



PESTICIDE

SAFETY

FOR SMALL FARMS



A Grower's Guide to Pesticide Safety

Second Edition

University of California
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Pesticide Safety for Small Farms

*A Grower's Guide to
Pesticide Safety*

Second Edition

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**The University of California Statewide
Integrated Pest Management Project**

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Introduction

Pesticides are chemicals that control pests. They include:

- Insecticides for insects
- Herbicides for weeds
- Fungicides for plant diseases
- Pesticides for other pests, such as rodents and birds



Pesticides vary in the ways they control a pest. They can kill the pest, stop its growth, affect pest reproduction, or act as a repellent to the pest.

Unfortunately, many pesticides can also hurt people, pets, other animals, and the environment if they are not used carefully and according to label directions.

The Worker Protection Standard is a law passed by Congress and enforced by the United States Environmental Protection Agency (U.S. EPA), which requires that people who handle pesticides receive information and training in the safe use of pesticides. In California, the law is enforced by the California Department of Pesticide Regulation and the county agricultural commissioners.

You need to learn as much as you can about pesticides and safety equipment to protect yourself and others from pesticide injury when you work in agricultural businesses — farms, fields, forests, nurseries, and greenhouses.

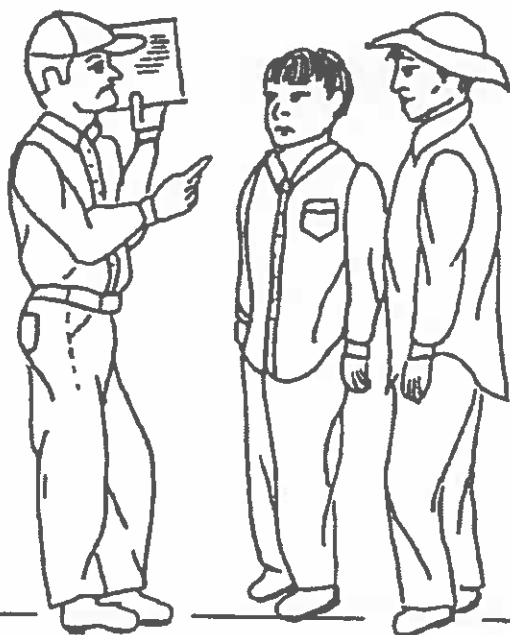
Introduction

You are a pesticide handler if you:

- Apply pesticides
- Assist with pesticide applications
- Clean, repair, or maintain pesticide application equipment (such as boom sprayers, backpack sprayers, or hoppers) that may contain pesticide residues
- Mix, load, or transfer pesticides into application equipment
- Dispose of pesticides or materials with pesticides on them, such as containers
- Work as a flagger during a pesticide application

During any of these activities, accidental contact with a pesticide could injure you or make you sick. Therefore, it is important for you to receive training in how to:

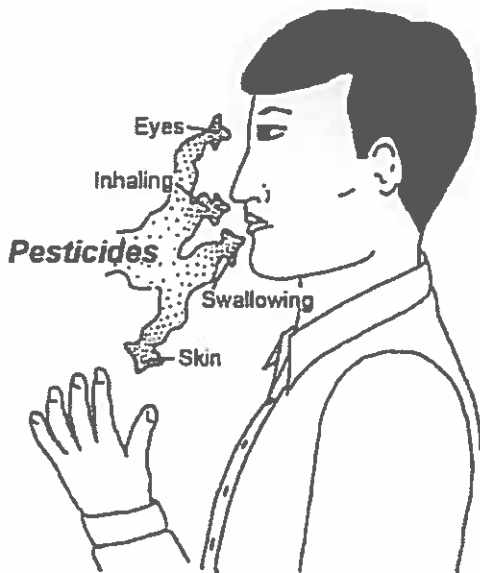
- Understand the health hazards associated with pesticide exposure
- Recognize the signs and symptoms of pesticide exposure and heat-related illness
- Respond to emergencies involving pesticides (first aid, spill cleanup)
- Wear, use, and maintain personal protective equipment (for example, goggles, respirators, and gloves)
- Read and understand information on a pesticide label
- Safely transport, mix, load, apply, store, and dispose of pesticides and pesticide containers
- Safely operate the mixing, loading, and application equipment
- Avoid exposure through common sense and personal hygiene



Pesticide Exposure

You can protect yourself from pesticides in many ways. Watch out for:

- Splashes and spills
- Sprays and dusts from pesticide applications
- Skin contact with pesticide residues



Pesticides can poison or injure you:

- If you swallow them
- If they get into your eyes
- If you inhale dusts or fumes
- If they get on your skin

Skin contact is the most common way pesticides enter the body. Pesticides that are spilled or splashed onto the skin or enter the body through cuts and wounds could make you very sick.

Because pesticides can enter your body through your eyes and skin, you should avoid wiping your eyes, face, and neck when you have been handling pesticides. It is also important to wash your hands before using the toilet.

Tobacco and food absorb pesticides, so don't carry them with you while you work. Leave them someplace where pesticides won't get on them.

Pesticide Exposure

Remember: Wash your hands and face before you :

- Eat
- Drink
- Chew gum
- Use tobacco
- Use the toilet

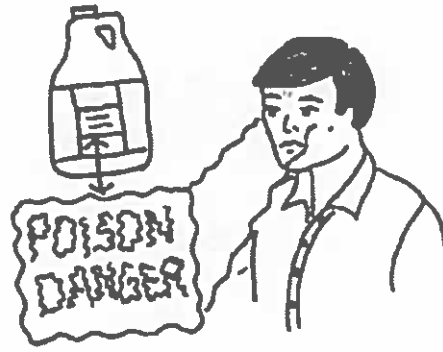


Pesticide Exposure

Too much exposure to certain pesticides will make you sick. Symptoms may include:



Tiredness or dizziness



Headache, blurred vision



Sweating too much



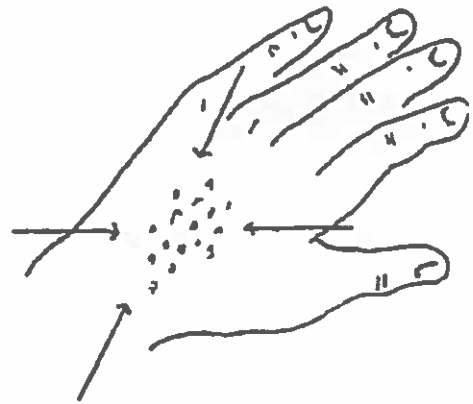
Stomach cramps, vomiting

Pesticide Exposure

Additional pesticide exposure symptoms may include:



Eye irritation



Skin rashes



Trouble breathing

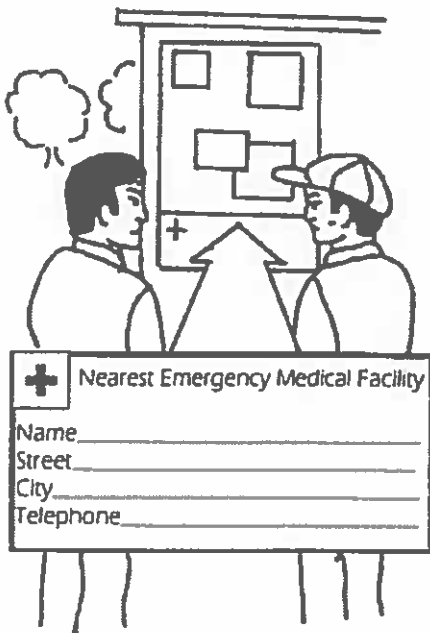


Chest pains

Emergency First Aid

The name, address, and telephone number of the nearest place to get emergency medical help must be posted at a central location, such as where you store pesticides and at the actual worksite. Worksite posting can be in your vehicle. Be sure you know ahead of time where this emergency information is located so that you can get help for yourself or others quickly in an emergency.

All pesticide labels have emergency first aid information for pesticide exposure. This is frequently listed under the section titled "Statement of Practical Treatment." Read it or have someone explain it to you before you handle the pesticide. You should know the emergency first aid procedures before you need to use them. If you do the wrong thing in an emergency, it could do more harm to you or others.



When you are working with pesticides, if you feel dizzy, sick, or have trouble breathing:

- Stop what you are doing right away
- Follow the appropriate emergency first aid procedures listed on the pesticide label



- Ask someone nearby for help
- Have someone drive you to an emergency medical center if necessary

The law requires that soap, a clean change of clothing, towels, and enough water to wash pesticides off your body must be kept near the area where you are working. Do not use water from irrigation ditches or canals — they could have pesticides or fertilizers in them.

Emergency First Aid

If pesticide gets in your eyes, rinse your eyes immediately with a gentle stream of clean water. Hold your eyelids open and keep rinsing your eyes for about 15 minutes.



If pesticide gets on your clothes or skin, take your clothes off immediately and wash your skin with soap and plenty of water.

The faster you act, the less likely you are to get sick or be harmed.



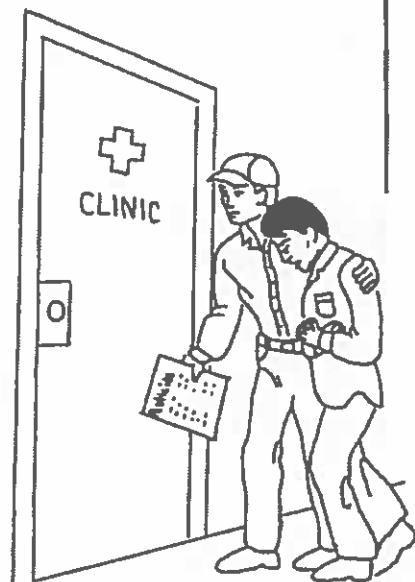
Emergency First Aid

If you swallow a pesticide, it is necessary to follow the first aid directions on the pesticide label. The label may provide important information on whether or not to induce vomiting. For those pesticides that are corrosive, inducing vomiting would do further damage.

If you are helping someone who has swallowed a pesticide, never induce vomiting if the person is unconscious or having convulsions. Call 9-1-1 or take the person to the nearest medical facility.

Provide medical personnel with as much information about the incident as possible. The doctor will need to know the brand name and the common name of the pesticide, the EPA registration number, the manufacturer, how the victim was exposed to the pesticide, and the recommended antidote listed on the label.

If possible, take a copy of the pesticide label with you to the doctor, or have another person call ahead with the necessary information while the victim is being transported to the medical facility.



Emergency First Aid

If you inhale a pesticide, get to fresh air immediately. If you are having difficulty breathing, call for help, then sit down and try to breathe normally. It is not good to walk around if you are having difficulty breathing.

Before you rescue someone who has inhaled a pesticide and who may be unconscious, make sure that you do not expose yourself to the same danger. Wear the appropriate respiratory protection and move the victim to fresh air. Then remove the victim's respirator (if present), loosen the clothing, and call for emergency medical assistance (9-1-1 or your local emergency number).



Get someone to take you to the doctor:

- If you swallow a pesticide or get it in your eyes
- If you spill concentrated or a large amount of diluted pesticide on your skin
- If you find it difficult to breathe
- If your skin shows signs of severe irritation
- If you feel ill and think you may have pesticide poisoning

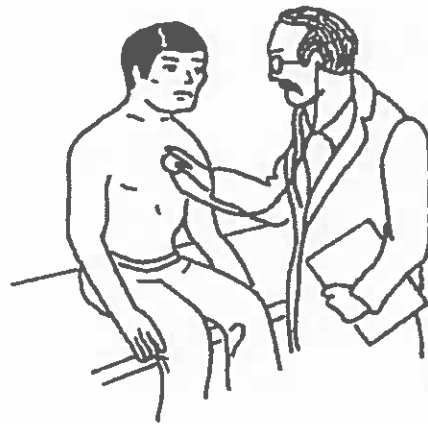
Other Health Effects

Some people are allergic to certain pesticides. They may get a severe skin rash when the pesticide touches their skin, or they may sneeze and have a runny nose and itchy eyes when they are near the pesticide. If a pesticide affects you this way, try wearing some extra protection (gloves, a respirator, etc.). If symptoms continue, you may have to stay away from that particular pesticide.



Allergic reactions may not occur with your first or second exposure to a particular pesticide. However, your body may become sensitized to that pesticide, and if you are exposed to it again, you may experience an allergic reaction.

Some harmful effects from pesticides may not show up for a long time. Studies with laboratory animals show that some pesticides may cause cancer and other potential problems: nervous system damage, reproductive damage, harm to unborn children, damage to specific organs such as lungs, liver, kidneys, etc.



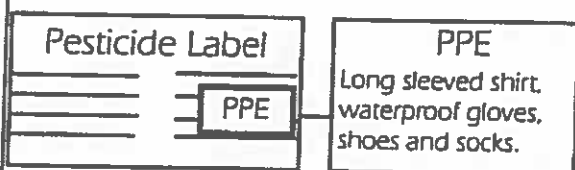
Scientists cannot always know about the long-term effects of pesticides on human beings, so don't take any chances.

When you handle pesticides, or when you work in areas where pesticides have been applied, do everything you can to keep them from getting on or in your body.

Personal Protective Equipment

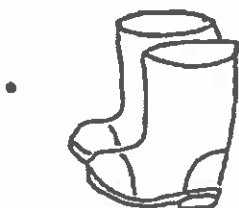
Personal protective equipment (PPE) helps to keep pesticides from getting on or in your body.

Pesticide residues cannot always be seen so you should cover as much of your skin as possible. This will help prevent skin rashes or poisoning. By law you must wear the protective clothing listed on the pesticide label.



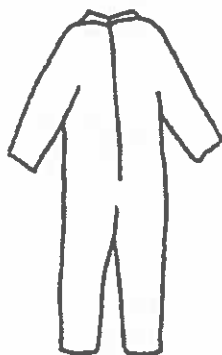
Examples of protective clothing are:

- Waterproof gloves



Boots or shoes

- Coveralls



- Hoods or wide-brimmed, chemical-resistant hats for overhead exposure
- Aprons if you are mixing and loading pesticides
- Protective eyewear: goggles, face-shields, or safety glasses with side and brow guards



- Respirator: you should use different types of respirators for different pesticides. Refer to the Respirator Section on the pesticide label

Do not wear cotton gloves when you are handling pesticides unless the pesticide label specifically says to use them.

Never use leather gloves when handling pesticides because leather absorbs pesticides and cannot be properly cleaned.

PPE must be clean and ready to use at the beginning of each work period. Before and during use, look for tears, holes, or other defects or signs of excessive wear, such as changes in the color of your equipment. If you find a problem with a piece of equipment, replace it.

Personal Protective Equipment

Here are nine easy rules for wearing PPE correctly.

- Keep your pant legs over the top of your boots so pesticide won't run down into your boots.
- Wear chemical-resistant gloves that reach at least halfway to your elbow.
- If you are applying pesticides to plants near the ground, wear your sleeves over the outside of your gloves so that pesticides do not run down into the gloves.
- If you are spraying above your shoulder, wear your sleeves inside your gloves.
- If you are spraying both above and below your shoulder, you can use duct tape to attach the tops of your gloves to your sleeves so that pesticides cannot run into your gloves or into your sleeves.
- Wear loose-fitting clothes for comfort. For moderately or highly hazardous pesticides, you should wear coveralls over your regular work clothes to give you very good protection.
- Use a chemical-resistant apron to keep splashes and spills from soaking your coveralls while you are mixing and loading pesticides or cleaning equipment.
- Button your collar at the neck to keep pesticides from getting inside your clothes.
- If your hood is separate from your coveralls, keep the bottom edges of the hood outside the coveralls to protect yourself from pesticide runoff.

While you are working, pay attention to your protective equipment. If your gloves, apron, or boots get holes in them, stop working right away and replace them.

When using pesticides, have clean water available in case of skin contamination. If pesticides get through damaged equipment and onto your skin, wash your skin and then put on clean equipment.

Heat Stress

If you wear PPE in hot weather, be aware of heat stress. You can get very sick if your body gets too hot and can't cool down.

Many symptoms of heat stress are like the symptoms of pesticide poisoning. You may feel tired and weak, have a headache, feel sick to your stomach, and get dizzy. If you are not sure what is making you ill, get help right away. Get out of the direct sunlight and away from pesticides if possible.

Severe heat stress can cause a person to act confused, get angry easily, or behave strangely. Get first aid help right away or the person could die. Some symptoms of pesticide poisoning and heat stress are:

Pesticide Poisoning Symptoms

- drooling, tearing, runny nose
- possible pinpoint pupils
- slow pulse



Heat Stress Symptoms

- dry membranes
- dilated pupils
- rapid pulse

If you suspect that someone has heat stress, it is very important to cool them down as quickly as possible and take them to the doctor immediately. To cool someone down, take off the outer clothing, pour cool water on them, fan them vigorously, and wrap them in loose, wet towels. Keep moistening the person's face and body with a cool damp cloth and continue fanning them while traveling to the doctor.

If the weather suddenly becomes much hotter, if you are new to the job, or if you are returning to work after being away, you may need to adjust gradually to working in the heat.

Learn to avoid heat stress. On warm and hot days, drink lots of water before, during, and after work. Drink at least a cup of water every half hour — more if you are sweating a lot.

Avoid doing jobs that require the use of full PPE in temperatures above 80 degrees during the day and 85 degrees at night. Take rest breaks in the shade if possible, to help cool your body.

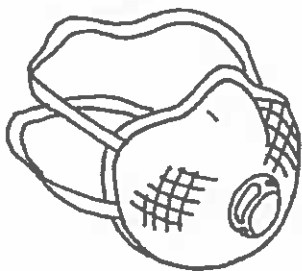
Respirators

Respirators protect you from inhaling pesticides that could damage your lungs and respiratory tract. There are different types and styles of respirators. The type of respirator you use depends on the pesticide that you will be handling. Select respiratory equipment based on the requirements listed on the pesticide label.

The pesticide label will say whether you must use a respirator and what kind to use. When a respirator is required, the pesticide label will give the MSHA/NIOSH approval code number (i.e. TC-21C, or TC-23C) for the type of respirator needed. Make sure that the MSHA/NIOSH number on the respirator matches the number given on the pesticide label. The different types of respirators are:

- Disposable dust and mist masks
- Chemical cartridge respirators
- Powered-air cartridge respirator

Disposable dust and mist masks. The simplest form of respiratory protection is a disposable dust and mist mask. These masks cover the nose and mouth to filter out dusts, mists, powders, and particles. Disposable dust and mist masks are lightweight, soft, and fairly comfortable to wear.



Dust/mist filtering respirator (a MSHA/NIOSH TC-21C type respirator)

Two elastic straps hold the masks in place. Most have soft metal bands at the top edge. Shape this around the bridge of your nose for a better seal. A few styles include a small activated charcoal cartridge to remove some organic vapor. Each disposable mask used for pesticide handling must have the NIOSH Approval Number "TC-21C" or indicate that the mask has been approved in accordance with part 84 of the Code of Federal Regulations (42 CFR part 84). The pesticide label refers to this approval number when it requires you to use this type of respiratory protection.

Chemical cartridge respirators. Chemical cartridge respirators remove low levels of pesticide vapors, dusts, and mists from the air you breathe. Do not use these respirators for protection against fumigants (gases). These respirators have the MSHA/NIOSH approval number "TC-23C," or indicate approval in accordance with part 84 of the Code of Federal Regulations (42 CFR part 84).



Half-face chemical cartridge respirator (a MSHA/NIOSH TC-23C type respirator)

Chemical cartridge respirators are available in either a half-face mask or a full-face mask. They have fitted rubber facepieces and two-stage cartridge filters. In some models the filter cartridges are replaceable, while others require replacing the entire respirator. Cartridge respirators have a one-way exhalation valve. Inhaled air must pass through the cartridge filters, but the valve permits exhaled air to bypass the filters.

Respirators

At least two adjustable elastic headbands hold the facepieces in place. The cartridges include a particulate prefilter to mechanically trap airborne pesticide particles. They also have an activated carbon organic vapor cartridge to adsorb gases.

To work safely and effectively, cartridge respirators must fit tightly around your face. Every time you put on a respirator, check to be sure it forms a complete seal around your face so that air cannot leak in at the edges of the respirator. One way to check the seal and fit of your respirator is to hold your hands or small plastic bags over the cartridges while wearing the respirator. Inhale to check for leaks around the facepiece or exhalation valve. Then, cover the exhalation valve and exhale to check for leaks of the inhalation valves. Repair or replace the respirator if you find leaks.

Most respirator styles won't protect you if you have a beard or other facial hair that loosens the seal and prevents the respirators from giving adequate protection. Regulations prohibit pesticide applicators with beards or long sideburns from wearing cartridge respirators.

If you have facial hair, you can protect yourself only by using hood- or helmet-style respirators that are specially designed to supply you with fresh air — for example, a powered air-purifying respirator.

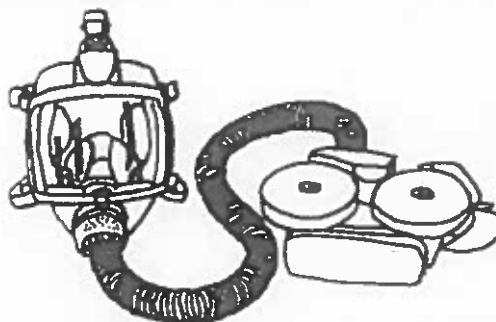


Full-face chemical respirator (a MSHA/NIOSH TC-23C type respirator)

If you taste or smell pesticide, if you have trouble breathing, or if you feel the pesticide burning or stinging your nose or throat, change the cartridge or canister immediately.

Follow the manufacturer's instructions or the pesticide label instructions for guidelines on when to replace filters, cartridges, and canisters even if you don't notice a problem. If there are no instructions, then filters, cartridges, and canisters should be replaced at the end of each day. Cartridge respirators should be in good working condition and cleaned after each use.

Powered-air purifying respirator. The powered air purifying respirator forces filtered air through a tube to a hood, helmet, or face mask. The motor, pump, batteries, and filters are usually worn on a waist belt. These devices have large, efficient filters, and provide comfortable protection for lengthy application jobs.



Powered air-purifying respirator (a PAPR)

These respirators often have face-shields for eye protection. They are comfortable to wear because the user does not have to force air through filters or valves. The constant supply of forced air around the user's face eliminates the need for a mask-to-face seal. Therefore, a person with a beard or long sideburns can wear this type of respirator.

Pesticide Labels

If you are going to be working with a pesticide, it is important to get all the information you can about the pesticide — either from your employer or by reading the pesticide label yourself.

Brand Name

When you first look at the label of the pesticide, you will see the brand name. It is important to know the name of the pesticide and the manufacturer in case you or someone else is poisoned by the pesticide. You should take the label or the common name to the doctor.

Directly below the brand name is the list of chemicals or ingredients.

Also on the front of the label is the type of pesticide you are using (insecticide, herbicide, fungicide, growth regulator, or other kind of control agent).

Signal Words

The following words — CAUTION, WARNING, or DANGER — are known as signal words. One of these signal words will be found on the label. These words tell you how harmful the pesticide is if swallowed, inhaled, absorbed into your skin, or splashed into your eyes.

CAUTION is used for pesticides that are the least hazardous. These pesticides can still harm you if you are not careful.

Pesticides with the signal word WARNING are more hazardous or irritating than those with the CAUTION label. Between one teaspoon and one ounce (6 teaspoons), swallowed by an adult could be fatal.

DANGER is used on highly hazardous pesticides. These pesticides may be very poisonous or may severely burn your skin or eyes.

When the pesticide is very poisonous, there will also be a skull and crossbones on the label and the word POISON. If you are handling these pesticides alone, you must have someone check on you every two hours during the day and every hour at night to be sure that you are all right.

Statement of Practical Treatment

Also on the label is the Statement of Practical Treatment which tells you what you should do if you swallow or inhale the pesticide or get it on your skin or in your eyes. This is the section that contains first aid information.

Note to Physicians

On some labels, a Note to Physicians gives information on symptoms and treatment of poisoning. If you need medical treatment, bring a copy of the pesticide label with you so the doctor can treat you properly. An emergency phone number to call in case of spills or exposure accidents is also listed on the label.

Precautionary Statements

The Precautionary Statements section on the label provides information on protecting yourself, other people, and the environment. It lets you know which parts of your body need special protection. For example, some labels tell you not to inhale the pesticide. The label may also tell what personal protective equipment you must wear when you handle the pesticide.

Pesticide Labels

| Sample Label | | | | | |
|---|---|--|--|---|---|
| <p style="text-align: center;">Precautionary⁶ Statements Hazards to Humans (and domestic animals)</p> <p style="text-align: center;">DANGER</p> <p style="text-align: center;">Personal Protective Equipment¹⁰</p> <p>Applicators and other handlers must wear:</p> <p>Mixers and loaders must wear:</p> <p>Respirator requirement:¹¹</p> <p style="text-align: center;">User safety recommendations:</p> <p style="text-align: center;">Environmental Hazards¹²</p> <p style="text-align: center;">Physical and Chemical Hazards</p> | <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>RESTRICTED USE PESTICIDE</p> </div> <p>KILL PESTO¹ Organophosphate Insecticide²</p> <p>ACTIVE INGREDIENTS: Galactonium O, O-Dimethyl Ethyl Phosphorothioate 20.9% Related isomers 1.1% Inert ingredients: 8.0% Total 100% Contains Zylene aromatic solvents.</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>KEEP OUT OF REACH OF CHILDREN</p> <p>DANGER³ PELIGRO³ POISON³</p> <p style="text-align: center;">Statement of Practical Treatment⁴</p> <p style="text-align: center;">Note to Physician⁵</p> </div> <p>VIP CHEMICAL COMPANY¹⁴ 2527 North South Drive Edgewood, MI 22315 Net Contents: 5 Gallons</p> <p>EPA Registration No.¹⁵ 12345.10 EPA Establishment No. 5678CO3</p> | <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">Directions for Use⁷</p> </div> <p style="text-align: center;">AGRICULTURAL USE REQUIREMENTS⁸</p> <p>Do not enter or allow workers to enter treated areas during <u>the Restricted Entry Interval</u> <u>(REI)</u> of 48 hours.⁹</p> <p>PPE required for early entry to treated areas that is required under the Worker Protection Standard and involves contact with anything that has been treated such as plants, soil or water is:¹⁰</p> <p style="text-align: center;">CROP:</p> <p style="text-align: center;">CROP:</p> <p style="text-align: center;">CROP:</p> | | | |
| <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">STORAGE AND DISPOSAL¹³</p> <p>Prohibitions</p> <p>Storage</p> <p>Container Disposal</p> </div> | | | | | |
| <p>Label Key</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;"> ¹Brand Name of Pesticide ²Type of Pesticide ³Signal Words ⁴Statement of Practical Treatment (First Aid Information) ⁵Note to Physician </td> <td style="width: 33%; border: none;"> ⁶Precautionary Statements ⁷Directions for Use ⁸Agricultural Use Requirements ⁹Restricted Entry Interval ¹⁰Personal Protective Equipment (PPE) </td> <td style="width: 33%; border: none;"> ¹¹Respirator Requirement ¹²Environmental Hazards ¹³Storage and Disposal of Pesticide (Requirements and Instructions) ¹⁴Information about Manufacturer ¹⁵EPA Registration Number </td> </tr> </table> | | | ¹ Brand Name of Pesticide ² Type of Pesticide ³ Signal Words ⁴ Statement of Practical Treatment (First Aid Information) ⁵ Note to Physician | ⁶ Precautionary Statements ⁷ Directions for Use ⁸ Agricultural Use Requirements ⁹ Restricted Entry Interval ¹⁰ Personal Protective Equipment (PPE) | ¹¹ Respirator Requirement ¹² Environmental Hazards ¹³ Storage and Disposal of Pesticide (Requirements and Instructions) ¹⁴ Information about Manufacturer ¹⁵ EPA Registration Number |
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Pesticide Labels

All labels have a **Directions For Use** section that tells you how to mix and apply the pesticide safely and correctly, and a section that explains the **Storage and Disposal** of the pesticide.

The **Agricultural Use Requirements** section of the label states that the pesticide must only be used in accordance with its labeling and with the **Worker Protection Standard (WPS)**. This section states the WPS requirements for the protection of agricultural workers and pesticide handlers. It also contains specific instructions and exceptions with regard to statements on the label about personal protective equipment, notification of workers, and restricted-entry intervals.



Some pesticides are extremely poisonous when they are first applied to the crop. A certain amount of time must pass before it is safe to return to the field. This waiting time is called the **Restricted Entry Interval (REI)**. You should not go into the field without special protective clothing until the restricted entry interval is over. This period is usually from 12 hours to three days, but may extend for several weeks for some pesticides.

The federal REI is listed on the pesticide label under **Agricultural Use Requirements** or next to the crop or application method to which it applies. However, keep in mind that for a number of pesticides, California regulations have established REIs that are longer than those found on the label. The agricultural commissioner in your county can provide you with a list of current California REIs.

If you must enter a field before the restricted entry interval is over, you must wear appropriate protective clothing and equipment.

You can obtain further information about the pesticide that you are using from the manufacturer. The name and address of the manufacturer are listed on the pesticide label.

Agricultural Use Requirements:

Do not enter treated areas during the Restricted Entry Interval (REI) of 48 hours.

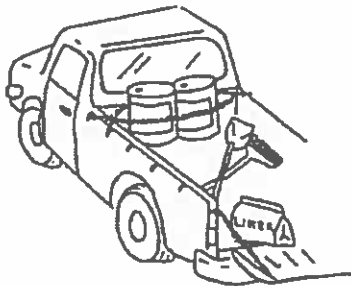
Transporting Pesticides

If you have to move pesticides from place to place in a truck or other vehicle, you need to know what to do in the event of an accident or

spill. Carry spill cleanup materials with you at all times. Know who to contact in case of a large spill that requires a professional cleanup crew.

Make sure the pesticides are in the back of the truck and that they are securely loaded and/or tied down to prevent the containers from falling over or rolling around. They should be placed in a tamper-proof container or locked storage box or compartment if the vehicle is left unattended.

Do not allow people, pets, or livestock to ride in the same compartment with the pesticides. Do not put food, feed, or clothing near the pesticides.



Storing Pesticides

Pesticides must be stored in a locked, ventilated building. Containers need to be closed tightly and stored upright, so they will not tip over and spill. The pesticide storage area should always be locked when not in use to prevent people and animals from entering. Do not store pesticides in household, food, or drink containers.

Containers should be checked often for leaks, breaks, or weak spots.

Clean up spills and leaks right away, but make sure you have the proper personal protective equipment and cleanup materials. Contain the spill to keep it from spreading. Rope off the spill area and keep people away from the site.



Mixing and Loading Pesticides

Mixing and loading pesticides requires special care. Pesticides are more concentrated and therefore more dangerous before they get diluted. When mixing and loading, follow the label directions/directions for use, and these safety practices.

- Wear extra protection. Use an apron over your protective equipment. You need to wear protective eyewear, too. A face mask provides better protection than goggles or safety glasses.
- Know what the label directions say about how much pesticide you need, and then measure it carefully. Using too much or too little can cause problems for you, the crop, and the environment.
- Put the pesticide container on a low, flat surface and open it carefully. Use a sharp knife or scissors to open paper and cardboard containers. If you rip them open, dust can fly out and get on your skin and into your eyes, mouth, and lungs. Mark the knife or scissors For Pesticide Use Only. Wash the knife or scissors with soap and hot water before using it again.
- Pour carefully to avoid splashes. Be sure your face and eyes are well above the container while you are pouring. Get someone to help you pour if the container is too big or too heavy for you to lift easily.



- When you add water to the mix tank or the spray tank, keep the hose above the level of the liquid in the tank, or use special equipment (a check valve) to prevent backflow from the mix tank to the water source.
- Never mix, load, or clean equipment near ponds, streams, wells, or ditches. Rinsewater containing pesticide residue could contaminate these water sources.

Cleaning Up Pesticide Spills

Pesticide spills can occur at any time. Here are steps you should take if a spill occurs.

- Think first of protecting yourself, other people and animals nearby, water sources, and the surrounding areas.
- Never try to clean up a spill unless you have the necessary cleanup materials available and are wearing the right protective equipment —rubber boots, gloves, waterproof protective clothing, goggles, and respiratory equipment.
- If you don't know what to do, call for help and wait until it arrives. Phone 9-1-1 (emergency hotline).
- If it is a big spill, send someone for help if you can. If no one else is there, stay nearby to warn others who may be unaware of the danger.



Three important steps for a pesticide spill:

1. Control the spill — make sure that the spill is stopped.

- Shut off the mixing or application equipment.
- If the container is broken or leaking, use caution and necessary protective equipment before attempting to handle it.

2. Contain the spill — stop the spill from spreading.

- Use dirt or other absorbent material to make a dike around the edges of the spill.
- Barricade the area so that other people cannot walk through it.

3. Clean up the spill.

- Do not hose down a spill with water. This will spread the spill and make it worse.
- Soak up liquid spills with sponges, soil, sawdust, clay, cat litter, or other absorbent materials.
- Sweep the spill and cleanup materials into plastic containers or special drums for disposal. Contact the local agricultural commissioner's office for disposal instructions.

Cleaning Pesticide Containers

Most pesticide containers should be triple rinsed immediately after you empty them. Follow these steps.

- When the container is empty, let it drain into the spray or mixing tank for at least 30 seconds.
- Fill the container with clean water. The following list tells you how much water to add based on the size of your container.

| Container Size | Amount of Water Needed |
|---------------------|--|
| 5 gallons or less | 1/4 of the container volume |
| More than 5 gallons | 1/5 of the container volume |
| 28 gallons or more | Triple rinsing is not required. These containers should be returned to the pesticide dealer. |

- Put the cap on, or tightly close the opening. Carefully shake or roll the container so that the water rinses the inside completely.
- Pour the rinse water from the container into the spray tank. Repeat the rinsing procedure at least two more times.



Triple rinse container

- Puncture rinsed containers so they cannot be used again.

Puncture container



Empty containers should be locked away until they can be taken to a disposal site or pesticide container recycling area. Even well-rinsed containers may still contain small amounts of pesticides. Don't use the containers for any other purpose, and do not take them home under any circumstances.

Never leave empty containers lying around the worksite or anywhere else. Some pesticide containers can be returned to the dealer, but they must be properly cleaned first.

Applying Pesticides

If you are applying pesticides, make sure that you adequately protect yourself, others, and the environment around you. Follow the application instructions on the pesticide label.

Before you begin, put on all the personal protective equipment that the pesticide label requires. California law requires handlers to wear eye protection and gloves in addition to the PPE listed on the pesticide label.



Perform an application equipment check. Make sure that there are no leaks and that hoses and nozzles are in good condition. If you need to repair the application equipment, turn it off first to prevent pesticides from getting on you. Keep your PPE on while making the necessary repairs.

Make sure that the sprayer is calibrated properly to insure that the right amount of pesticide is applied.

Check the Environmental Hazard Statement on the pesticide label. Take special care to protect wildlife that may be in or near the area to be treated.



Before you apply pesticides, check the area to make sure that there are no people, pets, or livestock in or near the area you will be spraying.

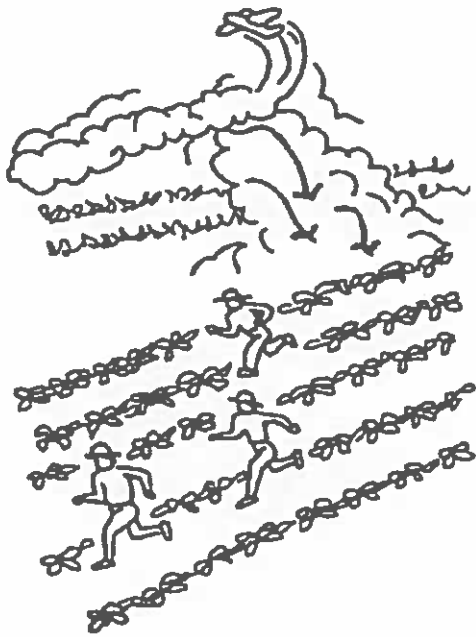
Check to see if there are ponds, streams, or wells in or near the area to be treated. Take the time and effort to keep pesticides from contaminating water supplies. Do not apply a pesticide where there is a significant risk that the spray will drift onto or run into water sources.

Applying Pesticides

It is illegal to apply pesticides in a way that puts people at risk — either directly or through spray drift.

If someone nearby is applying pesticides by plane, move out of the area before the plane flies overhead so that pesticides don't drift onto you. Move upwind so that any wind would blow the pesticide spray away from you.

When applying pesticides outdoors, check the weather conditions before you begin spraying. Don't apply pesticides when it is windy. Even a light wind can carry pesticides away from the area you are spraying.



Make sure you stay alert while applying the pesticide. Check the area you have just treated to be certain you are applying the pesticide evenly and the coverage looks right. Watch for clogged nozzles or hoppers.

If you need to clean a nozzle or screen, use a nonmetal cleaning tool designed for that purpose. Sharp metal can ruin the nozzle. Do not use your mouth to clean nozzles or screens.



When you finish the application, put your equipment away. Don't leave it in the field, and don't let it sit for a long period of time with pesticides on it. Follow instructions on how to properly clean the equipment. Keep your personal protective equipment on until the job is done and the application equipment has been put away.

Cleaning Up

When you finish an application, take off your personal protective equipment to avoid exposing yourself and others to pesticides. When taking off your equipment, be careful not to get pesticides on your skin or inner clothing. Here are some safe practices.

- Keep your gloves on while taking off and washing your other protective equipment. Then wash the outside of your gloves before removing them.



- Wash your hands, face, and any other exposed skin. Use plenty of soap and water.

- Put all of your used protective clothing in a place by itself until it can be cleaned or disposed of. Do not wear home or take home contaminated clothing or equipment. Hand wash the inside and outside of gloves, boots, and respirator facepieces.

If you are working for an employer, the employer is responsible for the laundering of most outer protective clothing, such as overalls. If you wash outer clothing, use heavy-duty soap or heavy-duty detergent and hot water.

Some types of disposable coveralls, gloves, shoe coverings, and aprons cannot be cleaned. They should be thrown away after a day of use.

At the end of your workday, take off your work clothes, shower, and put on clean clothes. Put your used work clothes into a separate container away from family clothing and wash them separately.



Cleaning Up

Follow these washing procedures for contaminated work clothes:

- Always keep your work clothes separate from your family's clothes and out of reach of children and pets.



- It is better to dry work clothes on a clothesline than in a clothes dryer. Sun drying helps to break down pesticide residues and will also keep the dryer from becoming contaminated. If you must use a clothes dryer, use the hottest setting possible.
 - Before doing family laundry, it is a good idea to clean the washer by running it through at least one more complete cycle. Run this cycle with hot water and detergent.
 - Throw away coveralls or other absorbent material clothing that has been drenched or heavily contaminated with an undiluted pesticide that has a signal word DANGER or WARNING on the label. This clothing must not be reused.
- Wash work clothes in a separate load in the washer.
 - Wash only a few items at a time to allow plenty of agitation and water for dilution. Use the highest water level setting.
 - Use a heavy-duty liquid detergent and hot water for the wash cycle.
 - Rinse and wash your work clothes twice in hot water to help remove pesticide residue.

Disposal of Pesticides and Pesticide Containers

You will occasionally have left-over pesticides that you can no longer use, as well as empty containers that need to be disposed of properly. Store them carefully in a locked storage area.

Never dump unused pesticides down a sewer drain or onto a field site. Never dispose of partially filled or empty pesticide containers in trash bins or other unauthorized facilities. There are set procedures that must be followed.

Triple-rinsed containers can be recycled or taken to a landfill (class 2 disposal site). Some larger containers can be returned to the pesticide dealer.

Even though the pesticide label may have general directions for disposal of pesticides and their containers, laws regarding disposal vary from state to state, or even from county to county within a state. Check with the agricultural commissioner's office in your area to be sure that you obtain and follow the proper pesticide disposal procedures.



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