

## Pesticide Labeling: Directions for Use<sup>1</sup>

Frederick M. Fishel<sup>2</sup>

*This document describes the directions for use section of the pesticide label – usually the largest body of information found on most labels. Examples of typical directions for use statements are provided.*

### Introduction

It was the farm manager's worst nightmare. Upon inspecting a recently-treated field of peppers, the sight of severely-damaged pepper plants was unnerving. As he was walking out of the field, all he could think was “what could have possibly happened to this crop?” Returning to the farm's main shop, the manager pulled a copy of the pesticide's label out of the file and carefully reviewed it. Then, after querying the employee who made the pesticide application about exactly what procedures were used in making the treatment, the answer quickly came to the manager. The pesticide was applied at the incorrect rate; in fact, at twice the rate suggested by the label. The employee explained that last season when he applied this same product, there was no injury. Why? The pesticide's manufacturer had doubled the amount of active ingredient contained in the product's new formulation in order to save money on the cost of shipping supplies of

product to retail agrichemical dealers. If only the manager and employee had reviewed the content of the new label, most importantly the directions for use section, there would likely have been no crop injury. Besides unacceptable crop injury (Figure 1) or death, illegal residues can be created, and such misuses are subject to regulatory action because of off-label use. Fortunately, these are not common mistakes; but on occasion, they occur, sometimes with dramatic effects.



**Figure 1.** The incorrect pesticide rate will often result in significant crop injury.

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2. Frederick M. Fishel, associate professor, Agronomy Department, and Director, Pesticide Information Office; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

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## Purpose of directions for use

The directions for use of a pesticide label describe how the product may legally be used and how the product must not be used. Generally speaking, the necessary information includes:

- The pest(s) that the product may be used to control.
- The sites where the product may be used.
- The application methods that are required or preferred.
- How much pesticide should be applied and the rate of application.
- Whether there are any restrictions on use for factors such as weather, time of day, season of the year, contamination of sensitive areas, exposure of nontarget species, etc.
- The application methods that are prohibited.
- How often the pesticide should or may be applied.
- All restricted entry intervals (REIs) pertaining to existing uses, as applicable.
- Maximum application rates per treatment and per year.
- Preharvest intervals (PHIs).
- Storage and disposal.
- Any other requirements as necessary.

The directions for use (Figure 2) reflect EPA's determination that the use of the product in such a manner does not cause unreasonable adverse effects on the environment or human health under FIFRA. The directions for use are organized and carefully worded so that the directions are understood by the person expected to use or to supervise the use of the pesticide. The sentences in the directions for use indicate whether any actions mentioned are required, prohibited, encouraged, or discouraged when using the product. Other sentences in the use directions may only convey background information.

Charts, tables, and graphics may be seen in many labels' directions for use and they provide accurate information in a clear, concise, and complete manner. For example, an instructional statement such as this may be seen: "To make spray solution, mix 1 to 2 pints of this product in 100 gallons of water. Apply 100 to 200 gallons of diluted spray solution per acre to trees depending on tree size and the coverage obtained with the spray equipment used." Labels for agricultural products usually express the application rate in terms of pints/acre for liquid formulations, or pounds/acre for solid formulations. The directions for use for an agricultural pesticide used in a spray solution also must include the spray volume/unit area or other measurement of coverage, depending on the type of formulation. Labels for residential/household use products express the application rate in smaller units, such as ounces, teaspoons/gallon, or pounds/square foot. Such rates and units of measure are more appropriate for the home garden or yard.

## Misuse statement

All registered pesticides, including all end-use and manufacturing-use products, will bear labeling which has the following statement immediately below the Use Classification: "It is a violation of federal law to use this product in a manner inconsistent with its labeling." Other statements related to misuse may be seen on residential/household use products in addition to the previous general misuse statement:

- "STOP! – Read the label before using."
- "Use only as directed on this label."
- "Read label very carefully, including any special requirements which pertain to your growing area."
- "Failure to follow all precautions and directions is illegal."

## Agricultural use requirements

The Worker Protection Standard (WPS) regulations require certain statements on the labeling of all pesticide products within the scope of the WPS (Figure 2). The WPS statements will appear after the

<b>DIRECTIONS FOR USE</b>	
<b>It is a violation of Federal law to use this product in a manner inconsistent with its labeling.</b>	
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 requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.	
<b>AGRICULTURAL USE REQUIREMENTS</b>	
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 12 hours.	
<b>Exception:</b> If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.	
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:	
<ul style="list-style-type: none"> <li>• Coveralls</li> <li>• Waterproof gloves</li> <li>• Shoes plus socks</li> </ul>	
<b>STORAGE AND DISPOSAL</b>	
Do not contaminate water, food or feed by storage or disposal.	
<b>Pesticide Storage:</b> Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.	
Handle and open container in a manner as to prevent spillage. If the container is leaking or material spilled for any reason or cause, carefully sweep material into a pile. Refer to Precautionary Statements on label for hazards associated with the handling of this material. Do not walk through spilled material. Dispose of pesticide as directed below. In spill or leak incidents, keep unauthorized people away. You may contact the Bayer CropScience Emergency Response Team for decontamination procedures or any other assistance that may be necessary. The Bayer CropScience Emergency Response Telephone No. is 1-800-334-7577.	
<b>Pesticide Disposal:</b> Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.	
<b>Container Disposal:</b> Triple rinse (or equivalent). Then offer for recycling or reconditioning, 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.	
<b>GENERAL INFORMATION</b>	
SENCOR 4 cannot be applied with low-pressure or high-volume hand-wand equipment.	
<b>MIXING</b>	
When using SENCOR 4, make sure the sprayer is completely clean, free of rust or corrosion which occurs from Winter storage. Examine strainers and screens to be sure the sprayer is clean from previously used pesticides.	
Any tank mix containing SENCOR 4 should be kept agitated and sprayed out immediately. Do not allow tank mixes to stand for prolonged periods of time.	

**Figure 2.** The directions for use section should be written so that the product will be used safely.

general misuse statement under the heading “Agricultural Use Requirements (40 CFR 156.206).” WPS statements include information pertaining to Restricted Entry Intervals (REIs), notification to workers, and non-agricultural use requirements.

### Chemigation information

If products are not approved for application through irrigation systems (Figure 3), the label will state “Do not apply this product through any type of irrigation system.” Any product used on agricultural sites that may be applied by chemigation will contain the following information:

- Types of irrigation systems to be used;
- Consequences of improper chemigation;
- To whom questions about chemigation can be directed;
- Warnings against connecting irrigation equipment to public water supplies without safety mechanisms;
- Personnel required for adjustment of chemigation equipment.



**Figure 3.** Some products are approved to be applied through irrigation systems.

## Pests controlled

Some labels often make pest claims on their front panel. For example, if the front panel lists fire ants as a target pest, then the directions for use must include the appropriate treatment directions for fire ants. This consistency is required by the EPA to prevent a registrant from misbranding their product. Some labels will very generally name target pests in their directions for use (e.g., ants); other labels may identify them specifically (e.g., carpenter ants). The pests listed on the label are appropriate for the intended use sites for the product. For example, pests listed on the labels of residential/household products should be typical household/garden pests. An agricultural crop specific pest, such as the cotton bollworm, would not be an appropriate pest claim for the label of a product intended only for use around the home.

## Sites

The application or treatment site(s) will be identified on the label and clearly associated with the pest controlled. The site will be consistent between those listed on the front panel and other areas where mentioned in the labeling, including the directions for use. For example, if ornamentals are listed as a site on the front panel, then the directions for use must also include the appropriate treatment directions for ornamentals. If the use site is indicated by a broad crop, such as ornamentals, then more specific sites will be identified in the directions for use, such as “Christmas trees” and “rhododendrons.” Some sites will be listed in very specific terms. As an example, some products intended for indoor home site uses may have statements such as “bathrooms,”

“kitchens,” or even more specifically, “cracks and crevices in kitchen areas of residences,” instead of simply stating “dwellings.”

## Mixing instructions

Some products must be mixed or diluted with other materials prior to application for pest control purposes. Labels for liquid formulations identified as concentrates, and dry products identified as “wetttable powders,” will have directions for mixing or diluting. These statements will be clear and given in easily measurable units. Units of weight for dry formulations are listed as pounds or ounces, while liquids are given in fluid ounces, pints, or quarts. Diluents will be specifically named, even if it is only water. Many labels will list their dilution directions in the form of a chart or table.

## Methods and types of equipment

When necessary, the label will indicate the types of equipment that may be used in applying the pesticide. Specific brands and models of equipment are not indicated unless specific information is provided to indicate that only that brand and model are appropriate because of safety or efficacy factors. For example, some home lawn granular products that are applied with spreaders list the make and model of various spreaders with their gate settings in order for the user to deliver the proper rate. Some types of equipment are designed specifically to apply particular types of pesticides or to interface with particular containers (Figure 4) in which certain products are packaged. Certain equipment that is not appropriate to apply a given product will be prohibited in this section of the label. Labels which state that the pesticide must be applied to the soil and incorporated will specify what kind of equipment must be used, such as a tandem disc, rolling cultivator, or bed conditioner.

## Use restrictions

Any precautions and restrictions that apply to specific sites and pests must be listed in the directions for use. Such restrictions are listed to avoid unreasonable adverse effects. Generally, restrictions involve any of the following:



**Figure 4.** Lock and load systems are designed for specific application equipment.

- Rates;
- Sites, pests, timing, weather, soil, and geographic location;
- Equipment or application method;
- Staining, phytotoxicity, and incompatibility with other products;
- Pre-harvest intervals or rotational crop restrictions;
- Crop varieties.

### **Additional information**

Fishel, F.M. 2005. Interpreting pesticide label wording. UF/IFAS EDIS Extension Document PI-34. <http://edis.ifas.ufl.edu/PI071>.

Nesheim, O. N. 2005. The Worker Protection Standard. UF/IFAS EDIS Extension Document PI-19. <http://edis.ifas.ufl.edu/CV138>.