

Understanding the Pesticide Label

Pest problems occur in many different settings from agricultural to commercial and residential. Often a pesticide will be chosen as part of a management plan for pest control. If you choose to apply a pesticide, understanding the contents of the pesticide label is essential for the product's safe and effective use.

The information on the pesticide label represents the research, development and registration that a pesticide must undergo before reaching the market at a cost of millions of dollars to the manufacturer. The U.S. Environmental Protection Agency (EPA) requires a manufacturer to submit data from numerous tests before that product's approval for use. The pesticide use information obtained in this process is referred to as the label or labeling, two similar words but with different meanings.

The *label* is the information printed on or attached to the pesticide container; it has several interpretations. To the manufacturer, the label is a "license to sell." To the state or federal government, the label is a way to control the distribution, storage, sale, use and disposal of the product. To the buyer or user, the label is the main source of information on how to use the product correctly, legally and safely.

Labeling refers to all the information that you might receive from the company or its sales representative about the product. This includes brochures, fliers and other information accompanying the pesticide product.

Familiarity with the pesticide label is crucial to selecting the most appropriate pesticide products for your use and therefore receiving maximum benefit from their use. Although the label may seem overwhelming at first, it takes only a few minutes to gain the information needed once the various parts of a label are studied.

Read the pesticide label

- Before purchasing the pesticide to ensure it is the one you need
 - Before mixing the pesticide to ensure the proper pesticide concentration
 - Before applying the pesticide to ensure proper use
 - Before storing any excess product or disposing of any empty containers
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Information contained on most labels can be divided into four major categories: safety, environmental, product and use information. This guide discusses the contents of these categories and provides interpretations.

Note: Numbers beside the category subheadings refer to locations on the sample label.

Safety information

1. Child hazard warning. The front panel of every pesticide label must bear the statement, "KEEP OUT OF REACH OF CHILDREN." Poisoning is a major cause of injuries to children.

2. Signal word. A signal word is displayed in large letters on the front of a pesticide label to indicate about how acutely toxic the pesticide is to humans. The signal word is based on the entire contents of the product, not the active ingredient alone. Signal words do not indicate the risk of delayed or allergic effects. All highly toxic pesticides that are very likely to cause acute illness if swallowed, absorbed through the skin, or inhaled have DANGER as their signal word and will carry the word POISON printed in red with the skull-and-crossbones symbol. Products that have the DANGER signal word due to skin and eye irritation potential will not carry the word POISON or the skull-and-crossbones symbol. A WARNING signal word indicates moderate toxicity. A CAUTION signal word indicates slight toxicity. Always choose a pesticide product with the least toxicity potential to reduce your level of exposure risk.

Table 1. Interpreting signal words on pesticide labels.

Signal word	Toxicity	Approximate amount that will kill the average person
DANGER	Highly toxic	A taste to a teaspoon
WARNING	Moderately toxic	A teaspoon to a tablespoon
CAUTION	Slightly toxic	An ounce to more than a pint

3. Statement of practical treatment. The labels for all highly toxic pesticides (signal word DANGER) must provide first-aid instructions in case of pesticide exposure. Some examples: "If swallowed, call a physician or poison control center immediately"; "If on skin, wash skin with soap and water." This section also must provide medical personnel with recommended treatment and antidotes. For this reason, always take the pesticide label with you if you need to visit an emergency medical facility. Products labeled DANGER also contain contact information that physicians may call for further treatment advice. Often labels for less

toxic pesticides will also provide first-aid instructions. Refer to MU Extension publication G1915, *Pesticide Poisoning Symptoms and First Aid*, for more information.

4. Hazards to humans and domestic animals. This part of the label includes precautionary statements indicating specific hazards, routes of exposure and precautions to be taken to avoid human and animal injury. The label will contain statements that indicate which route of entry (mouth, skin, eyes, lungs) you must particularly protect and what specific action you need to take to avoid acute effects from exposure to the pesticide. You will see such statements as “Fatal if absorbed through the skin, fatal if swallowed, and poisonous if inhaled. Do not breathe vapors or spray mist. Do not get on skin or clothing.” Pesticides that the EPA considers to have the potential to cause delayed effects must have label statements warning you of that fact. These statements will tell you whether the product has been shown to cause problems such as tumors or reproductive problems in laboratory animals. Additional information in this section will alert you if the product has the potential to cause allergic effects, such as skin irritation or asthma. Sometimes the labeling refers to allergic effects as “skin sensitizer.”

5. Personal protective equipment. Most pesticide labels contain specific instructions about the type of clothing that must be worn when handling and mixing the pesticide. This information is usually found after the statements regarding acute, delayed and allergic effects. Some labels may list this information after the signal word. An example of some common statements from pesticide labels regarding personal protective equipment is shown below. The personal protective equipment (PPE) listed is the minimum protection that should be worn while handling the pesticide. Sometimes the statements will require different personal protective equipment for different pesticide handling activities. In some cases, reduced personal protective equipment is allowed when you will be applying the pesticide in safer situations, such as enclosed cabs. More detailed information on PPE can be found in MU Extension publication G1915, *Personal Protective Equipment for Working With Pesticides*.

Personal protective equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
 - Waterproof gloves
 - Chemical-resistant footwear plus socks
 - Protective eyewear
 - Chemical-resistant headgear for overhead exposure
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Environmental information

6. Environmental hazards. This section of the label explains the nature of potential hazards and the precautions needed to prevent injury or damage to nontarget organisms or the environment. Some general statements appear on practically every pesticide label; for example, most pesticide

labels will warn you not to contaminate water when you apply the pesticide or when you clean your equipment or dispose of pesticide wastes. If the product poses a threat to groundwater, that threat is mentioned here. This section also provides instructions for minimizing environmental impacts. Some labels also mention endangered species concerns in this section. Refer to MU Extension publication G7520, *Pesticides and the Environment*, for more information.

Environmental hazards

- This pesticide is highly toxic to aquatic invertebrates and wildlife.
 - Birds in treated areas may be killed.
 - 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 treated area.
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Product information

7. Use classification. EPA is required to classify pesticides for either general use or restricted use. In classifying a pesticide, EPA considers

- the toxicity of the pesticide,
- how the pesticide will be used, and
- the effect of the pesticide on the environment.

When a pesticide is classified as restricted, the label will state “Restricted Use Pesticide” at the top of the front panel. Below this heading may be a reason for the restriction. To purchase and apply restricted-use pesticides, you must be certified and licensed through the Missouri Department of Agriculture.

A general-use pesticide is defined as one that will not harm the applicator or the environment to an unreasonable degree when used according to label directions. General-use pesticides are available to the general public for use according to label directions. Over-the-counter pesticide products are good examples of general-use pesticides.

Restricted-use pesticide

May injure susceptible, nontarget plants. For retail sale to and use by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator’s certification.

8. Brand (trade) name. Each manufacturer has a brand name for each of its products. Different manufacturers may use different brand names for the same pesticide active ingredient. For example, Pendulum, Pre-M and Prowl are trade names for the same herbicidal active ingredient, pendimethalin. It is not legal to use different brand-name pesticides interchangeably even if they contain the same active ingredient unless the label specifies the use. The brand name is shown plainly on the front panel of the label.

9. Ingredient statement. This statement, normally on the front panel of the label, identifies the name and percentage by weight of each active ingredient. Identified by chemical or common name, these are the components of

the product that affect the target pest. The chemical name is often complex. For Lorsban and Dursban, for example, the chemical name is 0, 0-diethyl 0-(3,5,6-trichloro-2-pyridyl)-phosphorothioate. To aid communication, EPA-approved common names may be substituted for chemical names. In this example, chlorpyrifos may be substituted for the chemical name. Usually following the list of ingredients, the amount of active ingredient is given in pounds per gallon or percent by weight.

Inert ingredients allow active ingredients to be formulated into many different products. As part of the formulation, they determine a product's handling properties. Inert ingredients need not be named, but the label must show what percent of the total contents they make up.

ACTIVE INGREDIENTS:

Chlorpyrifos: 0, 0-diethyl 0-(3,5,6- trichloro-2-pyridyl)-phosphorothioate) 69.6 percent

INERT INGREDIENTS: 30.4 percent

(Contains 6 pounds active ingredient per gallon)

10. Net contents. The front panel of the pesticide label tells you how much is in the container. This amount can be expressed as pounds, ounces, kilograms or grams for dry formulations and as gallons, quarts, pints, fluid ounces, liters or milliliters for liquids.

11. EPA registration number. This number identifies a specific product and signifies that the product has met federal registration requirements. This number must have a minimum of two sets of digits. For example, 264-458. The "264" indicates the manufacturer and the "458" is the number issued by the EPA to the company for the product.

12. EPA establishment number. This number identifies the facility that formulated the product. In the event of questions or concerns about a product, the facility that made the pesticide can be determined.

13. Name and address of manufacturer. The law requires the maker or distributor of a product to put the company name and address on the label. This enables consumers to know who made or sold the product.

14. Formulation. The front panel of some pesticide labels will tell what kind of formulation the product is. The formulation name may be either spelled out or designated by an abbreviation, such as WP for wettable powder, D for dust or EC for emulsifiable concentrate. This information is helpful for practical purposes because it provides insight about the type of application equipment that will be needed and the product's handling properties. Liquid formulations will usually provide a statement directly below the ingredient statement as to the amount of active ingredient contained in one gallon or liter of solution.

15. Physical or chemical hazards. This section will indicate specific fire, explosion or chemical hazards the product may pose. For example, it will alert you if the product is so flammable that you need to be especially careful to keep it away from heat or open flame or if it is so corrosive that it must be stored in a corrosion-resistant

container. This section is not always found in the same location within the labeling. Some labeling will identify physical and chemical hazards in a designated box; other labeling may list them on the front panel beneath the signal word; still others may list hazards under headings such as "Note" or "Important."

16. Limited warranty and disclaimer. This statement conveys the manufacturer's assurance that the product conforms to the chemical description on the label and that it is fit for label purposes if used according to directions under normal conditions. The warranty does not extend to any use of the product contrary to label instructions, nor does it apply under abnormal conditions such as drought, tornadoes, hurricanes or excessive rainfall.

Use information

17. Directions for use. This section usually makes up the bulk of a pesticide label and begins with the wording: "It is a violation of federal law to use this product in any manner inconsistent with its labeling." Products intended for use in agriculture will include an Agricultural Use Requirement box in this section. It will contain the statement: "Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170." The purpose of this statement is to inform those handling the product that the Worker Protection Standard applies to the product. When the Worker Protection Standard applies, information on employee notification of restricted entry intervals and applications, proper training, decontamination, emergency assistance and personal protective equipment is also included here.

Directions for use include the following information:

- The crops, animals, objects or areas to be treated
- The amount to use (per acre, per gallon of water, per 1,000 square feet, etc.)
- The method of application and type of application equipment
- The timing and frequency of application
- Specific limitations on reentry interval (REI) to treated areas
- The pests controlled
- Limitations or restrictions, including harvest intervals, time between applications, methods of use to prevent adverse effects on the environment, crop rotation restrictions, warnings about use on certain crops or sites, and animal restrictions

18. Storage and disposal. Label information about storage generally includes temperature requirements. In many cases, minimum and maximum storage temperatures will be provided. Some pesticide labels will state that the product becomes ineffective if not stored under suitable temperatures; other pesticide labels may indicate that if freezing occurs and crystals form, the product may be reused if it is warmed. Information about storage usually includes such general statements as "Do not contaminate feed, foodstuffs or drinking water" and "Store in original containers only."

Labels include information on disposal of pesticide containers and excess quantities of diluted pesticide mixtures. The label will inform users that leftover mixtures that can't be applied to a labeled site may be disposed of in an approved waste disposal facility that is in accordance with appropriate federal, state and local procedures. With disposal of liquid pesticide containers, the triple-rinse procedure will be stated in this section of the label and options such as recycling or disposal of punctured

containers in a sanitary landfill will be given. Manufacturers of returnable and refillable containers will remind the user to return the containers promptly and intact to the point of purchase. The label will state that bags containing dry pesticide products should be emptied thoroughly into the application equipment and incinerated or discarded into a sanitary landfill. Many states, including Missouri, have air quality regulations that do not allow open burning of pesticide containers.

7 RESTRICTED USE PESTICIDE
 (GROUND AND SURFACE WATER CONCERNS)
 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.

8 14 Bug-B-Ded 6EC Insecticide

Active Ingredient:

- 9** Killazine, (2,4,6 diamizine) 37.4%
Inert Ingredients:.....62.6%
Total.....100.00%

1 gal. contains 6.0 lb. killazine
 2.5 GALLONS

- 10** U.S. Standard Measure
 EPA Reg. No. 100-358
11 ESP Est. 34704-MI-1

12 Statement of Practical Treatment

- 3** **If swallowed**, DO NOT induce vomiting. Call a physician or Poison Control Center immediately.
If in eyes, flush with plenty of water.
If on skin, wash with plenty of soap and water.
NOTE TO PHYSICIAN: Vomiting should only be induced under professional supervision.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. **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 the involves contact with anything that has been treated, such as plants, soil or water is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

Directions for Use

- 17** It is a violation of federal law to use this product in a manner inconsistent with its labeling.
Cool-season turf: Chinch bugs, fleas and mole crickets: apply 1 ounce product per 1,000 square feet.
Warm-season turf: White grubs: apply 2 ounces product per 1,000 sq. ft. and water with supplemental irrigation.
 Allow at least 10 days before making a second application.

- 1** Keep out of the reach of children.
2 CAUTION
4 Harmful if swallowed or absorbed through the skin. Causes minor skin irritation.

5 Personal Protection Equipment (PPE)

Applicators and handlers must wear:

- Long-sleeved shirts and long pants
- Chemical-resistant gloves
- Shoes plus socks

6 Environmental Hazards

This product is toxic to fish. Do not apply directly to water or to areas where surface water is present.

15 Physical or Chemical Hazards

Do not use or store near heat or open flame.

Storage and Disposal

Storage: Do not contaminate water, food or feed by storage or disposal. Store at temperatures above 32 degrees F.

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

Container Disposal: Triple rinse (or equivalent). The puncture container and dispose of in a sanitary landfill or incinerate.

16 Limited Warranty and Disclaimer

The manufacturer warrants that this product conforms to the chemical description on the label; that this product is reasonably fit for the purposes set forth in the directions for use when it is used in accordance with such directions; that the directions, warnings, and other statements on this label are based upon responsible experts' evaluation of reasonable tests of effectiveness, of toxicity to laboratory animals, and to plants, and of residues on food crops and upon reports of field experience.

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