



**CHAPTER 3**

# Pesticide Labeling

## Chapter 3

### National Pesticide Applicator Certification Core Manual

## CHAPTER 3

# Pesticide Labeling

This module will help you:

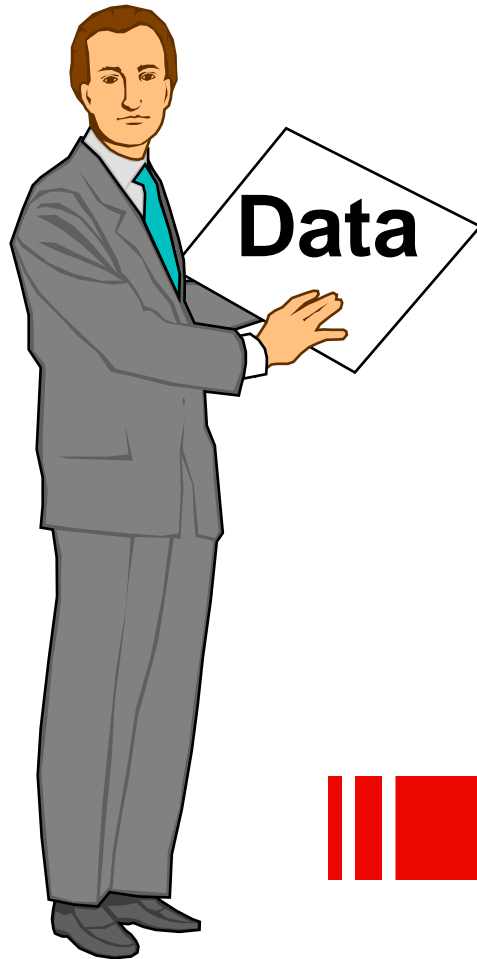
- ❖ Understand the basis behind pesticide labels
- ❖ Read a pesticide label and understand names, ingredients, formulations, signal words, precaution statements, and environmental hazard statements
- ❖ Understand directions for mixing and loading, application, storage, and disposal

# Labels and “Labeling”

- ❖ Pesticide users must comply with all label instructions!
- ❖ **Labeling** = the label itself, plus all other information referenced on the label or received from the manufacturer (brochures and leaflets)



# The Environmental Protection Agency



- ❖ EPA reviews every pesticide product
- ❖ EPA may require labeling changes
- ❖ EPA must approve labeling language



# What does it take to register a new pesticide??

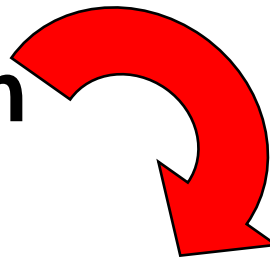
Laboratory Screening



Laboratory and Field Testing



Label Registration



millions

6+ years

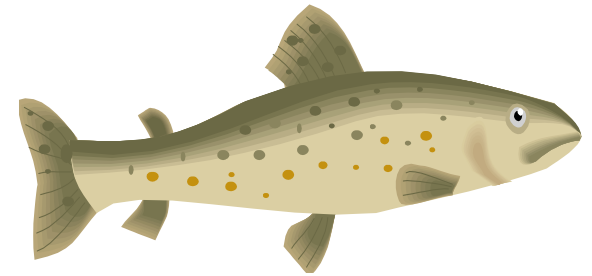
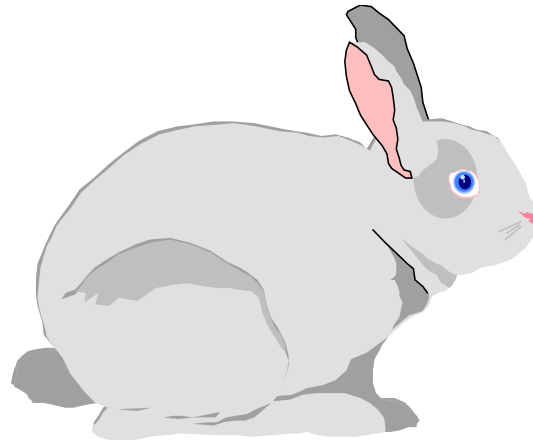
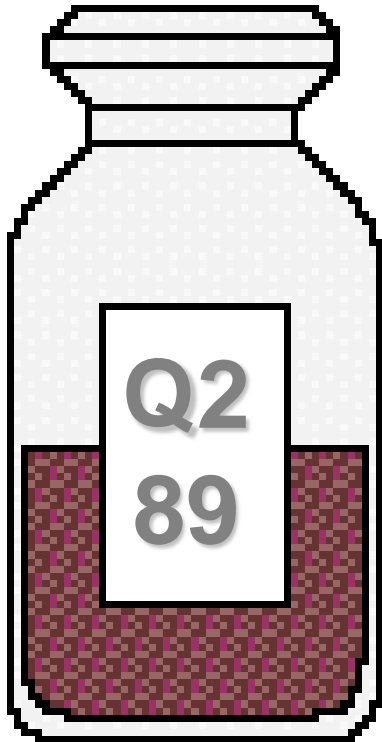
Pesticide Product

# What happens before you see a pesticide label?

- ❖ Manufacturers conduct scientific tests
  - ❖ toxicity or toxicological tests
  - ❖ efficacy or performance tests
  - ❖ degradation (breakdown), mobility & residue
  - ❖ effects on non-target species and the environment
- ❖ EPA reviews the data and the label

# Toxicity or Toxicological Tests

How poisonous or dangerous is a pesticide to humans, wildlife, and other non-target organisms?



# Efficacy Tests

- ❖ Does the pesticide manage the pest?
- ❖ Does the pesticide cause plant damage - phytotoxicity?





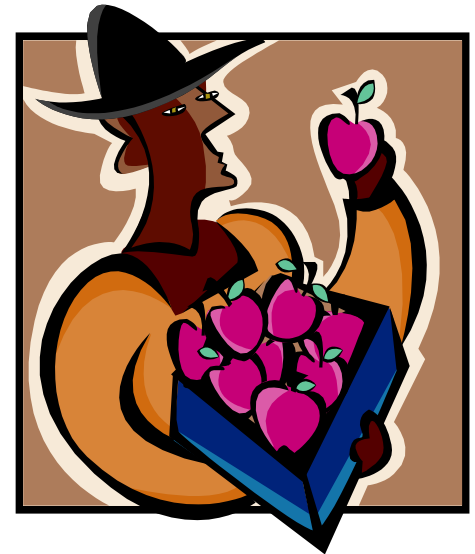
# Pesticide Testing

- ❖ Degradation, mobility, and residue tests
  - ❖ What happens to the pesticide after it is applied?
  - ❖ Does it move through soil to the groundwater?
  - ❖ Does it move into plants from the soil?



# Crops or Animals for Food

- ❖ **Residue tolerance:**  
the maximum amount of pesticide residue legally allowed on or in food or feed at harvest or slaughter

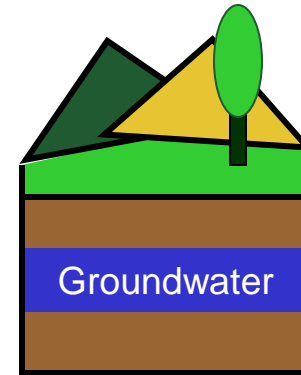


- ❖ **Preharvest interval (PHI):**  
minimum number of days allowed between the last application and harvest

Restrictions
Do not apply more than 16 fl oz per application and do not exceed 64 ounces of this product per season.
Allow at least 7 days to elapse between final application and harvest.

# Pesticide Testing

- ❖ Effects on the environment
  - ❖ Wildlife
  - ❖ Groundwater
  - ❖ Surface water



# Pesticide Registration

- ❖ Section 3 - standard registration
- ❖ Minimum-risk pesticides are exempted from registration under FIFRA Section 25 (b)
- ❖ Requested by states
  - ❖ Section 24 (c) - special local needs
  - ❖ Section 18 - emergency exemptions



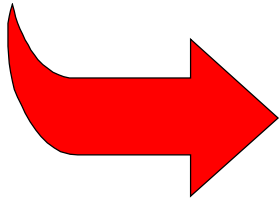
# Read the label before...

- ❖ Buying the pesticide
- ❖ Storing the pesticide
- ❖ Mixing and applying the pesticide
- ❖ Disposing of unused pesticide and empty containers



# Trade, Brand, or Product Name

The brand name “**PLANTGUARD 50W**” indicates the registered trade name is **PLANTGUARD**, it is formulated as a **w**ettable powder, and it contains **50**% active ingredient



**PLANTGUARD 50W**

**ORNAMENTAL FUNGICIDE**

**UNIRAY  
CHEMICAL**

# Ingredient Statement

- ❖ **Active ingredients (ai):** chemicals responsible for pesticidal activity or perform desired function
- ❖ **Inert ingredients:** usually not named, but their percentage of total contents must be shown, have no pesticidal activity

## SEVIN COMPOSITION

Active Ingredients: (% by weight)

Carbaryl (1-naphthyl N-methylcarbamate).....20.0%

Inert Ingredients.....80.0%

Total:.....100.0%

# Chemical Name

identifies chemical components and structure of the active ingredient

***Turf Care<sup>®</sup>***  
***Turf and Ornamental Fungicide***

*Active Ingredient:*

Chlorothalonil

(tetrachloroisophthalonitrile) . . . . 82.5%

*Other Ingredients:* 17.5%

---

*Total:* 100.0%

(82.5% Water Dispersible Granules)

*EPA Reg. No. 50534-202-100*

*EPA Est. 50534-TX-001*



# Common Name

- ❖ Short version of the chemical name
- ❖ **Examples:** carbaryl, imidacloprid, dichlobenil, glyphosate, 2,4-D, permethrin, chlorothalonil
- ❖ Purchase pesticides according to their common names!

***Turf Care<sup>®</sup>***  
***Turf and Ornamental Fungicide***

Active ingredient:  
Chlorothalonil

(tetrachloroisophthalonitrile) . . . . 82.5%

Other Ingredients: 17.5%

Total: 100.0%

(82.5% Water Dispersible Granules)

EPA Reg. No. 50534-202-100

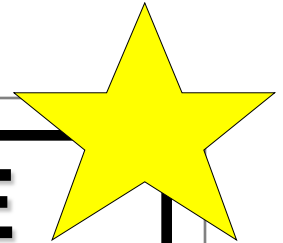
EPA Est. 50534-TX-001

# Use Classification Statement

## Restricted Use or Unclassified/General Use

### **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.



# Use Classification Statement

- ❖ **Restricted-use pesticides**
  - ❖ potential to harm humans, non-target organisms or the environment
  - ❖ applicators must be certified and demonstrate competence
- ❖ **Unclassified or General-use pesticides**
  - ❖ typically have lower toxicity and can be used by the general public



# Type of Pesticide

❖ Pesticides include

- ❖ **Insecticide** = insects
- ❖ **Herbicide** = weeds, brush, trees
- ❖ **Disinfectant** = germs

❖ Label indicates what the pests the product will control

Dogs include



Labrador Retrievers  
German Shorthaired Pointers

# Net Contents

- ❖ Each container states the total amount of product
- ❖ Expressed as pounds, ounces, gallons, pints, etc.
- ❖ Determine total active ingredient per container, use rate of active ingredient in container
  - ❖ Dry formulations: use % Ai
  - ❖ Liquids: use the lb Ai/gal equivalent on the label



# Lexone DF

Dry

Net  
Contents  
10 lbs

- Active Ingredient
- Metribuzin 25%
- Inert Ingredients 75%
- TOTAL 100%

# Lexone 2E

Liquid

Net  
Contents  
2.5 gals

- Active Ingredient
- Metribuzin\* 25%
- Inert Ingredients 75%
- TOTAL 100%

- \* contains 2 lbs metribuzin per gallon

# Required Label Information

- ❖ Name and address of manufacturer
- ❖ EPA registration number, except 25(b)
  - ❖ identifies manufacturer and specific product
- ❖ EPA establishment number
  - ❖ identifies the facility that produced the product



**Turf Care<sup>®</sup>**  
**Turf and Ornamental Fungicide**

Active Ingredient:  
Chlorothalonil  
(tetrachloroisophthalonitrile) . . . . 82.5%

---

Other Ingredients: . . . . 17.5%

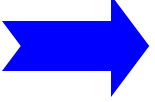
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Total: . . . . 100.0%

(82.5% Water Dispersible Granules)

EPA Reg. No. 50534-202-100  
EPA Est. 50534-TX-001

# Signal Words and Symbols

- ❖ **Signal words** indicate the relative acute toxicity to humans and animals
- ❖ Very low toxicity  signal words not required
- ❖ “Keep Out of Reach of Children”

Danger-Poison	Warning
Danger	Caution



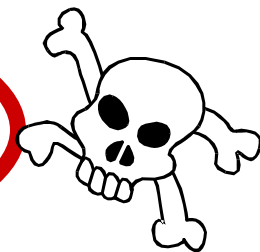
# Signal Words

**DANGER - POISON**

**Highly toxic  
by any route of entry**



**DANGER-POISON**  
**PELIGRO**



**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS  
AND DOMESTIC ANIMALS**

Code 279

**RESTRICTED USE PESTICIDE**

Due to acute oral and inhalation toxicity. For retail sale to and application only by certified applicators or personnel under their direct supervision.

Net Contents



EPA Reg. No. 279-2876

EPA Est. 279-

**Active Ingredient:**

\*Carbofuran .....44.0%

**Inert Ingredients:** .....56.0%

100.0%

\*2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate.

This product contains 4 lbs. of carbofuran per gallon.

**STATEMENT OF PRACTICAL TREATMENT**

**If swallowed:** Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person. Get medical attention.

**If inhaled:** Remove to fresh air. Call a physician immediately.

**If in eyes:** Flush with plenty of water for at least 15 minutes. Get medical attention.

**If on skin:** Wash skin immediately with soap and water.

**Antidote**

**Note to Physician:** Carbofuran is an N-methyl carbamate and a reversible cholinesterase inhibitor. Do not use oximes such as 2-PAM. Start by giving 2 mg. atropine intramuscularly. According to clinical response, continue until signs of atropinization occur (dry mouth or dilated pupils). If in eye, instill one drop of homatropine.

For Emergency Assistance Call (800) 331-3148.

**PRECAUTIONARY STATEMENTS**

**Hazards to Humans (and Domestic Animals)**

**Danger**

Poisonous if swallowed or inhaled. May be fatal or harmful as a result of skin or eye contact or by breathing spray mist. Causes cholinesterase inhibition. Warning symptoms of poisoning include weakness, headache, sweating, nausea, vomiting, diarrhea, tightness in chest, blurred vision,

**KEEP OUT OF REACH OF CHILDREN**

**DANGER-POISON**

**PELIGRO**

# Signal Words

## DANGER

= can cause severe eye damage or skin irritation;  
not highly toxic if inhaled or swallowed

**DANGER**  
**PELIGRO**

PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS  
AND DOMESTIC ANIMALS  
DANGER

**Causes irreversible eye damage.....**



# Daconil

## ULTREX<sup>®</sup>

### **Turf Care<sup>®</sup>** **Turf and Ornamental** **Fungicide**

Active Ingredient:

Chlorothalonil (tetrachloroisophthalonitrile) . . . .	82.5%
Other Ingredients:	17.5%
<hr/> Total:	<hr/> 100.0%

(82.5% Water Dispersible Granules)

EPA Reg. No. 50534-202-100  
EPA Est. 50534-TX-001

**KEEP OUT OF REACH OF CHILDREN.**  
**DANGER/PELIGRO**

*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 additional precautionary statements and directions for use inside booklet.

SCP 50534-202A-L1A 0402

syngenta

# More Signal Words

**WARNING**

**AVISO**

= moderately toxic either orally, dermally, or by breathing, or may cause moderate eye and/or skin irritation

**CAUTION**

= slightly toxic either orally, dermally, or by breathing, or may cause slight eye and skin irritation



# SAGA® WP INSECTICIDE

*Specimen Label*

- \* FOR RESIDUAL CONTROL OF MAJOR NUISANCE PESTS
- \* ONLY FOR SALE, USE AND STORAGE BY PEST CONTROL OPERATORS
- \* DESIGNED FOR USE IN FOOD/FEED AND NON-FOOD/NON-FEED AREAS OF FOOD/FEED PROCESSING PLANTS.
- \* FOR USE IN USDA INSPECTED FACILITIES

**ACTIVE INGREDIENT:**

(1R, 3S) 3[(1RS) (1', 2', 2', 2' -tetrabromoethyl)] -2, 2-dimethyl-cyclopropanecarboxylic acid (S)- alpha-cyano-3-phenoxybenzyl ester<sup>1/</sup> . . . . 40.00%

**INERT INGREDIENTS:** . . . . . 60.00%  
100.00%

<sup>1/</sup> Tralomethrin.

PRECAUCION AL CONSUMIDOR: Si usted no lee ingles, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

(TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you.)

EPA REG. NO. 432-755

EPA EST. NO.:

**KEEP OUT OF REACH OF CHILDREN  
WARNING  
FIRST AID**

- 
- If Swallowed:**
- ◆ Call a poison control center or doctor immediately for treatment advice.
  - ◆ Have person sip a glass of water if able to swallow.
  - ◆ Do not induce vomiting unless told to by a poison control center or doctor.
  - ◆ Do not give anything my mouth to an unconscious person.
- 
- If in Eyes:**
- ◆ Hold eye open and rinse slowly and gently with water for 15-20 minutes.

# Habitat<sup>®</sup>

herbicide

SPECIMEN

Applications may only be made for the control of undesirable emergent and floating aquatic vegetation in and around standing and flowing water, including estuarine and marine sites. Applications may be made to control undesirable wetland, riparian and terrestrial vegetation growing in or around surface water when applications may result in inadvertent applications to surface water.

**Active ingredient:**

Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)\*.....26.7%

**Inert ingredients**.....71.3%

**Total**.....100.0%

\* Equivalent to 22.6% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon.

EPA Reg. No. 241-426

U.S. Patent No. 4,798,619

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.)

In case of an emergency endangering life or property involving this product, call day or night,  
800-632-HELP.

See Next Page for Additional Precautionary Statements

Net contents: \_\_\_\_\_

For more information, please visit our web site:

[www.vmanswers.com](http://www.vmanswers.com)



BASF Corporation  
20 Davis Drive  
Research Triangle Park, NC 27709

**BASF**

**Choose the least toxic  
chemical that gives the  
desired level of control!**

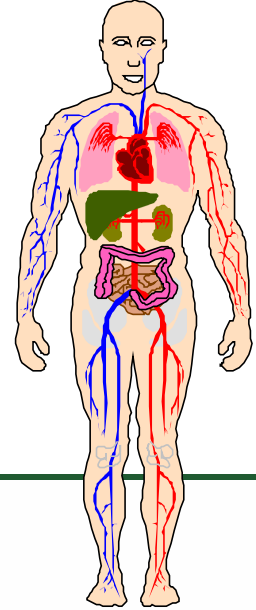




# Precautionary Statements include...

- ❖ Routes of entry statements
  - ❖ “May be fatal if swallowed or inhaled”
- ❖ Specific action statements
  - ❖ “Avoid contact with skin or clothing”
- ❖ Protective clothing and equipment statements

# Precautionary Statements



## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

#### DANGER

Fatal if swallowed. May be fatal if inhaled. Harmful if absorbed through skin. Causes moderate eye irritation. Do not breathe dust or spray mist. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco. Remove contaminated clothing and wash clothing before reuse.

#### Personal Protective Equipment (PPE)

##### Mixers and loaders must wear:

- Long-sleeved shirt and long pants or coveralls worn over long-sleeved shirt and short (or long) pants.
- Chemical-resistant gloves (see "Material Note" below)
- Shoes plus socks
- Protective eyewear
- Chemical-resistant apron

##### Applicators:

Aerial applicators and ground applicators in fully enclosed cabs must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

# Specific Action Statements:

many products are hazardous in more than one way--read carefully!

Causes irreversible eye damage. Wear goggles or face shield when handling. Harmful if swallowed, inhaled or absorbed through skin. Do not get in eyes, on skin or on clothing. Avoid breathing dust. Prolonged or frequently repeated skin contact with this product may cause allergic skin reactions in some individuals. Wash thoroughly with soap and water after handling.

# Protective Clothing and Equipment (PPE)

- Follow all directions stated on the label!
- Lack of a statement does NOT mean you do not need further protection

## PROTECTIVE CLOTHING REQUIREMENTS

When making applications, applicators must wear: a long-sleeved shirt, long pants, mid-forearm length protective gloves and protective boots. In addition, a protective apron and goggles or face shield must be worn during mixing/loading.

# Other Precautionary Statements

- ❖ Remove and wash contaminated clothing...
- ❖ Not for use or storage in and around a house

Causes irreversible eye damage. Wear goggles or face shield when handling. Harmful if swallowed, inhaled or absorbed through skin. Do not get in eyes, on skin or on clothing. Avoid breathing dust. **Prolonged or frequently repeated skin contact with this product may cause allergic skin reactions in some individuals.** **Wash thoroughly with soap and water after handling.**

# Statement of Practical Treatment

First-aid treatments for poisoning or accidental exposure

## STATEMENT OF PRACTICAL TREATMENT

**IF IN EYES:** Hold eyelids open and flush with a steady stream of water for 15 minutes. Get medical attention.

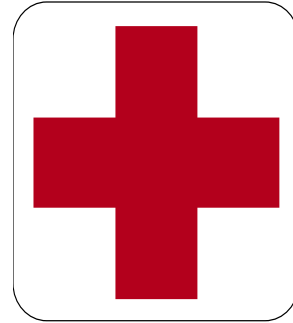
**IF SWALLOWED:** Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger, or if available, by administering syrup of Ipecac. Do not induce vomiting or give anything by mouth to an unconscious person.

**IF INHALED:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

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

# Statement of Practical Treatment

- ❖ Note to physician describing medical treatment for poisoning emergencies and may identify an antidote
- ❖ **Have labels available in case of an emergency!**



# Environmental Hazard Statements

- ❖ Provides information on environmental impacts associated with the pesticide

## **ENVIRONMENTAL HAZARDS**

This product is extremely toxic to aquatic and estuarine invertebrates.

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

## **BEE CAUTION: MAY KILL HONEYBEES IN SUBSTANTIAL NUMBERS.**

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds.

Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.





# Physical or Chemical Hazards

- ❖ Describes any special, fire, explosive or chemical hazards
- ❖ **Flammable:** Do not use, pour, spill, or store near heat or open flame. Do not cut or weld container
- ❖ **Corrosive:** Store only in a corrosion-resistant tank

Hazard statements on labels are not necessarily located in same place!



# Agricultural Use Requirements



- ❖ Required on products covered by WPS
- ❖ The **Worker Protection Standard (WPS)** requires training, notification, emergency assistance, protective equipment
- ❖ **Restricted-entry Interval (REI)**: the time that must pass between an application and the reentry of unprotected workers

# Agricultural Use Requirements

- ❖ No agricultural employee can enter least 4 hours after the application. After 4 hours but before the REI has expired, early enter workers must wear PPE
- ❖ **Non – agricultural labels: No REI statement listed?** Wait until sprays have dried or dusts have settled

# Find this statement on the label:

## **Agricultural 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 interval. 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 4 hours.

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

- Coveralls
- Waterproof gloves
- Socks and chemical-resistant footwear

# Non-Agricultural Use Requirements

- ❖ Can be found on pesticide labels that have both Agricultural and non-Ag uses

## **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 Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

The area being treated must be vacated by unprotected persons.

Keep unprotected persons out of treated areas until sprays have dried.

# Storage and Disposal

- ❖ Provides general instructions for storage and disposal of the pesticide and its container

## Storage and Disposal

**Storage:** Store in a cool, dry, well-ventilated area, but not below 32°F.

**Pesticide Disposal:** Do not contaminate water, food or feed by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA regional office for guidance.

**Container Disposal:** Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, by incineration or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

# Directions for Use

**instructions on how to use the product**

- ❖ Will tell you:
  - ❖ Crops or sites intended for protection
  - ❖ Pests the manufacturer claims the product will control
  - ❖ How to mix and apply the product
  - ❖ Phytotoxicity and other effects
  - ❖ How to minimize drift

## DIRECTIONS FOR USE:

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

1. Simply place each bait station indoors or outdoors immediately next to ant trails or areas where ants are numerous. Nests are usually located in dark, humid and warm areas near a water and food source. For maximum effectiveness in ant control the bait station should be placed in or near wall voids, electrical outlets (if wiring permits), potted plants, wastebaskets, garbage cans and sinks.

Bait stations can be placed in cabinets, next to food and dishes, near sensitive equipment, and other areas where your ant problem occurs.

2. Indoor Use: For normal infestations, you should use 3 MAXFORCE® Ant Killer bait stations in an average size room. For heavier infestations, you will need additional bait stations in each room. If an infestation persists beyond two weeks, replace all bait stations where the bait has been consumed and relocate bait stations that show no evidence of ant feeding.

3. Outdoor Use: Bait stations should be placed near ant activity or anywhere ants may be entering to the structure. Application sites include air conditioning units, electrical conduits, vent pipes, door chases, concrete slabs, skylights on roofs; around ant mounds, garbage cans, and tree trunks; on walls, window sills, sidewalks and driveways; on ground around structure.

4. The bait stations can be stuck to a vertical surface by peeling off the bottom label to expose the adhesive.

**5. Do not spray the bait stations. Avoid placing the bait stations on freshly sprayed surfaces.**

6. Increased ant activity may be seen near the bait stations immediately after placement. However, over longer periods but you can expect to see less activity within one week. After placement, ant trails should be observed between the bait stations and the nests. For best results do not interfere with the bait stations during their use because ants must carry the bait back to destroy the nest and colony.

7. Inspect all bait stations and replace as needed for continuous control of ants.

**TOTAL NET WEIGHT**  
**1.27 oz. (36g.)**

## DIRECTIONS FOR USE

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

**READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH PRECAUTIONARY STATEMENTS AND DIRECTIONS, AND WITH APPLICABLE STATE AND FEDERAL REGULATIONS.**

### DIRECTIONS

CROP	WEEDS	AMOUNT BOLERO 10 G PER ACRE	FURTHER INSTRUCTIONS
Rice (California only)	Barnyardgrass (Watergrass) Sprangletop Smallflower Umbrellaplant	40 lbs.	Apply after flooding when rice is in the expanded 2 leaf stage (first open leaf). Do not apply if rice exhibits symptoms of stress.

The variety Cal Pearl may react adversely to some stress conditions more than other varieties.

Barnyardgrass beyond the 2 leaf stage and Smallflower Umbrellaplant beyond the 3 leaf stage may not be controlled. Smallflower Umbrellaplant must be submerged for optimum control. Cold weather during the planting season may result in decreased weed control due to prolonged period of weed seed germination.

Do not drain BOLERO 10 G treated fields for a minimum of 14 days after application, except where state regulation may allow shorter water holding periods for hydrologically isolated fields (as verified by the County Agricultural Commissioner), or for fields associated with systems designed to isolate discharged water from natural bodies of water. Examples of such systems include tailwater recovery systems for single or multiple fields, and use of fallow land for ponding discharged water. Contact the California Department of Pesticide Regulation for further information on acceptable water management practices.

Water level in the checks should be maintained at 3 to 4 inches with no exposed soil. Water flow should be maintained at a minimum during and up to four days after application for good weed control.

**Precautions** Do not make more than one application per year. Do not plant subsequent crops in treated fields within 6 months of last application. Do not apply to rice paddies where commercial catfish or



# Preharvest Interval (PHI)

- = minimum number of days that must pass before harvest
- ❖ set by EPA to allow time for the pesticide to break down on or in the crop



# Examples of Misuse:

- ❖ Applying to a site not stated on the label
- ❖ Applying at a higher-than-labeled rate
- ❖ Mishandling (such as storing near food or water)

**KNOW YOUR PESTICIDE LABEL!**  
**FOLLOW THE LABEL!**

# Remember...

- The **host or site must be on the label**, but the pest does not have to be listed
- **Deviation**: Any application method may be used: air, ground, rope-wick
  - except ***chemigation***.  
To chemigate the label must state chemigation



# Remember...

❖ **Deviation:** A pesticide may be applied at a lower dose than specified on the label, ***but not at a higher dose!***

❖ **Deviation:** Pesticides may be combined with other substances ***unless prohibited by the label***

Crop Use Recommendations		
Alfalfa:		
Insects Controlled	Rate of Application	Method of Application
For control of Grasshoppers	¼ to ½ pint per acre	Apply as a foliar spray when insect populations and/or damage reaches economic thresholds, refer to Cooperative Extension Pest Management Guidelines. Minimum gallonage requirements. Ten gallons of finished spray per acre with ground equipment, two gallons per acre with aircraft.
For control of Alfalfa Blotch Leafminer and Potato Leafhopper	1 to 2 pints per acre	
For control of Blue Alfalfa Aphid (nymphs and wingless adults)	½ to 1 pint per acre	Apply as a foliar spray when insect populations and/or damage reaches economic thresholds, refer to Cooperative Extension Pest Management Guidelines. Use 30 gallons of finished spray per acre with ground equipment, 5 gallons per acre with aircraft.

## TANK MIX COMBINATIONS

Combination with other herbicides broadens the spectrum of weeds controlled. In addition, total vegetation control can be achieved with higher rates of LANDMARK™ MP plus residual type companion herbicides. To improve postemergence control of weeds, add surfactant at 0.25% by volume or at the manufacturer's recommended rate based on spray area.

LANDMARK™ MP may be applied with the recommended rates of other herbicides registered for this use. For application method and other use specifications, use the most restrictive directions for the intended combination.

Do not tank mix LANDMARK™ MP with DuPont™ HYVAR® X-L herbicide.

# Material Safety Data Sheets (MSDS)

- ❖ Manufacturers required to develop and provide upon request for each product
- ❖ **Get from your dealer**
- ❖ Details a product's composition, properties, hazards, first-aid procedures
- ❖ Companies required to keep MSDS for workers in contact with the substance

# Parts of MSDS

- ❖ Chemical product information (active and inert ingredients)
- ❖ Physical and chemical properties
  - ❖ Solubility, vapor pressure, stability, freezing/boiling point
- ❖ Fire and explosion hazards
- ❖ Toxicological Information/ Human Health Data
  - ❖ Acute, chronic, and delayed toxicity, carcinogenicity, teratogenicity
- ❖ Personal Protective equipment
- ❖ Other information – similar to pesticide label

**MATERIAL SAFETY DATA SHEET**

Agricultural Products Group  
 P.O.Box 13528,  
 Research Triangle Park, NC 27709  
 (919) 547-2000

**EMERGENCY TELEPHONE NUMBERS:**

BASF Corporation: 1 (800) 832-HELP

CHEMTREC: 1 (800) 424-9300

Product No.: 579609                      Arsenal® railroad herbicide

Date Prepared: 6/13/2000    Date Revised: 6/24/2002

**SECTION I**

Trade Name: Arsenal® railroad herbicide

Chemical Name: 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid, salt with 2-propanamine (1:1)

Synonyms: Isopropylamine of imazapyr; AC252, 925                      Formula: C(13)H(15)N(3)O(3).C(3)H(9)N

Chemical Family: Imidazolinone                      Mol Wt: 320.4

**SECTION II - INGREDIENTS**

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
Isopropylamine salt of Imazapyr	81510-83-0	27.6	0.5 mg/m <sup>3</sup> TWA BASF recommended
Inerts	N/A	72.4	None established

SARA Title III Section 313: Not Listed

**SECTION III - PHYSICAL DATA**

BOILING/MELTING POINT@760mm Hg: N/D                      pH: 6 - 7.5

VAPOR PRESSURE mmHg @ 20°C: N/D

SPECIFIC GRAVITY OR BULK DENSITY: 1.06 - 1.09 g/mL

SOLUBILITY IN WATER: Miscible

APPEARANCE: Pale yellow to dark green liquid    ODOR: Ammonia    INTENSITY: Slight

**SECTION IV - FIRE AND EXPLOSION DATA**

FLASH POINT (TEST METHOD): &gt;210 °F SFCC                      AUTOIGNITION TEMP: &gt; 200° F

FLAMMABILITY LIMITS IN AIR (% BY VOL):                      LOWER: N/D                      UPPER: N/D

**NFPA 704 HAZARD CODES**

HEALTH: 1                      FLAMMABLE: 1                      INSTABILITY: 0                      OTHER: N/R

## CHAPTER 3

# Summary

- ❖ Follow label directions carefully!
- ❖ Read the label before buying, mixing, applying, storage, and disposal
- ❖ Be familiar with names, signal words, symbols
- ❖ Know the use instructions & precautions
- ❖ Protect yourself beyond the label requirements
- ❖ **It's the applicator's responsibility!**



## CHAPTER 3

Q1. Which of the following is an allowable deviation from the label?

1. applying at a greater application rate
2. applying at a greater dilution
3. tank mixing pesticide with a fertilizer
4. using chemigation, even it is not specified on the label

- A. 1 and 2 only      C. 2 and 3 only  
B. 1 and 3 only      D. 2 and 4 only

## CHAPTER 3

Q2. Pesticides that have high acute toxicity and cause corrosive eye damage would display which of the following signal words ?

- A. Danger-Poison *Peligro* with a skull and crossbones symbol
- B. Danger *Peligro*
- C. Warning *Aviso*
- D. Caution

## CHAPTER 3

Q3. Which of the following are examples of “Precautionary Statements Hazards to Humans and Domestic Animals”?

1. Fatal if swallowed
2. Poisonous if inhaled
3. Causes skin and eye irritation
4. This product is highly toxic to bees

A. 1 only

C. 1, 2, and 3 only

B. 1 and 2 only

D. 1, 2, 3, and 4

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## CHAPTER 3

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The logo for CAST (Council for Agricultural, Science and Technology) consists of the word "CAST" in white, bold, sans-serif capital letters, centered within a dark green rectangular background.