

# PESTICIDES

Advanced Level Training  
Texas Master Beekeeper Program



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## Introduction

- People who use pesticides have the **legal** responsibility to read, understand and follow the label directions.
- Protection of people and the environment from harmful effects of pesticides is based primarily on three factors:
  1. Pesticides must be registered by the U.S. Environmental Protection Agency before they can be sold or applied.
  2. Pesticide labels provide necessary information to pesticide users for safety handling.
  3. Pesticides must be used according to label instructions to achieve effective pest control and safe handling.

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## Label Requirements

- Contents of a pesticide label:
1. Name, brand, or trademark of product
  2. Name and address of producer or registrant
  3. Net contents
  4. Product registration number
  5. Producing establishment number
  6. Ingredient statement
  7. Hazard and precautionary statements
    1. Human and domestic animal hazards
    2. Environmental hazards
  8. Directions for use
  9. Use of classification(s)



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## Product Name

- Every pesticide has a:
  - Product name
  - Brand name or trade name

<b>Oxalic Acid Dihydrate</b> <small>For Varroa mite control on bees</small>	
Active Ingredient:	
Oxalic Acid Dihydrate:	97.0%
Inert Ingredients:	3.0%
TOTAL:	100.0%

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## Net Contents

- The amount the container holds.



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## Type of Pesticide

- The label must indicate what type of pesticide the product is or what types of pests it will control.
- Example: Livestock and Premise Insecticide
  - For Agricultural/Commercial, Vector Control Agency, Pest Control Operator Use Only.
  - For Control of Flies, Lice, Mites, and Ticks on livestock and their premises.
  - Can be used on Lactating and Non-Lactating Dairy Cattle and Goats, Beef Cattle, Sheep, Swine, Poultry and Horses.
  - Can be used in all areas of Dairy Barns, including Milk Rooms.
  - For Control of Fleas and Ticks on Dogs as spray, dip wash or dip tank.
  - For Control of Fire Ants as a mound drench.
  - For aid in Control of Small Hive Beetles around Honey Bee Hives.

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## Types of Formulations

E or EC	Emulsifiable Concentrate
F, L, or FL	Flowables
D	Dusts
B	Baits
G	Granulars
MC	Microencapsulated
P or PS	Pellets
W or WP	Wettable Powders
S or SP	Soluble Powders
DF	Dry Flowables
WDG	Water Dispersible Granules
WDL	Water Dispersible Liquids

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## Types of Formulations

• Other less common formulations include:

AF	Aqueous Flowables
AS	Aqueous Suspensions
ES	Emulsifiable Solutions
MTF	Multiple Temperature Formulation
OL	Oil-soluble Liquids
SL	Slurries

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## EPA Registration and Establishment Numbers

- Registration number: Indicates that the pesticide product has been registered and its label was approved for sale by the Environmental Protection Agency (EPA).
- Establishment number: Identifies the facility where the product was produced.
- Examples:
  - EPA Est. No. 73291-NC-001
  - EPA Reg. No. 91266-1-73291




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## Manufacturer Name and Address

- Provides the manufacturer's contact information in case you want more information about the product.
- Safety Data Sheet (SDS)
  - Provides detailed toxicity information, chemical properties, and precautions needed for emergency personnel.
  - Used to be called Material Safety Data Sheet (MSDS).

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## Ingredient Statement

- Each pesticide label must include the active and inert ingredients in the product.
- The statement shows what the active ingredients are and the amount of each one.
- Must show the total percentage by weight of all inert ingredients.
- The ingredient statement must list the official chemical names and/or common names for all active ingredients.

<b>Oxalic Acid Dihydrate</b>	
<i>For Varroa mite control on bees</i>	
Active ingredient:	
Oxalic Acid Dihydrate:	97.0%
Inert Ingredients:	3.0%
TOTAL:	100.0%

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## Acute Toxicity Data

- Information collected on the side-effects of the chemical during acute toxicity studies.
- Precautionary statements, signal words, and first aid statements are determined based on these results.

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## Precautionary Statements

- Precautionary statements identify potential hazards and recommend ways to minimize or avoid risks.
- Types of precautionary statements include:
  - "Hazards to Humans and Domestic Animals"
  - "Environmental Hazards"
  - "Physical or Chemical Hazards"

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## Hazards to Humans and Domestic Animals

- This statement is required for products with a Toxicity Category of 1, 2, or 3.
- The signal word is listed, followed by statements indicating which routes of entry (mouth, skin, lungs, eyes) are the most likely routes of exposure which result in harm and must be particularly protected.
- The label provides specific actions that can prevent overexposure to the pesticide.
- The label indicates whether the major concern is irritation, corrosiveness, or illness.
- *Protective clothing and equipment* required to handle or apply the pesticide is listed here, as are laundering instructions.

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## Hazards to Humans and Domestic Animals

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

**Acute Hazards:** May be fatal if swallowed. Harmful if inhaled. Corrosive. Causes irreversible eye damage.

**Hazard avoidance:** Do not breathe dust or fumes. Do not get in eyes, on skin, or on clothing. Wear protective clothing, eyewear, and respiratory protection as listed under "Personal Protective Equipment." 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.

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## Environmental Hazards

- Environmental hazards section of the label warns of pesticide risks to wildlife, birds, fish, bees or to the environment, including water quality.
- It provides practical ways to avoid harm to organisms and the environment.

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## Physical Hazards

- Listed under the "Precautionary Statement"
- Lists the personal protective equipment required in order to use the product.

**PERSONAL PROTECTIVE EQUIPMENT:**  
Handlers and Applicators who apply product by the Solution Method must wear:

- Long-sleeved shirt and long pants
- Socks and shoes
- Protective gloves
- Protective eye wear such as goggles
- Half-face respirator with cartridge and/or particulate filter

Handlers and Applicators who apply product by the Vaporizer Method must wear:

- Long-sleeved shirt and long pants
- Socks and shoes
- Waterproof gloves
- Protective eye wear such as goggles
- Half-face respirator with cartridge and/or particulate filter

**User Safety Requirements:**  
Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions are provided for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

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. As soon as possible, wash thoroughly and change into clean clothing.

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## At-home Safety Precautions

- "Keep out of reach of children" statement
  - required on all pesticide containers, unless proven that the interaction with children at any time is unlikely.
- Keep pesticides and other home products out of the reach of children and pets.

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## Example of Note to Physician

**NOTE TO PHYSICIAN:** Probable mucosal damage may contraindicate the use of gastric lavage. Provide general supportive measures and treat symptomatically. Treatment should be rapidly instituted by giving a dilute solution of calcium lactate, lime water, finely pulverized chalk, plaster, and/or milk to supply large amounts of calcium to inactivate oxalate by forming an insoluble calcium salt in the stomach. Gastric lavage is controversial, since this may compound an already severe corrosive lesion in the esophagus or stomach. However, if used, gastric lavage should be done with lime water (calcium hydroxide). Intravenous gluconate or calcium chloride solutions should be given to prevent hypocalcemic tetany; in severe cases parathyroid extract also has been given. Additionally, acute renal failure should be anticipated, and careful fluid management is necessary. Metabolically its toxicity is believed to be due to the capacity of oxalic acid to immobilize calcium and thus upset the calcium-potassium ratio in critical tissues. Effective therapy against burns from oxalic acid involves replacement of calcium.

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## Directions for Use

- Must be written in a way that is easily understood by any user.
- Written to protect users from personal injury and to protect the environment.
- "It is a *violation of Federal law* to use this product in a manner inconsistent with its labeling."

**DIRECTIONS FOR USE**

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

**READ THIS LABEL:** Read the entire label. This product must be used strictly in accordance with the label's precautionary statements and use directions, as well as with all applicable State and Federal laws and regulations.

**USE RESTRICTIONS:**

Chalk Acid Chloride applications are for outdoor use only.

**DO NOT** use in enclosed overwintering areas.

Use only in late fall or early spring - when little or no frost is present. Chalk Acid Chloride might damage tree buds. Chalk Acid Chloride will not control larvae when in capped brood.

Do not use when honey bees are in place to prevent contamination of nectariferous honey.

Apply only when monitoring indicates treatment is required. Consult state guidelines and local extension experts for monitoring protocols and thresholds for treatment.

(See next page for additional DIRECTIONS FOR USE.)

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## Directions of Use Includes:

1. Site(s) of application
  - i.e. crops, animals, areas, or objects to be treated
2. Target pest(s)
3. Dosage rate associated with each site and pest
4. Method of application
  - Instructions for dilution, if necessary
  - Application equipment needed
5. Frequency and timing of application
6. Directions for storage, residue removal, and disposal of chemical and container
7. Limitations/restrictions of use

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## Ways to Protect Pollinators

- Restrict the use of pesticides on plants/crops that are flowering.
- The Environmental Protection Agency (EPA) has created a **bee advisory box** that will be placed on pesticide labels.
  - More clear and precise applicator directions
- EPA provides a list of approved pesticides used to combat Varroa mites.
  - <https://www.epa.gov/pollinator-protection/epa-registered-pesticide-products-approved-use-against-varroa-mites-bee-hives>
- Check with your state pesticide regulatory agency to check which products have been approved.
  - [http://npic.orst.edu/reg/state\\_agencies.html#map](http://npic.orst.edu/reg/state_agencies.html#map)

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## Sources

- <https://www.epa.gov/pesticide-labels>
- <https://www.epa.gov/pesticide-registration/label-review-manual>
- <https://texasagriculture.gov/RegulatoryPrograms/Pesticides/PesticideLinks.aspx>
- [http://www.ecfr.gov/cgi-bin/text-idx?SID=a8de8692c293c9c6e6581f762b8195af&mc=true&tpl=/ecfrbrowse/Title40\\_40cfr156\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?SID=a8de8692c293c9c6e6581f762b8195af&mc=true&tpl=/ecfrbrowse/Title40_40cfr156_main_02.tpl)
- <https://www.epa.gov/pesticides>
- <https://www.epa.gov/pollinator-protection/epa-actions-protect-pollinators>

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