard of a pesticide depends on both the toxicity and the exposure received from the pesticide.

**1.9** Label comprehension is the key to ensuring a better understanding of pesticides.

**1.10** The potential for a pesticide to cause harm to humans is called toxicity.

**1.11** In case of an accident or overexposure, the label identifies the pesticide's active ingredient so medical personnel can provide immediate and proper treatment.

**1.12** Regardless of the complexity of the label, it is your responsibility to read and understand the label.

**1.13** As a new employee in the structural pest control industry, you should develop the habit of reading the label before:

- ❑ purchasing the pesticide
- ❑ mixing the pesticide
- ❑ applying the pesticide
- ❑ storing the pesticide
- ❑ disposing of the pesticide

**1.14** One of the major ways pesticides can enter the body to possibly cause harm is through the skin.

**1.15** *"It is a violation of Federal law to use this product in a manner inconsistent with its labeling".* What does this statement mean to you?

If I don't follow the instructions on a pesticide label, I may not satisfactorily control structural pests. I may injure myself or others if I over apply a pesticide or apply it where it should not be applied. In addition, I may have charges brought against me or my employer by the Structural Pest Control Division if I am found guilty of a misuse of the any of the instructions on the label.

**1.16** Pesticides control pests.
**True.**

**1.17** Pesticides can be broken down by microorganisms and other environmental factors.
**True.**

**1.18** Pesticides that are slightly toxic will not harm you.
**False.** Repeated *overexposure* to **any** pesticide, regardless of the level of toxicity (slight, moderate, high), may cause harmful effects.

**1.19** Pesticide exposure can be prevented by wearing PPE.
**True.**

**1.20** Label comprehension is the key to ensuring a better understanding of pesticides.
**True.**

# UNIT TWO

**2.1** What do **Termidor Foam, Termidor Dry,** and **Termidor 80 WG** pesticides have in common?
**a.** they contain the same active ingredient

**2.2** How many of the **Termidor** labels have a US EPA registration number?
**d.** 3

**2.3** **Termidor Foam, Termidor Dry,** and **Termidor 80 WG** are:
**a.** insecticides

**2.4** What statement below is true for the pesticides **Termidor HE** and **Taurus SC** (see **Table 2.1**);
**d.** both a. and c.

**2.5** The name used by pesticide manufacturers to advertise their product is called the:
**c.** brand name

**2.6** The material in a pesticide formulation that actually controls (prevents, destroys, repels) the pest is the active ingredient

**2.7** Every pesticide manufacturer has a brand name for its product.

**2.8** It is important to check the active ingredient(s) when comparing pesticides.

**2.9** Inert ingredients are added to improve the mixing and handling qualities of the pesticide

**2.10** An example of an insecticide active ingredient is chlorpyrifos (or permethrin).

**2.11** Two pesticides containing the same active ingredient will always have similar directions for use indoors.
**False**

**2.12** **Termidor Foam** contains 100% active ingredient.
**False**

**2.13** Some insecticides labeled for insects also control of ticks, mites, spiders, and other arthropods.
**True**

**2.14** Pesticides may contain the same active ingredient but in different concentrations.
**True**

**2.15** **Fipronil** is a pesticide and an insecticide.
**True**

# UNIT THREE

**3.1** Chemical names on pesticide labels are:
**c.** long and complex

**3.2** Pesticides with different brand names but the same common names will have:
**b.** the same active ingredient

**3.3** A pesticide classified as "persisitent" would:
**c.** break down slowly

**3.4** All pesticides used in structural pest control have:
**d.** both b. and c.

**3.5** **Imidacloprid** insecticide will exhibit chemical properties that are similar to (refer to **Table 3.2**)?
**c.** acetamiprid

**3.6** All registered pesticides have a chemical name (or brand name).

**3.7** To comply with **Structural Pest Control Rules & Regulations,** you are required to keep a record of each pesticide applied.

**3.8** The chemical name is the complex name on a pesticide label that identifies the chemical components and structure of the pesticide.

**3.9** The single-most important decision that you will ultimately face is to determine the right pesticide for your particular pest control situation.

**3.10** The organophosphates were the first insecticides to replace the chlorinated hydrocarbons.

**3.11** Carbamates have even lower toxicity to mammals than most organophosphates.

**3.12** Inorganics are slow killing insecticides that provide a long residual action against a variety of structural pests.

**3.13** Pyrethroids are synthesized from the insecticidally active compounds found pyrethrum.

**3.14** Pesticides grouped within classes will exhibit common properties.

**3.15** Pyrethrum is the most widely used botanical insecticide in structural pest management.

**3.16** When a pesticide is used repeatedly in the same place, against the same pest, the opportunity for resistance decreases.
**False**

**3.17** Pyrethrum is very toxic to humans.
**False**

**3.18** All pesticides have a common name.
**False**

**3.19** Carbaryl is a carbamate insecticide.
**True**

**3.20** Chlorox bleach is a commonly used household cleaning product which is considered a pesticide.
**True**

**3.21** Pheromones kill pests.
**False**

**3.22** Termiticides control cockroaches.
**False**

**3.23** Rodenticides control mice.
**True**

**3.24** All insecticides are pesticides.
**True**

**3.25** All pesticides are insecticides.
**False**

# UNIT FOUR

## WORKBOOK EXERCISE

| **Formulation** | Weight of product | Active ingredient | Inert ingredient |
|---|---|---|---|
| FIRE ANT 2.5 G | 100.00 | 2.5 | **97.5** |
| TERMIDOR 80 WG | 10.00 | **8.0** | **2.0** |
| LAMBDA STAR 9.7% | 10.00 | **0.907** | **9.093** |

**4.1** A pesticide formulation:
**c.** consists of active and inert ingredients

**4.2** The formulation symbol for emulsifiable concentrate is:
a. E
b. CE
c. EC
**d.** Both a. and c.

**4.3** Which of the following is a true statement regarding pesticides?
**c.** most pesticides are diluted before use

**4.4** Which dry pesticide formulation requires frequent agitation to remain in suspension
**c.** a wettable powder

**4.5** A microencapsulated pesticide:
**c.** contains an active ingredient surrounded by a plastic coating

**4.6** A pesticide formulation that contains 0.01 percent active ingredient is _____ than one which contains 0.1 percent active ingredient?
**c.** 10 times less concentrated

**4.7** **Termidor 80 WG** is:
**b.** water dispersable granule

**4.8** Soluble powders mixed in water form a **solution**.

**4.9** Pesticides are available in different forms called formulations.

**4.10** Every pesticide label must list each active ingredient and show its amount as a percentage by weight on the front panel of the label.

**4.11** Hazard is the risk of harmful effects from pesticides and will depend on the particular toxicity of a pesticide and the length of exposure to that pesticide.

**4.12** The active ingredient is the chemical in a pesticide formulation which has a specific effect on a pest.

**4.13** A pesticide formulation consists of active and inert ingredients.

**4.14** Inert ingredients are used in a pesticide formulation to make the pesticide easier to mix (and safer to handle).

**4.15** Ultra-low-volume concentrates may contain 100% active ingredient.

**4.16** WP's mixed in water form suspensions.

**4.17** A pesticide formulation containing 55% active ingredient will also contain 45% inert ingredient.

**4.18** Inert ingredients in a pesticide formulation are always safe and harmless?
**False**

**4.19** Fungicides control fungi and wood decaying organisms.
**True**

**4.20** Applicators must be certified or licensed to apply fumigants.
**True**

**4.21** A formulation is a convenient form of a pesticide which allows it to be used effectively and safely at a required concentration for a specific pest control purpose.
**True**

**4.22** Microencapsulated pesticides can be applied in a dry form without mixing in water.
**False**

**4.23** Aerosols contain a high percentage of active ingredient(s).
**False**

**4.24** A repellent is not considered a pesticide.
**False**

**4.25** All pesticide active ingredients are completely soluble in water.
**False**

## WORKBOOK EXERCISE

**4.26** What is the common name of this product?
Pyriproxyfen

**4.27** What type of product formulation is **Ultracide Pressurized Flea IGR & Adultacide**?
Aerosol

**4.28** How much active ingredient is contained in **Ultracide Pressurized Flea IGR & Adulticide**?
.95% AI

**4.29** Who is the manufacturer of **Ultracide Pressurized Flea IGR & Adulticide**?
Whitmire Micro-Gen Research Laboratories, Inc by BASF Corporation

**4.30** **Ultracide Pressurized Flea IGR & Adulticide** is NOT approved for treatment of fleas on pets.

# UNIT FIVE

**5.1** Some pesticide labels bear a **WARNING** statement. What does this mean to you?
**c**. the product requires that I exercise greater care in its use than a product with a **CAUTION** signal word.

**5.2** What two factors determine the hazard of a pesticide to the applicator?
**c**. toxicity of the pesticide and the length of exposure to the pesticide.

**5.3** **DANGER** on a pesticide label means:
**d**. the product is highly toxic to humans.

5.4 The statement "**Keep Out of Reach of Children**" appears on the labels of all pesticides.
a. highly toxic
b. moderately toxic
c. slightly toxic
**d**. all of the above

**5.5** A pesticide label with a **CAUTION** signal word means the pesticide:
**d**. is relatively non-toxic to humans.

**5.6** The signal rod provides the pesticide user with an *indication* of the relative toxicity of the formulated product to humans and animals.

**5.7** If a specific reentry period is not noted on the pesticide label, surfaces treated with liquids must dry or dusts and mists must settle out of the air before allowing other people, or pets to enter the area, without protective clothing.

**5.8** In the event of suspected poisioning from exposure to a pesticide, you must follow the labels first aid advice and then immediately call a physician.

**5.9** Pesticide absorbtion through the skin is the most common cause of poisioning that can occur during mixing, loading, applying, and cleaning of pesticide equipment.

**5.10** List the four ways pesticides can contact your body:
Getting pesticide on your skin
Swallowing a pesticide
Inhaling a pesticide
Getting pesticide into the eyes

**5.11** The word **WARNING** indicates that the product is likely to cause acute illness from oral, dermal, or inhalation exposure.

**5.12** When in doubt regarding the proper storage of structural pesticides, contact the Structural Pest Control Division.

**5.13** The "Note to Physicians" provide emergency medical personnel with poison treatment information.

**5.14** The signal word on a pesticide label indicates the hazard to you of any active ingredients, solvents, or inert ingredients contained in the formulation.

**5.15** The higher the LD50 rating, the lower the toxicity of a pesticide.

**5.16** the terms hazard and toxicity have the same meeting.
**False**

**5.17** Proper disposal of unused pesticides and pesticide containers is essential to reduce human and environmental hazards.
**True**

**5.18** Unlike humans, most animals are not susceptible to pesticide injury.
**False**

**5.19** The two types of toxicity to pesticides are acute and severe.
**False**. Acute and chronic

**5.20** Pesticide absorption through the eyes (ocular exposure) is the most common cause pesticide exposure during mixing, loading, applying, and cleaning of pesticide equipment.
**False**

**5.21** Pesticides that bear a **Danger** or **Warning** signal word will control a greater variety of pests than a pesticide with a **Caution** signal word.
**False**

**5.22** Acute toxicity is used to describe the potential long term effects which could result from exposure to small amounts of a toxin over time.
**False**

**5.23** Overexposure can result form improper use of a pesticide.
**True**

**5.24** The **Statement of Practical Treatment** provides the pesticide user with information regarding the potential toxicity, irritation and sensitization hazard associated with the use of a pesticide.
**False**

**5.25** In the event of suspected poisoning from exposure to a pesticide, you must immediately induce vomiting of the victim.
**False**

**5.26** Does the pesticide label contain all the instructions and directions for use that you need to use the product safely and legally? Explain

**A**. Some pesticide products have all the necessary instructions and directions for use on the product label. For other products, more instructions and directions may be in other labeling that accompanies the product at the time of purchase. The label or labeling of other products may refer to separate documents that contain specialized instructions and directions. Pesticides users are required by law to comply with all of these types of instructions and directions - not just with the label itself

**5.27** What is the meaning of the statement: "It is a violation of Federal law to use this product in a manner inconsistent with its labeling?

**A**. It is illegal to use a pesticide in any way not permitted by the labeling. A pesticide may be used only on the sites named in the directions for use. You may not use higher dosages, higher concentrations, or more frequent applications. You must follow all directions for use, including directions concerning safety, mixing, diluting, storage, and disposal. You must wear the specified personal protective equipment even though you may be risking only your own safety by not wearing it.

**5.28** What types of hazard statements should you look for on the pesticide labeling?

**A**. You should look for precautions about hazards (and domestic animals), environmental hazards, and physical/chemical hazards

**5.29** Name and explain the meaning of the signal words and symbols you may see on a pesticide product.
**A**. **"CAUTION"** indicates that the pesticide product is slightly toxic or relatively nontoxic. **"WARNING"** indicates that the pesticide product is moderately toxic. **"DANGER"** indicates that the pesticide product is highly toxic. "Poison" and the "skull and crossbones" indicates that the pesticide product is highly toxic as a poison, rather than as a skin or eye irritant.

**5.30** Explain the differences between chemical name, common name, and brand name. Which of these terms should you use to most accurately identify a pesticide product?
**A**. The chemical name is a complex name that identifies the chemical components and structure of the pesticide. A common name is a shorter name that is officially recognizes by EPA as a substitute for the chemical name of a pesticide. A brand name is the name--usually a trademark--used by a chemical company to identify a pesticide product. The common name (or the chemical name, if no common name is given) is the most accurate and useful way to identify a pesticide product.

**5.31** Explain the differences between the terms "label" and "labeling."
**A**. The label is the information printed on or attached to the pesticide container. Labeling includes the label, plus all other product information received from the manufacturer when you buy it.

# UNIT SIX

**6.P.1** **Vikane** is highly toxic to humans?
**True**

**6.P.2** **W**hat type of pesticide formulation is **Advion**
Gel

**6.P.3** What type of pesticide formulation is **Boracide**?
Borate powder

**6.P.4** **Boracide** may be used in a mop solution on floors and as a dust outdoors on sewers?
**True**

**6.P.5** The common name of **Advion** is?
Indoxacarb

**6.P.6** It is recommended to apply **Vikane** for insect control in enclosed structures during winter months (temperature below 40 degrees F)?
**False**

**6.P.7** Describe two types of applications permitted for **Boracide** in controlling cockroaches.
Liquid spray - 1 cup per gallon of water & liberal application of **Boracide** dust.

**6.P.8** **Advion** Select is approved for use as a crack & crevice treatment indoors for cockroach control in residential areas.

**6.P.9** When applying **Vikane** to fumigate an enclosed structure it is recommended that 2 persons must be present during the introduction of this fumigant.

**6.P.10** Can one Registered Technician apply **Vikane** without supervision?
**N**

**6.P.11** Can two Registered Technicians apply **Vikane** as a team without supervision if they have been trained in the Use of fumigants?
**N**

**6.P.12** What is the area of a restaurant/caferteria that **Advion** is not approved for use?
Surface area where food is prepared.

**6.P.13** **Boracide** poses no threat to wildlife?
**False**

**6.P.14** When applying **Boracide** to control ants and cockroaches and silverfish indoors, it is recommended to apply this material in what manner? (explain)
Dust liberally

**6.P.15** When applying **Advion** it is recommended that placement of the gel be near these type areas;
at or near harborages, or aggregation areas=corners.

**6.P.16** How much **Boracide** is used in preparing a liquid treatment for fly larvae in a dumpster? 1 cup per gallon of water.

**6.P.17** **Vikane** has a nasty odor and can easily be detected.
**False**

**6.P.18** What is the minimum recommended amount of pressure needed when introducing **Vikane** into an enclosed structure? 500 lbs/square inch.

**6.P.19** How long does it take for **Advion** to reduce pest populations (German Cockroaches) after treatment? (choose one)
**c**. slight delay after treatment

**6.P.20** What is **Boracide's** toxicity category?
c. slightly toxic

**6.P.21** What is the application rate of **Advion** to control a "severe infestation of German Cockroaches"?
Apply 3 to 5 spots of Advion per 10 lineal feet

**6.P.22** What is the name of the warning agent in conjunction with **Vikane?**
Chloropicrin

**6.P.23** What is the toxicity category of **Advion?**
Slightly Toxic.

**6.P.24** Ants and cockroaches and termites are three different insect pests controlled by **Boracide** according to label recommendations.

**6.P.25** What company manufacturers **Vikane?**
Douglas Products

**6.P.26** Sulfuryl flouride is the common name of which pesticide?
**b. Vikane**

**6.P.27** Which of the three pesticides listed is recommended strictly for cockroach control?
**c. Advion**

**6.P.28** Which of the three pesticides is recommended as a dust application to control cockroaches in wall voids, soffits, and subcabinet voids?
**a. Boracide**

**6.P.29** **Boracide** is manufactured by BASF Corporation?
**F**

**6.P.30** To apply **Vikane** in North Carolina you need to be licensed?
**T**

**6.P.31** Advion can only be used indoors as a crack & crevice treatment in residential homes infested with cockroaches.
F

**6.P.32** Directions for control of Drywood Termites in infested wood using **Boracide** recommend you dust liberally the entire surface area of infested wood with the product?
**F**

**6.P.33** When introducing **Vikane** into a single apartment that is one of many apartments in the same building, the the recommended procedure is to prepare the entire building as a fumigated structure and all applicable rules, regulations and label instructions apply?
**T**

**6.P.34** Which of the following pesticides can be applied as a bait?
**c. Advion**

**6.P.35** A 20 lb. bag of **Boracide** contains 20 lbs. of active ingredient.

## Section Exercise 6.W Wood -Destroying Insects & Organisms
(Unit Six - page 13-16)

To complete the following questions, refer to the **Talstar P, Termidor 80 WG** and **Recruit HD** pesticide labels.

**6.W.1** The active ingredient of **Recruit HD** is Novi flumuron.

**6.W.2** In one gallon of **Talstar P** there is 2/3 lbs. of active ingredient.

**6.W.3** What is the formulation of **Termidor 80 WG**? Water soluble particles.

**6.W.4** **Termidor 80 WG** is the primary termite control material used on the famed Augusta National Golf Course in Augusta, Georgia. Augusta National Golf Course is the home of the internationally recognized "Masters Golf Tournament".
**F**

**6.W.5** What is the toxicity category of **Talstar P**? Category III - slightly toxic.

**6.W.6** The active ingredient in **Recruit HD** is a b) IGR

**6.W.7** Why is it recommended to apply **Talstar P** when it is calm and no rain is predicted for the next 24 hours?
To help ensure that wind or rain does not blow or wash pesticide off the treatment area.

**6.W.8** A 10lb. bag of **Termidor 80 WG** contains 8.0 lbs. of active ingredient.

**6.W.9** Which of these pesticides is applied as a bait? b) Recruit HD

**6.W.10** When applying **Termidor 80 WG** into a trench along inside foundation walls; the recommended rate is 4 gallons of finished dilution (0.06%, 0.09% or 0.125%).

**6.W.11** Application rate of Talstar P for bed bugs is __1__fluid oz. per gallon of water = __0.06____% dilution. This rate will give residual protection in control of bed bugs in structures.

**6.W.12** In a situation where the structural foundation has already been treated with a soil-applied termiticide, do not install **Sentricon** bait stations in the soil closer than 18 inches from the foundation wall.

**6.W.13** To avoiding contaminating cisterns or wells, never apply **Termidor 80 WG** within 5 feet of any cistern or well.

**6.W.14** **Recruit HD** in bait stations is used for elimination and prevention of what structural pest? Subterranean Termites

**6.W.15** The rate of application of Talstar P in 0.02% active ingredient in a finished diluted spray solution is 33 fluid ounces for 100 gallons per 1000 sq ft.

**6.W.16** Bifenthrin is the active ingredient of **Talstar P**.

**6.W.17** Bait stations contain **Recruit HD** should be inspected how often (at a minimum)? Once per year.

**6.W.18** Of the three pesticides used as examples in this section, which one has the lowest percent of active ingredient? **Recruit HD**

**6.W.19** If you mixed 4 paks of **Termidor 80 WG** per 67 gallons of water, you have a dilution of **0.09%**.

**6.W.20** If soil conditions will not accept applications of 4 gallons of 0.05% dilution **Talstar P** insecticide per 10 lineal feet it is recommended to apply 2 gallons of 0.1% solution per 10 lineal feet.

**6.W.21** Recruit HD is an acceptable substitute of a pre-construction termiticide (chemical barrier) treatment as a means of preventing termite infestations.
**T**

**6.W.22** What company manufactures **Talstar P**?
FMC

**6.W.23** To ensure accurate detection results using **Recruit HD** baits in **Sentricon** baiting stations, do not allow more than 15 months to elapse between inspections.

**6.W.24** The lowest rate of T**ermidor 80 WG** to use in pre-construction treatments and still achieve effective termite Control is 0.06%.

**6.W.25** "The treated back method". The steps are: a) trench and remove soil to be treated and place soil onto a heavy tarp or plastic sheeting or into a wheel barrow b) treat soil at rate of 4 gallons dilution per 10 lineal feet per foot of depth of the trench OR 1 gallon per 1.0 cubic feet of soil c) after the treated soil has absorbed the dilution, replace the soil into the trench

**6.W.26** Describe how the IGR noviflumuronin in **Recruit HD** affects individual insect pests and the long term effects on the colony of these pests; noviflumuron prevents successful molting and development of subterranean termites. This disruption of development of individual termites causes a decline in the termite colony to the point the colony cannot sustain itself.

**6.W.27** What is the label rate of **Termidor 80 WG** when applying the material to a concrete slab; 1-1.5 gallon of finished dilution per 10 square foot. The label recommends spraying **Termidor 80 WG** in a coarse low pressure spray (less than 25 p.s.i.), evenly & uniformly over entire area treated.

**6.W.28** What is the minimum recommended label rate of **Termidor 80 WG** in Pre-Construction treatments?
0.06%

**6.W.29** Describe the application method recommended by the label for **Talstar P Insecticide** in a crawl space; trenching or trenching & rodding downward along inside and outside of foundation wall.

**6.W.30** Which of these statements accrately describes these pesticides; **Termidor 80 WG, Talstar P Insecticide, Recruit HD** a) All three are termiticides.

**6.W.31** Which of these two pesticides; **Termidor 80 WG** or **Talstar P Insecticide** is a "moderately toxic - category II" material? **Termidor 80 WG**

**6.W.32** Which of these three pesticides; **Termidor 80 WG, Talstar P Insecticide, Recruit HD** must be used in conjunction with a monitoring service? **Recruit HD**

**6.W.33** Which of these pesticides is a category III material? **Talstar P Insecticide**

**6.W.34** If you are following label directions in mixing **Termidor 80 WG**; you will need 8 paks of **Termidor 80 WG** per 100 gallons of water to reach a 0.125% finished dilution of this product.

**6.W.35** Pre-construction subterranean termite treatments should be made after grading is completed and prior to the pouring of the slab.

# UNIT SEVEN

**MULTIPLE CHOICE**

Refer to the **Premise Pro Insecticide** SDS to answer questions 7.1 - 7.5.

**7.1** The Hazards Identifications section of a SDS provides information on: c) possible health hazards

**7.2** The common name of **Premise Pro Insecticide** is; c) imidacloprid

**7.3** Which of the following is a physical property of **Premise Pro Insecticide**? b) white or light beige in color

**7.4** Which of the following statements about **Premise Pro Insecticide** is accurate? d) moderately mobile in soils.

**7.5** The accurate oral LD50 of **Premise Pro Insecticide** indicates it is; c) moderately toxic

**FILL IN THE BLANK**

Complete each statement with the appropriate word(s).

**7.6** SDS stands for **S**afety **D**ata **S**heet.

**7.7** Pesticide manufacturers must provide an SDS for each pesticide.

**7.8** The license must have an SDS for each pesticide you handle, use, or apply.

**7.9** You can be exposed to a pesticide by skin or eye contact, swallowing, or inhaling the pesticide.

**7.10** Always read the Safety Data Sheet before starting any job involving a new pesticide or pesticide formulation.

**TRUE OR FALSE**

Read each question. Decide if the statement is true **(T)** or false **(F)**. Circle your answer.

**7.11** Pesticide manufacturers are required to report all physical and health hazards of any pesticide they make.
**T**

**7.12** The label and SDS will tell you if certain personal protective equipment should be worn when a pesticide is being used.
**T**

**7.13** Each SDS contains information on emergency first-aid treatment for exposure victim.
**T**

**7.14** Chronic effects from exposure to a pesticide occur immediately.
**F** Chronic effects from exposure to pesticide is an injury or illness that can result from repeated exposures, over time, to doses of some pesticides.

**7.15**
An SDS does not provide spill control instructions.
**F** Sections 6 and 13 of a SDS will provide information on accidental release and disposal considerations.

# UNIT EIGHT

**8.1** The purpose of *FIFRA* is to:
**b**. protect the public health and the environment.

**8.2** Persons who use pesticides in a manner that is *inconsistent with the pesticide labeling:*
**b**. are subject to penalties which may include fines and imprisonment

**8.3** Administration and enforcement of the North Carolina Structural Pest Control Law and Rules is provided by:
**c**. the Structural Pest Control Division of the North Carolina Department of Agriculture and

**8.4** Restricted use pesticides have a greater potential for causing:
**b**. harm to the environment than general use pesticides

**8.5** A certified structural pest control applicator may perform pest control work for the general public
**d.** only if employed by a North Carolina licensed structural pest control operator

**8.6** Persons who buy or use <u>restricted-use pesticides</u> must be certified as competent pesticide applicators or must be directly supervised by a certified applicator

**8.7** The purpose of the restricted use classification is to ensure that individuals applying these pesticides receive <u>adequate training and/or supervision</u>

**8.8** Certification examinations are administered by the <u>Structural Pest Control Division</u>

**8.9** The <u>Structural Pest Control Committee</u> reviews settlement agreements of structural pest control applicators who have violated any part of the North Carolina Structural Pest Control Law.

**8.10** The North Carolina Structural Pest Control Law **(SPCL)** <u>regulates</u> persons, corporations and firms engaged in structural pest control in the state of North Carolina.

**8.11** The SPCL divides structural pest control into the following three phases according to the type of work performed
1) P-phase 2) W-phase 3) F-phase

**8.12** A commercial certified applicator is any structural pest control certified applicator employed by a licensed individual

**8.13** The Structural Pest Control Division performs routine inspections of all structural pest control licensees and non-commercial certified applicators.

**8.14** Provide an example of a willful violation of the Structural Pest Control Committee Law which may revoke or suspend and license, certified application or registered technician card or assess a civil penalty. Registered Technician chooses answer from 13 possible violations of the SPCL.

**8.15** Registered technician, certification and license cards expire on June 30 each year and must be renewed annually.

**8.16** States may establish stricter standards governing pesticides than Federal law. True

**8.17** The control of wood-destroying organisms such as subterranean termites, drywood termites, powderpost beetles, etc, requires a P-phase structural pest control license.
False. The control of wood-destroying organisms requires a W-phase structural pest control license.

**8.18** Within 75 days of employment by a licensee or non-commercial certified applicator of an employee who is either an estimator, salesman, serviceman, or solicitor, the licensee or certified applicator shall apply to the Structural Pest Control Division for the issuance of a registered technician's identification card for such employee. True

**8.19** Restricted-use pesticides may be purchased and used by responsible individual.
False. Persons who buy restricted-use pesticides must be certified pesticide applicators or must be working under the direct supervision of a certified applicator and only for those uses covered by the certified applicator's certification.

**8.20** Structural pest control applicators are eligible to hold their certification for a three-year period upon payment of annual renewal fees.
False. Structural Pest Control certification is for a 5-year period.