

## Chapter 8

# Deployment of Insecticides and Acaricides

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One of the main reasons for the high productivity in modern agriculture has been the ability to deliver crop production and protection materials to crops and pastures to combat a wide variety of pests. In the past few decades, this application has gone from spray everything (i.e., nuke it) to very precise application of some very pest-specific materials. New systems for pesticide delivery are using integrated global positioning systems, global information systems, and other highly advanced technologies to make the most judicious use of pesticides and minimize any unintended effects on the surrounding environment. Therefore, it is important that all users of pesticides be informed on how to safely use and apply these materials.

This chapter focuses on four main issues: the safe use of pesticides, application equipment, atomization, and drift. These areas were selected with two main goals in

mind. The first was to provide a general overview of how crop production and protection materials are delivered from the pesticide container to the target site (i.e., plant). The second was to provide up-to-date information on the computer models and droplet size classification systems available to applicators to help them select and use application equipment. Throughout this chapter, numerous websites are referenced. Everyone knows that there are vast amounts of information available and that the information is always changing. These reference links are to sites that are generally kept up-to-date.

In this chapter, the term pesticide is used repeatedly in reference to *any* crop protection or production material. Therefore, pesticides can refer to biological materials such as *Bt*, insecticides, nutrients, or any other materials sprayed onto a crop, pasture land, or forest.

## Safety, Storage, and User Protection of Pesticides



### Read the label, read the label, read the label

If the above statement is the only part of this chapter that you read, you will have the basic information you need to safely use, handle, store, and dispose of any registered pesticide in the United States. All uses and requirements for pest control products used in the United States are covered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The act mandates that the information in Fig. 1 is shown on all products.

The label also contains all of the basic information needed to handle, apply, store, and dispose of the agrochemical being used. The most important part of the label is the first item that states, "It is a violation of Federal Law to use this product in a manner inconsistent with its labeling." The label also contains information on what to do in the event that the product is swallowed, inhaled, reaches the eyes, or comes into contact with the skin. The label describes the personal protection equipment that must be worn while handling and applying the material. The label

<b>PRODUCT NAME</b>	
<p><b>DIRECTIONS FOR USE</b> It is a violation of federal law to use this product in a manner inconsistent with its labeling.</p> <hr/> <p><b>PRECAUTIONARY STATEMENTS</b> HAZARDS TO HUMANS (AND DOMESTIC ANIMALS) <b>DANGER</b></p> <hr/> <p><b>ENVIRONMENTAL HAZARDS</b></p> <hr/> <p><b>PHYSICAL OR CHEMICAL HAZARDS</b></p> <hr/> <p><b>STORAGE AND DISPOSAL</b></p> <p>STORAGE _____</p> <p>DISPOSAL _____</p>	<p><b>KEEP OUT OF THE REACH OF CHILDREN</b> <b>DANGER</b></p> <p><b>FIRST AID</b> (STATEMENT OF PRACTICAL TREATMENT)</p> <p>IF SWALLOWED _____ IF INHALED _____ IF IN EYES _____ IF ON SKIN _____</p> <hr/> <p>ACTIVE INGREDIENTS _____ % OTHER (INERT) INGREDIENTS _____ % <b>TOTAL:</b> _____ <b>100.00%</b></p> <hr/> <p>THIS PRODUCT CONTAINS XX LBS OF XXXX PER GALLON</p> <p><b>WARRANTY STATEMENT</b> _____</p> <hr/> <p>MANUFACTURER'S ADDRESS _____</p> <hr/> <p><b>NET WT / NET CONTENTS STATEMENT</b> _____</p> <hr/> <p>EPA Registration No. / EPA Reg. No. _____</p> <hr/> <p>EPA Establishment No. / EPA Est. No. _____</p>

**Figure 1.** A generic pesticide label showing all of the information that is available on every pesticide label (Source: EPA.)