

Chapter 5 - Agri-Chemicals

Pesticide Safety

Safety with pesticides should be a concern of everyone involved with these chemicals. Although pesticides provide real benefits, they can also be dangerous if mishandled or misused. An accidental death from pesticides is a rarity, but skin disorders and health problems are not. Additionally, improper handling or use of pesticides can result in harmful effects to the environment.

Pesticide safety begins with the selection of the proper product and proceeds through the transportation, storage, mixing, loading, application, and disposal of the pesticide and its container. Read the label.

Understanding the Label

Reading and understanding the label before purchase is the first consideration. The product name provides recognition. It is generally designed to attract you (so you will make a purchase) and to promote product identification. It helps you to find the product when you return to make additional purchases.

The terms "active ingredient" and "percent" give you more precise information. The active ingredient is the material, which controls the pest. Should product "A" have two percent active ingredient, and product "B" four percent, product "B" has twice the amount of actual pesticide and it will be twice as strong. Likewise, if product "C" has two pounds of active ingredient per gallon, it has twice the active ingredient of product "D" if it contains only one pound per gallon. Remember, this comparison applies only when two products have the same active ingredient. Other factors, however, may determine the concentrate of the product best suited for your needs.

There are many other items of information to study on the pesticide label before you can make an intelligent purchase.

EPA Registration Number

Look for this number on every product. It is your assurance that the product has been approved by the U.S. Environmental Protection Agency (EPA) and should be safe and effective when used as directed on the label. This means you must read the rest of the label before making your purchase.

Directions For Use

Before you buy any pesticide make sure the product is labeled for use against the pest, on the plants or animals, in the environment where you plan to use the product. A product may be labeled to control a pest on nursery plants, but not for the same pest on fruits, vegetables, or house plants in the home.

Precautions

Pesticides carry one of three precautionary words or phrases.

The products most toxic to humans will be labeled "**DANGER-POISON**" and display a skull and crossbones. These products are extremely toxic in the form found in the container, before they are diluted. Only a few drops could cause severe burns, serious health problems, or even death.

Products labeled "**WARNING**" are less toxic to humans, but extreme care must be exercised in their use, particularly before they are diluted.

The word "**CAUTION**" will appear on those pesticides that are the least harmful when used as directed. These products, however, can still cause serious injury or health problems, and even death. You will notice that pesticides carrying even the least toxic message, the word "**CAUTION**", often carry the statement "**KEEP OUT OF REACH OF CHILDREN.**"

LD or lethal dose value is another term used in describing pesticide toxicity. An LD/50 indicates the amount of active ingredient in the pesticide formulation that would be lethal to 50 percent of a population of test animals. The LD amount is expressed in milligrams of toxic product per kilogram of body weight. Thus, a pesticide with an LD/50 of 50mg/kg is ten times more toxic than a pesticide with an LD/50 of 500mg/kg.

Statement of Practical Treatment

This is information about first aid and can be limited or detailed. It may give advice on what to do if the product is accidentally swallowed, inhaled, or gotten into the eyes or onto the skin.

The statement may tell you that you need to purchase additional equipment and supplies before you can use the product safely and be able to deal with accidents effectively.

You need to know what to do if someone is accidentally poisoned by the pesticide. Be sure you understand the Statement of Practical Treatment.

Have materials available to administer first aid. Always call a doctor or emergency room immediately if an accident occurs.

Make sure the doctors are given the pesticide label; it will help the doctor prescribe immediate correct treatment. Emergency telephone numbers, including that of the nearest poison control center, should be posted near all telephones.

Storage and Disposal

Don't purchase the pesticide if you cannot store it properly or dispose of unwanted quantities safely. Seek an agreement with the dealer that unopened, unused quantities can be returned for credit. Purchasers of large quantities of pesticides might even obtain an agreement on the return of empty pesticide containers.

Classification Statement

Some pesticides are classified as "restricted use." These pesticides can be purchased and applied by state-certified licensed applicators only. Restricted use pesticides are identified by a prominent restricted use statement located above the brand name on the front of the label. Pesticides that are not classified as restricted use are considered unclassified and can be purchased and used in accordance with the label by the general public.

Classes of Pesticide Toxicity and their Oral Lethal Doses.		
Signal Word	Toxicity	Lethal (Oral) Dose (160 lb man)**
Danger Poison*	Highly toxic	Few drops to 1 teaspoon
Warning	Moderately toxic	1 teaspoon to 1 Tablespoon
Caution	Low toxicity	1 ounce to more than 1 pint
* Skull and crossbones symbol included. ** Less for a child or person weighing less than 160 lbs.		

You can make intelligent purchases of pesticides by completely reading and understanding the label. A product you have chosen wisely will do the job economically and safely. It is the user's legal responsibility to thoroughly read and follow label instructions. Remember, by reading the directions and warnings before you purchase the pesticide you can protect yourself, your family and the environment from serious accidents.

Pesticide Exposure

There are three ways for pesticides to enter the body:

1. by breathing it (inhalation),
2. by swallowing it (also called ingesting), or
3. by contact through the skin or eyes (absorption).

All three methods can cause immediate danger.

Inhaled pesticides are absorbed rapidly into the body through the thin membranes of the lungs. Wearing a properly-fitted respirator with the proper cartridge or canister is very important. Replace the canister or cartridge after every few hours of use, or whenever the odor or taste of the pesticide is detected, or when breathing becomes difficult. Working upwind of the pesticide dust, mists, and vapor, and not smoking pesticide-contaminated cigarettes are other safety practices to follow.

Although breathing pesticides is the most rapid way for them to enter the blood stream, most acute poisonings are the result of swallowing pesticides. It happens more often. Swallowed or ingested, they are absorbed more slowly and less completely than by breathing. Establishing good work habits, including washing hands before eating, and not eating, smoking, or drinking while working with pesticides will reduce the chances of ingesting pesticides. It must be emphasized that pesticides should never be stored in anything other than their original containers. Putting pesticides in containers that originally held food or drink has resulted in many accidental poisonings.

All pesticides may enter the body by absorption through the skin and eyes, the most common method of accidental poisoning. The eyes, stomach, groin, arms, hands, and forehead are the likely areas for absorption. Most absorption is through the hands and forearms during the handling, mixing, and loading operations.

The importance of protective gloves and long sleeves can not be overemphasized. Be extremely careful to see that open wounds, sores, or blisters are not exposed to pesticides. Wearing the proper protective clothing and equipment, changing and laundering immediately after working with pesticides, and showering thoroughly with detergent or soap will reduce the danger of absorption.

Should you spill pesticides onto your body, the first two minutes are critical. Immediate removal of your clothing and a long soapy shower are required.

Symptoms of Pesticide Poisoning

Many of the early symptoms of mild pesticide poisoning are similar to the symptoms of the flu, heat stroke, exhaustion or the common cold. However, if these symptoms occur while working, or shortly after you have been working, with pesticides contact your supervisor, nurse, or doctor.

Worker Protection Standard

Basic Responsibilities

The new Worker Protection Standard (WPS) requires that all agricultural workers and pesticide handlers be trained about pesticide safety. It is the employers' responsibilities to ensure that agricultural workers and pesticide handlers have received the pesticide safety training, as described below.

Agricultural workers are those who perform hand labor tasks, such as weeding, planting, cultivating, and harvesting, or other tasks involved in the production of agricultural plants on farms or in greenhouses, nurseries, or forests.

Pesticide handlers are those who handle agricultural pesticides (mix, load, apply, clean or repair equipment), or perform other tasks that bring them into direct contact with pesticides.

Specific Duties

Who Must Be Trained?

Each agricultural worker and pesticide handler must be trained about pesticide safety except those who:

1. Have been trained within the last 5 years as a WPS handler or WPS worker, even if he or she has changed employers, OR
2. Currently hold a valid Oregon Private/Commercial Applicator license, OR
3. Have a current Oregon Pesticide Operator Registration.

Be aware that different WPS training programs are required for agricultural workers and for pesticide handlers. Training materials for both programs are available from EPA, Oregon Department of Environmental Quality, or your county extension office.

When Must Handlers and Workers Be Trained?

1. **Handlers** must be trained before they perform any handling task, such as mixing, loading or applying pesticides, etc.
2. **Early-entry workers who will enter a treated area and contact anything** that has been treated with the pesticide during a restricted-entry interval (REI) must be trained **BEFORE** they conduct any early entry task. **(Important:** Entry during an REI is permitted only in a few strictly limited circumstances; please refer to EPA manual *The Worker Protection Standard for Agricultural Pesticides-How to*

Comply: What Employers Need to Know pp. 45-47, 59-61 for more information. This manual is also available online at www.epa.gov/oeca/ag/awor.html)

3. **Early-entry workers who will enter a treated area and NOT contact anything** that has been treated with the pesticide during an REI must be trained in the same time period as that described for workers below.
4. **Workers** must be trained before they accumulate more than 5 separate days entry into treated areas on an agricultural establishment where, within the past 30 days, a pesticide has been applied or an REI has been in effect. These 5 days need not be consecutive and may occur over several periods of employment or over several seasons or years.

NOTE: Prior to October 20, 1997, **workers** must be trained about general pesticide safety before they accumulate more than 15 separate days of entry into treated areas.

How Often Must Handler and Workers Be Trained?

Handlers and workers must be trained at least once every 5 years, counting from the end of the month in which the previous training was completed.

When Do WPS Training Requirements Become Effective?

The WPS safety training requirements for agricultural workers and pesticide handlers became effective on January 1, 1995.

Who Can Conduct Training?

1. WPS handler training can be conducted by anyone who meets one of the following criteria:
 - a. Currently be a certified private or commercial applicator of restricted-use pesticides, and have registered with Oregon Department of Environmental Quality (ODEQ); OR
 - b. Currently be designated by the state as a trainer of certified pesticide applicators or operators; OR
 - c. Has completed a state approved WPS pesticide safety train-the-trainer program.
2. WPS worker training can be conducted by anyone who meets one of the following criteria:
 - a. Currently be qualified to conduct WPS handler training; OR
 - b. Currently be trained as a pesticide handler (NOT a pesticide operator) who works under the supervision of a certified applicator, and have registered with Oregon Department of Environmental Quality; OR
 - c. Currently be trained as a WPS handler, and have registered with Oregon DEQ.

How To Conduct Training

1. To conduct worker or handler training, trainers must:
 - a. Use written and/or audiovisual materials,
 - b. Present the training orally or audiovisually,
 - c. Present the information in a manner that trainees can understand,
 - d. Using a translator if necessary, response to trainees' questions.
2. Anyone who conducts worker training must use non-technical terms the worker can understand.

Content of Training

The pesticide safety training materials for workers and handlers must be either:

1. WPS training materials developed by EPA, OR
2. Equivalent material that contains at least the concepts/topics listed in the following Training Criteria for Workers and Handlers.

Criteria For Worker Training

WPS worker safety training must cover the following 11 concepts/topics:

1. An explanation of the WPS requirements designated to protect workers, including application and entry restrictions, design of the warning sign, posting of warning signs, oral warnings, availability of specific information about applications, and protection against retaliatory acts.
2. Hazards of pesticides resulting from toxicity and exposure, including acute effects, chronic effects, delayed effects, and sensitization.
3. Routes through which pesticides can enter the human body.
4. Signs and symptoms of common types of pesticide poisoning.
5. Emergency first aid for pesticide injuries or poisonings.
6. How to obtain emergency medical care.
7. Routine and emergency decontamination procedures, including emergency eyeflushing techniques.
8. Warnings about taking pesticides and pesticide containers home.
9. Descriptions of where and in what form pesticides may be encountered during work activities.
10. Hazards from chemigation and drift.
11. Hazards from pesticide residues on clothing.

NOTE: WPS worker training materials must use nontechnical terms that the worker can understand.

Criteria For Applicator/Handler Training

WPS training for pesticide handlers must include the following topics/information:

1. Items 1-8 of the WPS worker training criteria.
2. Format and meaning of information on pesticide labels and in labeling, including safety information such as precautionary statements about human health hazards.
3. Need for and appropriate use of personal protective equipment.
4. Prevention, recognition, and first aid treatment of heat related illness.
5. Safety requirements for handling, transporting, storing, and disposing of pesticides, including general procedures for spill cleanup.
6. Environmental concerns such as drift, runoff, and wildlife hazards.

The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard requires that all employees be apprised of all hazards, including pesticides, to which they are exposed. This includes all handlers, mixers, loaders and applicators of pesticides.

The Environmental Protection Agency (EPA) requires that restricted use pesticides can only be purchased by and applied by trained and state-certified, licensed applicators or others under their close supervision

Transportation and Storage

Transportation

Pesticides should never be transported inside the passenger compartment of an automobile or truck cab; put them in the trunk or in the back of the truck. Never transport them where they could come in contact with people, groceries, livestock feed, or other products, which might become contaminated.

When transporting pesticides in a truck, see that they are secured to prevent spillage or loss due to sudden starts, stops, turns, etc. Should there be an accident or spill immediately inform the local police and fire officials of the quantity and name of the pesticide involved. Even small spills or releases, particularly of extremely hazardous pesticides, must be reported to the State Emergency Response Commission (SERC) (904-488-1320) and your Local Emergency Planning Committee (LEPC).

Applicators of pesticides, particularly in populated areas, must take special precautions to secure products transported to the application site. Allowing containers of pesticides to remain unattended on the back of an open truck is inviting an accident, and a costly lawsuit.

Commercial transporters of pesticides must meet special requirements: vehicles must carry placards, bills of lading, labels of the product, etc.

Storage

- Keep pesticides, other poisons, and related materials locked in a cabinet, room, or separate building designated solely for the storage of these materials. Metal storage cabinets, such as discarded school lockers, provide excellent storage for homeowners or other users of small amounts of pesticides.
- Post the cabinet, room or facility with a sign, "**PESTICIDES-POISONS, KEEP OUT**", or similar signs.
- Control access to this facility to only one, two, or three highly trusted, responsible and informed individuals.
- Never store pesticides where food, feed, seed, fertilizers or other products can become contaminated.
- Store pesticides in their original containers. It's the law.
- The facility should be reasonably fireproof and well-ventilated. Temperatures should be kept between freezing and 100 degrees F.
- Sealed concrete floors with no floor drains, concrete block walls, and metal shelves are recommended instead of wooden structures.
- With shelf storage, store dry pesticides on the top shelves, liquids on the lower shelves.
- Electrical fixtures should be of the dust - and explosion - proof type.
- Provide adequate space for the secure storage of empty pesticide containers until proper disposal of them is possible.

Those businesses with large quantities of pesticides to store should have a separate building for this purpose. In addition to the above features, this facility should also include the following characteristics.

- Have a concrete mixing/loading pad adjacent to the storage facility. This pad should be roofed to keep rainwater out and the pad should be sloped to capture spilled material.
- When feasible, the facility should be downwind and downhill from sensitive areas such as homes, play areas, feedlots, animal shelters, gardens, and ground water sources.
- The facility should be located in an area not subject to flooding.
- A water supply should be furnished for mixing, loading, tank rinsing and cleanup
- Showers and cleanup stations should be supplied for the persons who mix, load and apply the pesticides.
- Fire detectors and fire-fighting equipment should be available.
- A telephone should be convenient, with all emergency numbers posted.
- A current inventory of all materials in storage, along with a label of all materials, should be maintained in a secure area away from the storage area. The local fire department and the Local Emergency Planning Committee (LEPC) should be

- provided with an updated copy of this inventory, along with a Material Safety Data Sheet (MSDS) for each extremely hazardous pesticide you have in storage.
- Equip the storage area with the needed personal protective equipment and materials to prevent accidents and to handle accidents and spills. Activated charcoal, absorptive clay, vermiculite, clay-granule cat litter, or sawdust are good materials to absorb liquid spills.
 - Date and identify all pesticides when they are placed into storage, and store no more than will be needed for one season. Establish a policy of first-in first-used so that pesticides do not become outdated.
 - Have your fire insurance carrier inspect your pesticide storage facility periodically. It is intelligent management, and may reduce your insurance premium.

Mixing and Loading

Mixing and loading pesticides are among the most dangerous tasks with these products, because it is at this time that people are working with open containers of concentrated pesticides.

For this reason, individuals employed to perform this activity should be well-informed of the dangers involved, and work under the close supervision of a properly certified, licensed applicator whenever handling restricted-use pesticides.

Mixing and loading should never be done without a full understanding of the pesticide label and should always be done with the use of all recommended personal protective equipment. The label will identify the dangers involved and the precautions to follow. It may indicate the signs and symptoms of poisoning, and recommend first aid practices should one be exposed to the product.

Before you begin to mix, load, and apply pesticides, and after you understand the label directions, make certain you have taken the following precautions.

- Have detergent or soap and an adequate supply of water available.
- Know the early symptoms of poisoning for the pesticide you are using.
- Know the first aid procedures and make certain that materials and supplies are available.
- Be certain the materials are available to handle spills.
- Make certain that all equipment is functioning properly.
- Do not work alone; be sure help is available if you get into trouble.
- Have all the recommended protective clothing and equipment. Double-check that the respirator fits properly and has the correct canister or cartridge.
- Never eat, drink, smoke or go to the bathroom while working with pesticides without first washing your hands.

You are now ready to begin mixing and loading. Follow these suggestions. Reread the label and follow the directions; pay special attention to the warnings and precautions.

- Make sure only authorized mixers, loaders and/ or supervisors are in the mixing and loading area. No other people or animals should be in the area.
- Work only in a well-ventilated, well-lighted area.
- Pesticide containers should be in a secure position when being opened to prevent any spillage. Be sure everyone is wearing the proper personal protective equipment.
- Mix and pour concentrated pesticides down low, preferably below waist level. Never pour pesticides at eye level. A spill or splash could be disastrous. Always remove clothing and wash yourself and your clothing thoroughly, immediately (within two minutes), if pesticides are spilled or splashed on you.
- Stand with your back to the wind - upwind - so that any fumes or dusts are blown away from you.
- Pour the pesticide into water, never water into the pesticide.
- If stirring is necessary use a stir stick, never your hands.
- Mixing and loading is best done on a concrete slab, where spills can be contained more effectively. If mixing and loading must be done in a field or grove, never mix or load near a well-head or surface water. Stay at least 100 feet away. Do not mix and load in the same location repeatedly. Change locations and clean up all spills.
- Never pour pesticide directly into a spray tank. Always mix and dilute in a pail or container.
- When pouring, stand with your head well above the spray tank to prevent pesticides from splashing in your face. Protect your eyes with splash-proof goggles.
- Never overflow a spray tank. The cleanup could be an all-day/all-night task and could be costly and dangerous.

After the mixing/loading task has been completed your responsibility continues.

- Securely close pesticide containers immediately after use. Return unused pesticide to its proper storage.
- Clean up all spills, no matter how small the amount.
- Wash mixing and loading pails, measuring devices, and stirring equipment or tools in strong detergent water, rinse in clear water, and store to air-dry.
- Wash your personal protective equipment in detergent, rinse, and hang to air-dry.
- The wash and rinse water used in the above steps can best be disposed of by pouring it into the spray tank. Don't overflow the spray tank. Otherwise there will be no room for the rinse water.
- Remove your clothing and launder separately with heavy-duty liquid detergent and hot water. **DO NOT USE BLEACH**, as it could cause a dangerous chemical reaction. Line-dry the clothing where it is exposed to sunlight.

- Take a hot shower using a detergent type soap. Don't forget to wash your hair. Put on clean clothing.

Application

When applying pesticides, applicators are not exposed to the same high concentration of pesticide as they are during the mixing and loading operation. However, the time-length of exposure is much longer, thus the cumulative exposure may be equal to or greater than that during the mixing/loading operation.

Pesticide applications are made with everything from hand sprayers and dusters, to irrigation equipment, to large airblast grove sprayers and aircraft. Whatever equipment is used, many of the safety precautions are the same.

- Read and follow the label. Applications made that vary from label requirements are violations of federal law.
- Use the correct equipment and make sure it is properly maintained and adjusted. Screens, strainers, and nozzles should be clean and functioning properly. Nozzles should be of the right type and properly adjusted and all lines, valves and seals should be checked for leaks.
- The application equipment should be accurately calibrated on a regular basis. Whenever you have any suspicion that the equipment is applying an inaccurate amount, recalibrate the equipment. Your operator's manual should provide information on calibration of the equipment. Additional information is available through your county's Cooperative Extension Service.
- Wear the proper protective clothing and equipment.
- Check the weather forecast frequently to determine if conditions will be favorable for the application and effectiveness of the pesticide.
- Avoid spraying near sensitive areas where drift could damage neighboring crops or the environment. When spraying must be done in these areas, attempt to spray when the air is still, humidity is high, and any potential drift will be away from sensitive areas.
- Lower pressures, proper boom and nozzle adjustments, larger nozzle size and drift-reducing additives (if the label permits) will reduce drift.
- Do not make field adjustments to the sprayer in a recently sprayed, still wet area. Move to an unsprayed area.
- Never attempt to clean a nozzle, screen, or hose by blowing or sucking on it with your mouth. Use small, soft-bristle brushes and/or an air pressure bulb for these purposes.
- Always empty a tank by spraying the entire contents onto the vegetation or other area for which it was intended. Never drain a spray tank onto the ground. Never mix more than you need!

Pesticide and Pesticide Container Disposal

Major problems exist in the disposal of pesticides and pesticide containers. These are: the disposal of excess quantities of mixed pesticides, disposal of rinsates, the disposal of unwanted quantities of obsolete, deteriorated or unwanted pesticides, and the disposal of containers.

Accidental Spills

Accidental spills can happen in transport, in storage, or in the mixing, loading, or application activities. Many labels describe what actions should be taken should a spill occur; if the label contains such directions, follow them.

If the spill or release is a pesticide classified as an extremely hazardous substance (EHS) and exceeds the reportable quantity (RQ) you must follow the procedures detailed in SARA TITLE III, the Community Right-to-Know Law, requires that these spills or releases be reported immediately - within fifteen minutes - to the local fire department and the Local Emergency Planning Committee (LEPC) or the State Emergency Response Committee (SERC).

The following are practices to follow with all spills.

- Secure the accident scene.
- Keep people and animals away.
- Equip the clean-up personnel with protective equipment.
- Keep the spill from spreading.
- Control the spill by banking with soil, or by absorbing the liquid.
- Never hose down a contaminated area.
- Notify the local fire department immediately.
- Contact EH&S

The Oregon Department of Environmental Quality (DEQ) has established regulations requiring submission of reports of spills, above certain amounts. All large spills of a hazardous chemical such as a pesticide (more than one gallon liquid or one pound solid) must be reported promptly to EH&S. That office will make the report to DEQ, LEPC, or SERC if necessary.

If the spill is liquid then activated charcoal, absorptive clay, vermiculite or sawdust should be used to soak up all the material. Sufficient absorbent material should be used to soak up the liquid. The material should then be swept up and/or shoveled into a leakproof drum. Saturated soil should also be placed into drums.

It may be necessary to neutralize the area. Again, check the label. Hydrated lime, lye, ammonia, sodium hypochlorite and detergents are frequently recommended.

Supplies of absorbent and neutralizing materials should be available in the storage or mixing/loading area at all times, along with the tools and other supplies necessary for a clean-up.

The contaminated materials may be hazardous wastes. In many cases they are not usable and must be shipped to an incinerator or sanitary landfill approved for disposal of hazardous wastes. This type of disposal is costly, therefore, it is important to follow all safety precautions to prevent spills.

Special Requirements for Nurseries and Greenhouses

Under the EPA's Worker Protection Standard (WPS) nursery and greenhouse operations are required to provide workers with specific protections. These include safety training for pesticide handlers and general workers, the posting of application information in a central area, the distribution and use of personal protective equipment (PPE), etc. There are, however, special requirements, which apply only to nurseries and greenhouses. The following outlines these special restrictions.

Nurseries

Nurseries are required under WPS to follow special restrictions during applications in terms of who can enter treated areas. Basically, non-pesticide handlers are not allowed into treated areas during applications and in certain circumstances are not allowed within specific distances from the treatment area. Once the application is completed, workers may not enter the treated area during the Restricted Entry Interval (REI) for the materials applied. Workers, however, are allowed to enter bordering areas that were restricted during the application.

Special Entry Restrictions

The special entry restrictions apply only during the application of a pesticide and are grouped based on the method of application used.

The first category covers materials applied aurally, or in an upward direction, or using a spray pressure greater than 150 psi. During these applications non-pesticide handler workers are not allowed in the treated area and within 100 feet surrounding the entire treatment zone. This restriction also applies for fumigant, smoke, mist, fog and aerosol applications.

The second category for restriction applies to materials that are applied in a downward direction using a spray pressure between 40 and 150 psi, or applied as a fine spray, or from a height greater than 12 inches above the tops of plant material. For these situations,

non-pesticide handler workers are not allowed in the area and within 25 feet surrounding the entire treatment zone.

This requirement also applies if the pesticides label requires the applicator to wear a respirator during applications.

The final category covers any other method of application such as drenches, etc. In these situations non-pesticide handler workers are not allowed in the treated area.

Greenhouses

Greenhouses are also required under WPS to follow special requirements during and after applications in terms of sign posting and who can enter treated areas. The posting of signs on greenhouse doors during all applications and REI's is mandatory. Entry restrictions are based on how a material is applied.

Special Entry Restrictions - During an Application

If the pesticide is applied as a fumigant, no non-pesticide handler is allowed in the entire greenhouse, including any adjacent structure that cannot be sealed off from the treated area until ventilation criteria are met.

If the material is applied as a smoke, fog, mist or aerosol, or if the label requires the use of a respirator during applications, non-pesticide handlers must vacate the entire enclosed area during treatment until ventilation criteria are met.

If any other application method is used and the material is applied from a height greater than 12 inches above the tops of plants, or is applied as a fine spray, or using a pressure greater than 40 psi, the treatment area and 25 feet surrounding the treatment zone must be vacated until the application is completed.

For all other application techniques only the treated area must be vacated until the application is complete.

Special Entry Restrictions - Following Applications

After the application is complete, if the above criteria have been met, workers may enter treated areas during the REI if they wear appropriate PPE. However, what is considered to be the treated area during the REI may vary.

If the application involved a fumigant, there are no entry restrictions once ventilation criteria have been met. If the material was applied as a smoke, mist, fog, or aerosol, the treated area is the entire enclosed area. For all other application methods the area physically treated with a pesticide is restricted from entry.

Ventilation Criteria

In certain situations, workers are not allowed into treated areas until specific ventilation criteria for the greenhouse are met (see above). In these situations, employers must make sure that one of the following criteria are met:

1. The concentration of the pesticide in the air is measured to be less than or equal to any inhalation exposure level required on the label, or
2. If no inhalation exposure level is listed on the pesticide label then:
 - a. 10 air exchanges have occurred (for questions regarding air exchange rates contact EH&S, 737-2273), or
 - b. 2 hours of ventilation using fans or other mechanical ventilation is used, or
 - c. 4 hours of ventilation using vents, windows or other passive ventilation system, or
 - d. 11 hours with no ventilation followed by one hour of mechanical ventilation, or
 - e. 11 hours with no ventilation followed by 2 hours of passive ventilation, or
 - f. 24 hours of no ventilation.

Remember, no workers may enter the areas treated in the greenhouse until these have been met.