NebGuide

Nebraska Extension

Research-Based Information That You Can Use

G1955
Revised March 2021

Understanding the Pesticide Label

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This NebGuide describes the parts of a pesticide label to aid in understanding and to promote safe and effective use of pesticide products.

The pesticide label is more than just a piece of paper; it is a legal document recognized by courts of law. Using a pesticide in a way that is inconsistent with its label is a violation of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Pesticide applicators assume certain responsibilities when they purchase and use a product. (For more information see NebGuide G479, *Pesticide Laws and Regulations*).

Label formats vary according to pesticide type, registration, toxicity, and manufacturer. Some of the many types of pesticides include herbicides, insecticides, fungicides, termiticides, and rodenticides. All pesticide products must be registered with the Environmental Protection Agency (EPA), and each is given a unique registration number. FIFRA establishes four types of pesticide registration:

Section 3—product has standard registration (by far the most common);

Section 25(b)—product has been exempted from registration because it poses minimal risk;

Section 24(c)—product has been registered based on a special local need; and

Section 18—product has been given an emergency exemption.

Pesticide manufacturers are required by law to provide certain information on the label. This information includes:

- brand name or trade name of the product;
- ingredient statement;
- percentage or amount of active ingredient(s) by weight;
- net contents of the container; and
- name and address of the manufacturer.

Other required parts of the label are:

- the registration and establishment numbers;
- first aid statement (not always required);
- environmental hazard statement;
- use classification statement;
- directions for use;
- re-entry statement, if necessary;
- harvesting and/or grazing restrictions, if applicable; and
- storage and disposal statements.

Brand, Trade, or Product Name

Brand, trade, or product name is used to identify and market the product (e.g., **Pest No More** in *Figure 1*). Different companies use different brand names to market products, even when the same active ingredient is used and the products are more or less identical.

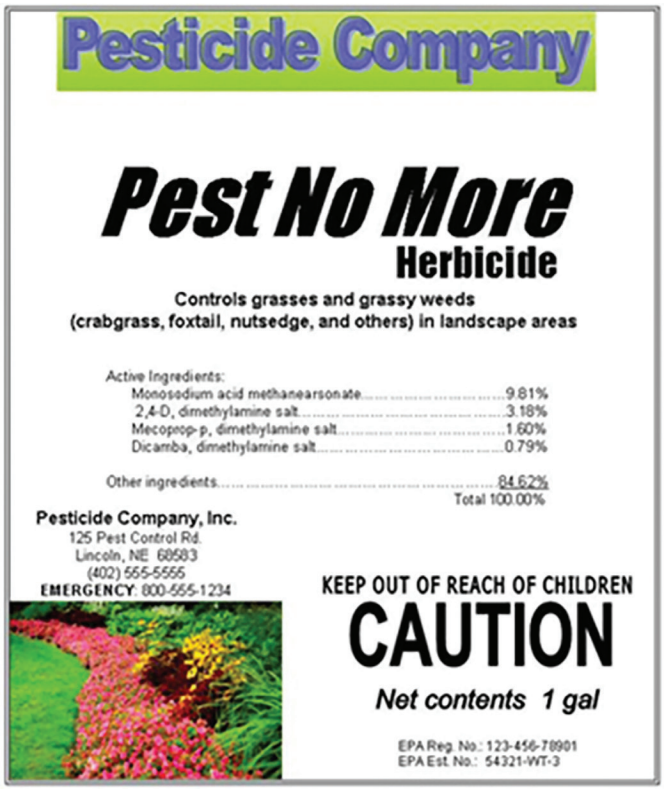

Figure 1. An example of pesticide label.

Ingredient Statement

Every pesticide label must list the product's active ingredient(s) by name (either chemical or common) with the percentage of each by weight. Active ingredients are the chemicals in a product responsible for killing, repelling, or controlling the pest. The total percentage of inert ingredients by weight must also be included. Inert ingredients, also referred to as "other ingredients" on some labels, are not listed by name. Inert ingredients are added to enhance the effectiveness of the product, and include emulsifiers, solvents, carriers, aerosol propellants, fragrances, and dyes. *Net contents* are listed on the front of the product and indicate the total amount of product in the container (fluid ounces, pints, quarts, ounces, pounds, etc.).

Use Classification Statement

Each pesticide is classified as either a General Use Pesticide (GUP) or a Restricted Use Pesticide (RUP). In general, GUPs are either less toxic or less environmentally hazardous than RUPs. Thus, to purchase or apply RUPs, the applicator must be trained and certified, or be working under the direct supervision of a trained/certified applicator (*Figure 2*).

RESTRICTED USE PESTICIDE

May injure (Phytotoxic) susceptible, non-target plants. 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. Commercial certified applicators must also ensure that all persons involved in these activities are informed of the precautionary statements.

Figure 2. An example of a Restricted Use Pesticide statement.

Type of Pesticide

Most labels state the type of pesticide on the front. For example, the label may say *Herbicide*, indicating the product controls weeds, or *Insecticide*, indicating it will control insects.

Manufacturer

The name and address of the manufacturer, formulator, or registrant (e.g., Pesticide Company, Inc. in *Figure 1*) must be on the label. If a product's registrant and manufacturer are not the same entity, then contact information will be preceded by a statement such as "packaged for," "distributed by," or "sold by."

Emergency Telephone Number

Often the label will show a telephone number to use in case of emergencies (poisoning, spill, fire, etc.). This is especially common on product labels intended for the general public.

Registration and Establishment Numbers

The *Registration Number* (EPA Reg. No.) is proof that the product and its label were approved by the EPA. The

Establishment Number (EPA Est. No.) identifies the specific facility that manufactured the product. This allows individual product containers to be traced back to their manufacturing facility.

Signal Words

Pesticide labels must prominently display a signal word on the front unless they have a Class IV toxicity level (very slight hazard). Signal words identify the relative toxicity of a particular product. From most toxic to least toxic, the signal words are Danger-Poison, Danger, Warning, and Caution. (*Table I*).

Table I. Signal words that may appear on the label.

Signal Word	Category**	Toxicity (Lethal Dose)*
Danger or Danger-Poison	Class I—highly toxic	Corrosive or irritant properties, a few drops to 1 teaspoon
Warning	Class II—moderately toxic	1 teaspoon to 1 ounce
Caution	Class III—slightly toxic	1 ounce to 1 pint/ 1 pound
Caution or none	Class IV— very slight hazard	Over 1 pint or 1 pound

* Lethal doses are listed for a 150-lb. adult.

** A product's toxicity category determines what must be on its label.

Precautionary Statements

A label's *Precautionary Statements* outline the health risks associated with exposure to the product, ways to minimize exposure, and what to do in case of exposure/poisoning. The *Precautionary Statements* section usually consists of several different components, and vary according to a product's toxicity, formulation, and approved uses. One simple but important component that must be on practically every pesticide label is the *Child Hazard Warning Statement* (i.e., "Keep Out of Reach of Children").

The *Hazards to Humans (and Domestic Animals) Statements* are accompanied by the product's signal word. These statements are required for products in toxicity Classes I, II, and III (*Table I*). Common examples include "Harmful if swallowed" and "Do not get on eyes, on skin, or on clothing."

Personal Protective Equipment Statements appear under the *Precautionary Statements* section. Because different jobs carry varying degrees of risk, labels sometimes require people in certain roles to wear more personal protective equipment (PPE) than others. For example, mixers and loaders sometimes must wear more PPE than applicators because, unlike the applicator, they will be handling concentrated pesticide. PPE requirements for other scenarios, such as aerial applications or early-entry work in agriculture, often appear elsewhere on the label. (See NebGuide G758, *Protective Clothing and Equipment for Pesticide Applicators*.)

Statement of Practical Treatment

The *Statement of Practical Treatment*, also called the *First Aid Statement*, describes what to do if a person is exposed to a product. Applicators should read this information before using a product, and it should be readily available in case of an emergency. Some labels also include a *Note to Physician Statement*, which is technical information meant for medical professionals treating victims of pesticide exposure.

Environmental Hazard Statement

Environmental Hazard Statements detail a product's potential hazards to the environment, including soil, water, air, wildlife, fish, and nontarget plants. These statements are based on a pesticide's characteristics, such as water solubility, drift potential, and toxicity to various plants and animals. Examples include "This product is highly toxic to bees," "Do not contaminate water when disposing of equipment washwaters," and "Do not allow drift to contact nontarget plants or trees."

Endangered species protection information may be found in this section of the label, or in a separate section. If necessary, a product label informs the user of its potential risks to endangered species. It may direct the user to an *Endangered Species Protection Bulletin* through a telephone number or a website, such as EPA's *Bulletins Live! Two*. If referenced on the label, such a Bulletin is considered part of the label and must be consulted and followed.

Physical or Chemical Hazards

Physical or Chemical Hazards Statements describe any possible fire, chemical, or explosion hazards specific to the product. For example, "Spray solutions of this product should be mixed, stored, and applied using only stainless steel, aluminum, fiberglass, plastic, or plastic-lined steel containers" and "This gas mixture could flash or explode

causing serious personal injury if ignited by open flame, spark, welder's torch, lighted cigarette, or other ignition source" are both statements that can be found under this section of the label. These statements are sometimes accompanied by a symbol (e.g., a pictogram of a flame for flammability).

Agricultural Use Requirements

If a product is approved for use in the production of an agricultural commodity, its label will include *Worker Protection Standard* (WPS) requirements under the heading *Agricultural Use Requirements* (*Figure 3*). The WPS includes specific safety measures for agricultural workers and handlers of agricultural pesticides.

Restricted-Entry Statements, such as Restricted-Entry Intervals (REI), are a common feature of the *Agricultural Use Requirements* on labels. The REI indicates how much time must pass after the application before workers are allowed back into the treated area with no PPE. (See Extension Circular EC3006, *Worker Protection Standard for Agricultural Establishments*.) Re-entry restrictions for uses outside of agriculture (lawns, golf courses, aquatic areas, rights- of-way, etc.) will not appear in the WPS section of the label. This information is listed under *Non-Agricultural Use Requirements*. A common example is "Keep children and pets out of the treated area until sprays have dried."

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
- Chemical resistant gloves made of any waterproof material
- Shoes plus socks

Figure 3. An example of an *Agricultural Use* label section

Storage and Disposal Statement

Each pesticide label has general storage and disposal instructions. This usually includes keeping pesticides stored in a secure location, away from food and feed supplies, and in their original containers. This section of the label also describes what to do with empty pesticide containers. Triple- or pressure-rinsing containers, and puncturing them to prevent re-use, are common directions. The label also lists approved container disposal options, such as recycling, landfilling, incineration, or burning. State and local laws may include additional requirements, especially for proper pesticide disposal procedures (see Extension Circular EC2507, *Safe Transport, Storage, and Disposal of Pesticides*.

Directions for Use

The *Directions for Use* describe how a product can and cannot legally be used. Approved sites of application, such as a crop or a lawn, are a critical component. Applying a pesticide to a site not listed on its label is illegal, as is deviating from any mandatory label language. Mandatory language uses words such as "must," "shall," or "do not," and must be followed. Advisory language uses words such as "should" and is used to convey best management practices. Pests that the product has demonstrated effectiveness against are also listed. Application rates, methods, timing, and frequency all fall under *Directions for Use* and are critical to safe, effective applications.

Labels for products approved for use on row crops or vegetable gardens include a *Pre-harvest Interval* (PHI). This is the amount of time that must pass between a pesticide application and harvest to ensure that any pesticide residue left on the crop falls well below tolerance levels. A product's PHI may vary by crop—the PHI for a product used on

PROTECTION OF POLLINATORS

APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.

Look for the bee hazard icon  in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators.

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives or off-site to pollinator attractive habitat can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx.

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state, go to www.aapco.org/officials.html. Pesticide incidents should also be reported to the National Pesticide Information Center at www.npic.orst.edu or directly to EPA at beekill@epa.gov

Figure 4. The bee hazard icon, found on some labels, alerts the applicator of the product's risk to pollinators.

corn may be different from the PHI for the same product used on soybeans.

The *Directions for Use* may also include measures such as spray drift prevention (e.g., droplet size requirements), water protection (e.g., "This product must not be mixed or loaded or used within 50 ft. of all wells"), and pollinator protection (*Figure 4*). Weather factors, such as wind speed and direction, temperature, humidity, and forecasted precipitation, are increasingly addressed on labels with either mandatory or advisory language.

Products approved for use in chemigation will include specific instructions for this application method on their labels. Products without these instructions cannot be used in chemigation.

Resistance Statement

The possibility of a pest population developing resistance is a concern when using pesticides. The product label may have advisory pesticide resistance management guidelines based on target site/mode of action (how the pesticide kills the pest) for agricultural uses. The *Resistance Statement* may also suggest non-chemical controls to consider. Many product labels feature one or more group numbers, which denote a product's mode(s) of action (*Figure 5*). The applicator can select pesticides with different modes of action over time to reduce the risk of target pest populations developing resistance.

For example, the label for a Group 1 herbicide may state the following:

If the applicator uses this herbicide, and must use a herbicide again, the applicator should consider using one with a group number other than 1, as it would have a different mode of action.

Group	1	HERBICIDE

Figure 5. International committees classify pesticides based on their modes of action to make it easier for applicators to adopt resistance management techniques.

Special Requirements

Some product labels require that the applicator receive special training prior to use. Some may have special recordkeeping requirements. These requirements, and any online information to which the label directs you, are part of the labeling and must be heeded.

Deviations from the Label

Using a pesticide in a way that is inconsistent with its label is a violation of FIFRA. However, in 1978, the original prohibition of the "use of any registered pesticide in a manner inconsistent with its labeling" was modified to allow four exceptions:

Applying amounts less than the label states. You may apply a pesticide at dosages, concentrations, or frequencies that are less than those specified on the label. Keep in mind that a pesticide application at less than the recommended rate may be ineffective, costly, or result in the development of resistant pest populations.

Application methods not prohibited by the label. You may use application methods not specifically prohibited by the label instructions. However, certain application methods, such as chemigation, must be specifically listed on the label to be legal.

Applying against a target pest. Unless specifically prohibited by the label, you may apply a pesticide against a target pest not listed on the label, provided that the application will be made on a label-approved site.

Mixtures. You may use mixtures of pesticides or pesticides with fertilizers if these mixtures are not specifically prohibited by the label instructions. You should conduct a Jar Test to check for compatibility, unless directed not to. A Jar Test involves mixing products proportionally on a small scale (in a quart jar) to see if they are compatible. Some pesticides do not allow you to use a Jar Test, and instead direct you to a list of approved mixes.

Read and follow all label directions for safe, effective, and legal use of pesticides. Reading the pesticide label will help ensure responsible pesticide use.

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