SAFE HANDLING OF PESTICIDES

Why Use Pesticides Safely?

Pesticides are controversial. There are some groups that would like to eliminate all pesticide use. Without pesticides, however, it would be impossible to control pests that damage our homes, carry diseases, and attack landscapes.

Pesticides and pesticide applicators are under constant public scrutiny. Use pesticides with the highest standards of safety and responsibility.

If you do not use pesticides responsibly, there are several important consequences.

- You may endanger your health or the health of other people.
- You may endanger the environment.
- You will be subject to additional liability and/or other legal actions (lawsuits).

General-Use Versus Restricted-Use Pesticides

Every pesticide in the United States must be registered with the Environmental Protection Agency (EPA) and the state in which it is sold.

General-use, or unclassified, pesticides may be purchased and used by anyone; they are available at local garden centers and department stores.

Restricted-use pesticides are more dangerous; applicators need special training to use them safely.

- Only certified pesticide applicators (or people under their supervision) may purchase and apply restricted-use pesticides.
- The certified applicator is responsible for the people under his or her supervision. Do not allow inexperienced people to use restricted-use pesticides!
- Restricted-use pesticides are clearly identified on the front panel of the pesticide label.
**Pesticide Labeling**

Pesticide labeling includes the information that comes with the pesticide and any documents to which the pesticide label refers. The labeling is your best source of information about using the pesticide safely.

- Keep a copy of the pesticide labeling whenever you apply the pesticide.
- It is a violation of Federal law if you do not follow the directions in the pesticide labeling.
- Agricultural pesticides will refer you to the Worker Protection Standard; other labels may refer you to information concerning endangered species. You are required to read and follow this additional information.

The **pesticide label** is the information on the pesticide container. The EPA requires the following information on every pesticide label.

- **Restricted-Use Designation:** The words 'Restricted-Use Pesticide' will appear in a box at the top of the front panel. There may be a statement that describes the reason for the restricted-use classification. You or your supervisor must have a pesticide applicator's license (Colorado Qualified Supervisor [QS] or Certified Operator [CO]) to purchase/apply these pesticides.

- **Product Name:** The company's name for the pesticide is written boldly on the front panel. Sevin® and Roundup® are brand names.

**Signal Words**

- **Signal Words:** The signal word will be on the front of the pesticide in large letters.

<table>
<thead>
<tr>
<th>Danger/Poison:</th>
<th>A drop to a teaspoonful can kill an average adult; a smaller amount will kill a child or a pet. A skull-and-crossbones will be included.</th>
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<tr>
<td>Danger:</td>
<td><strong>DANGER</strong> without the word <strong>POISON</strong> indicates a product highly corrosive to either the eyes and/or skin. These products can cause severe burns and/or permanent eye damage.</td>
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<tr>
<td>Warning:</td>
<td>Product is moderately likely to cause acute illness. A teaspoonful or two tablespoonfuls can kill an average adult.</td>
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<tr>
<td>Caution:</td>
<td>The least toxic pesticide category. One ounce or more may kill an average adult.</td>
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**Note:** The signal word tells you nothing about chronic risks like cancer. Be careful with all pesticides.

- **Active Ingredient(s):** The chemical(s) in the product that control the pest.
  - The common name is a simplified version of the more complex chemical name. Roundup®, Accord® and Kleenup® are products that contain the active ingredient glyphosate. Glyphosate is the common name for an isopropylamine salt of N (phosphonomethyl) glycine. The list of ingredients will also indicate the amount of each active ingredient in the product. To compare various pesticides, refer to the active ingredients by common name or chemical name.
• **Inert Ingredients:** The active ingredient(s) are usually a small percentage of the total product. *Inert ingredients* make up the rest of the pesticide product. Inerts, such as chalk, solvents, or spreading agents, typically make the active ingredient safer, more effective, or easier to apply. The inert ingredients are not specified on most pesticide labels.

• **Precautionary Statements:** Hazards to Humans and Domestic Animals: *Harmful or fatal if absorbed through skin*; *Avoid breathing mists or vapors*; and *Causes severe eye burns* are common statements. **TAKE THESE WARNINGS SERIOUSLY.**
  
  o The appropriate protective equipment will also appear in this section. The law requires all of the protective equipment indicated on the label. Protective clothing indicated for mixing/loading pesticides is often different from protection needed during application.

• **Statement of Practical Treatment - First Aid:** Be familiar with this information. The label may tell you **not** to induce vomiting. There may be also a "Note to Physician." If someone is poisoned, take the label with you to the emergency room.

• **Environmental Hazards:** Specific risks to honey bees, endangered species, or other wildlife. Special hazards to groundwater or wetlands may be included. Common statements include 'Highly toxic to fish' and 'Do not apply to areas where bees are visiting.'

• **Physical and Chemical Hazards:** Fire, explosion, or corrosion hazards.

• **Directions for Use:** Use the pesticide only on the sites listed. Mixing and application instructions also appear here. **Follow the directions carefully or you could be subject to criminal and/or civil penalties, with these exceptions.**
  
  o You may apply a pesticide for a pest not listed on the label.
  o You may apply a pesticide below the labeled rate or fewer times than indicated by the labeling. However, the pesticide company will not be held responsible if the pest is not controlled.
  o You may use any appropriate application equipment not prohibited by the labeling.
  o You may mix a pesticide with other pesticides or fertilizers unless it is prohibited by the labeling. Some pesticides and/or fertilizers are not compatible with one another; check with your extension office or pesticide dealer.

• **Agricultural Use Requirements:** Requirements of the EPA Worker Protection Standard.
  
  o Only applies to agricultural uses of the pesticide, including row crops, nurseries, greenhouses, and forestry.
  o Requires employee training, decontamination sites, worker notification, reentry intervals, and personal protective equipment. Your county extension agent can provide more detailed information.

• **Storage and Disposal Directions:** General guidelines for storing and disposing of pesticide wastes and pesticide containers. Contact your county extension office for more information.

• **Name and Address of Manufacturer**

• **EPA Establishment and Registration Numbers:** The establishment number indicates where the pesticide was made. The registration number identifies a particular product.

• **Net Contents**

• **Restricted Entry Statement:** No one may enter the treated area without specific protective clothing until the reentry interval expires. The reentry interval may range from several hours to several days.

• **Category of Applicator:** Some pesticides may be used only by holders of specific categorical licenses, e.g., 'Only for sale to, use and storage by professional pest control operators.'
Protecting Yourself from Pesticide Exposure

Pesticide concentrates can be VERY DANGEROUS. Check with your supervisor for the required PPE when mixing pesticides.

When you apply pesticides, **ALWAYS** wear

- Long-sleeved shirt
- Long pants
- Socks and shoes
- Broad-brimmed hat
- Water-proof, chemical resistant gloves
- Any protective equipment indicated on the labeling

**ALWAYS** wash your protective equipment after you use it. Store it where it cannot become contaminated with pesticides.

**Skin**

- More than 90% of pesticide exposure is through the skin.
  - **Exposure occurs** from failing to wash properly after handling pesticides, wearing contaminated clothing or protective equipment, applying pesticides under windy conditions, touching pesticide-treated surfaces, or wearing inadequate protective equipment.
  - Protect your hands and forearms whenever you handle pesticides.
  - **NEVER** wear gloves or shoes made of leather, paper, or fabric unless the materials have been treated to prevent pesticide penetration.

**Eyes**

- Many pesticides can injure your eyes.
  - **Exposure occurs** from splashing or spraying pesticides in the eyes, applying pesticides in windy conditions, rubbing eyes with contaminated hands/gloves or pouring powdery formulations.
  - Wear eye protection, particularly when you handle concentrates. A face shield is your best protection.
  - **NEVER** pour pesticides near your face or above your head. Handle pesticides below your waist.

**Mouth**

- Serious poisonings occur when pesticides are in food/drink containers.
  - **Exposure occurs** from eating, drinking, or using tobacco without washing hands after handling pesticides. Pesticides may splash into the mouth.
  - Wear a face shield or respirator to protect you from splashing.
• NEVER place any pesticide in a food or drink container.

• NEVER pour pesticides near your face or above your head. Handle pesticides below your waist.

**Lungs**

- Inhaling pesticides can be extremely dangerous. If the labeling calls for a respirator, wear one every time.
  - **Exposure occurs** from using pesticides in poorly ventilated areas, breathing vapors while handling pesticides, inhaling vapors by entering a treated area too soon, or by using a respirator that does not fit or has not been properly maintained.
- **Wear the respirator indicated on the pesticide labeling.**
  - **Dust filtering masks** protect you only against dusts.
  - **Chemical cartridge or canister respirators** protect you against dusts, spray particles, and vapors.
- **Be sure the respirator fits properly.** If you smell or taste anything outside your respirator, your lungs are not protected from pesticides.
- **Maintain your respirator.** Clean it at the end of each day and store it away from pesticides. Replace the filters and cartridges according to the manufacturer's instructions, at the end of eight work hours, or whenever you smell or taste any pesticide while wearing the respirator. Refer to other extension bulletins for more details concerning respirator selection and use.
- **Wear a respirator when you are mixing or applying a DANGER/POISON pesticide or any pesticide that makes fine dust or mist.**

**Mixing and Loading**

Mixing and loading are the most hazardous pesticide jobs because operators must handle open containers of concentrated pesticide. Read the label before you mix a pesticide. Follow all instructions regarding protective clothing and special precautions. Be prepared for emergencies.

**Consider** wearing additional protective equipment when handling pesticide concentrates. A chemically resistant apron will protect your front. A face shield provides the best protection of your eyes and face. A respirator or dust mask may be needed to protect you from vapors or dust.

**Follow this Checklist to Ensure Safe Mixing and Loading:**

- NEVER mix pesticides within 100 feet of a wellhead, stream, or other water body.
- NEVER mix pesticides up-slope from streams, lakes, wells, etc.
- NEVER pour pesticides near/above your head. Mix/pour pesticides below waist level.
- NEVER tear or rip open paper or cardboard pesticide containers. Cut them cleanly with a knife.
- NEVER siphon pesticides by mouth.
- Provide adequate light and ventilation. Mix pesticides outdoors.
- Keep all animals and all unauthorized persons away from the mix/load site.
- Prevent back-siphoning. Keep the end of the water hose above the water level in the tank (air gap). The purpose of the air gap is to prevent pesticide contamination of the water hose.
- Closely supervise filling the spray tank.
- Pour pesticide into water, not water onto pesticide.
- Triple rinse or pressure rinse empty containers immediately. Add the rinse water to the spray tank.
  - Drain the container directly into spray tank for at least 30 seconds.
  - Fill the container ¼ full of water, cap it, and shake it vigorously. Drain into the spray tank for at least 30 seconds. Repeat two more times or until the container is clean.
  - Puncture the container on the sides and bottom.

**Applying Pesticides**

- **Secure the surrounding area.**
  - All children and unprotected people should leave the area until the reentry indicated on the pesticide label expires. If no reentry is specified, prevent entry until pesticide has dried and dusts/vapors have settled.
  - Check to be sure all animals and pets are clear of the treatment area.

- **Check your equipment.**
  - Replace faulty nozzles, cracked hoses, or other unsafe components.
  - Calibrate your equipment regularly. Your supervisor can assist you.
  - Ensure that the operator understands how to use the equipment safely and knows what to do in an emergency.

- **Wear the proper protective equipment.**
  - **Read the label.**
    - You may need additional protection in these situations.
      - Applications in enclosed areas. You may need a respirator.
      - Overhead applications. Wear a chemically resistant head cover.
      - Air blast or aerosol-type applications.
      - High-pressure applications.
      - Application of pesticide concentrates, such as ultra-low volume (ULV).
      - Applications in wind currents.
      - Hand-held equipment or backpack sprayers increase exposure.
      - Walk backwards into the untreated area if possible.
      - Wear high, water-impermeable boots and chemical resistant pants if you must walk through treated areas.

- **Pay Attention!**
  - Is the pesticide directed to the target site? Check the delivery periodically.
  - If the color/appearance of the spray changes, something is wrong.
  - Puddles of liquid or piles of granular pesticide mean something is wrong.
  - Never clear plugged hoses/nozzles by mouth. Carry a small brush or wire on the sprayer for this purpose.
  - Carry a pair of waterproof gloves with you in case you need to repair equipment.

- **When You Take a Break.**
o Turn off your equipment; depressurize any pressurized tanks.
  • UNLESS you are applying a flowable formulation that needs constant agitation to minimize plugging.

o Check equipment.

• Avoid Drift!
  o Drift is affected by spray characteristics, equipment, and weather.
  o Use the largest practical droplet size.
  o Apply pesticides at the lowest practical pressure.
  o Position the sprayer/boom as close to the target as practical.
  o Avoid spraying pesticides on windy days.

Transporting Pesticides

• NEVER CARRY PESTICIDES IN THE PASSENGER COMPARTMENT OF A VEHICLE. TRANSPORT THEM IN THE CAR TRUNK OR TRUCK BED.
• NEVER PLACE PESTICIDES NEAR GROCERIES OR ANIMAL FEED.
• NEVER LEAVE PESTICIDES UNATTENDED. You may be found liable if children or other unauthorized persons are injured by the pesticide.
• Always secure pesticide containers in the truck bed.
• Always protect pesticide containers from water.

Cleaning Up after Pesticide Operations

• Close pesticide containers and return them to the storage area.
• Place properly rinsed, empty containers in a secure area.
• Recycle pesticide containers or dispose of them.
• Rinse mixing pails and measuring cups in water and add the rinse water to the spray tank.

Laundering Pesticide Work Clothing

If concentrated highly-toxic (DANGER/POISON SIGNAL word) pesticide spills on fabric clothing, discard the clothing as you would empty pesticide containers and other hazardous waste.

• Wash pesticide clothing separately from other family clothes. Presoaking outdoors will help to remove additional pesticide residues.
• Wash at least twice with heavy-duty detergent in hot (140 degrees F) water.
• DO NOT USE BLEACH; it could cause a dangerous chemical reaction.
• Drying clothes in the sun helps break down pesticide residues.
• IF YOU USE A CLOTHES DRYER, AVOID STEAM FROM THE DRYER VENT.
• Clean the washing machine by running through an entire cycle with no clothes in the washer. Use hot water and detergent.
First Aid for Pesticide Poisoning

- Tightening of the chest, mental confusion, blurred vision, rapid pulse, intense thirst, vomiting, convulsions, and unconsciousness are serious symptoms! Seek medical attention!

- Pesticides with 'DANGER' on the label can cause severe injuries or death very quickly. Take immediate action!

- Other symptoms of pesticide poisoning: headache, fatigue, weakness, restlessness, nervousness, perspiration, nausea, diarrhea, or irritation of the skin, eyes, nose and/or throat. Consult Material Data Safety Sheet for symptoms associated with a particular pesticide.

Pesticide on Skin

- Wash pesticide from skin as quickly as possible with any available water that does not contain pesticides.

- Remove protective clothing and any contaminated clothing.
- Wash contaminated skin with soap and water as soon as possible.
- Do not let victim become chilled or overheated.
- If skin is burned, cover with a loose, clean bandage. Do not apply ointments or other medicines.

- If the victim experiences any symptoms of poisoning, consult a physician. Take the pesticide or label with you.

Pesticide in Eyes

- Rinse affected eye gently with clean water for 15 minutes.

- If eye remains irritated or blurry after rinsing, seek medical attention right away! Take the pesticide or label with you.

Pesticide in Mouth or Swallowed

- Provide large amounts of water or milk to drink.

- **DO NOT GIVE LIQUIDS TO AN UNCONSCIOUS/CONVULSING PERSON!**
- Consult the label BEFORE you induce vomiting. The label may tell you not to induce vomiting.

- **DO NOT INDUCE VOMITING IF A PERSON IS UNCONSCIOUS OR CONVULSING!**
- Seek medical attention. Take the pesticide or label with you.
- If the pesticide was not swallowed, rinse mouth thoroughly with clean water. If mouth is burned or irritated, consult a physician.

Pesticide Inhaled

- Move victim to fresh air immediately!
- Warn others in the area.
- Loosen tight clothing.
- Administer artificial respiration if necessary.
- Avoid any pesticide or vomit that may be around the victim's mouth.
- Seek medical attention. **Take the pesticide or label with you.**

**Heat Stress**
- Move the victim to a cooler area.
- Remove protective clothing and pour cool water over the person.
- Give cool liquids to drink.
- **DO NOT GIVE LIQUIDS TO AN UNCONSCIOUS/CONVULSING PERSON!**
- Pesticides do not cause heat stress, but the required protective clothing can cause overheating.
- Seek medical attention if the person is unconscious or if the person is not fully recovered within 15 minutes of cooling down and drinking liquids.

**Pesticide Wastes**

**AVOID PESTICIDE WASTES!!!**

*IT IS ILLEGAL TO BURY, BURN, OR DUMP PESTICIDES OR PESTICIDE WASTES.*

- Buy only the amount of pesticide that you will use in a timely manner. Good records will help you decide how much pesticide to buy.

- Calibrate carefully and mix only the amount of pesticide that you need.

**How to Get Rid of Pesticides You Do Not Want**

**Leftover pesticide mix**
- Spray it out on a site listed on the label.
- Do not exceed labeled rates and observe retreatment intervals on the label.
- Store the pesticide in a holding tank until you can apply it.

**Registered pesticides in containers**
- Apply it according to the label.

- Sell, trade, or give the pesticide away if it is still useful.
  - Your pesticide dealer or county agent may be able to help find someone who needs your pesticide.

  - **NEVER** offer a restricted-use pesticide to an unlicensed applicator.
Empty pesticide containers

- **NEVER burn, bury or dump pesticide containers.**
- Recycle clean, empty plastic pesticide containers, if possible. Do not recycle them with other plastic containers.
  - Rinse empty containers immediately!
- Place clean, empty pesticide containers in a landfill.
- Place properly emptied paper containers and cardboard packing boxes in a landfill.
- Look for packaging that will minimize wastes, such as water-soluble packets or refillable containers, when you buy pesticides.

Absorbent materials from spill cleanup

- Apply materials that have been used to absorb liquid pesticides to any use site on the pesticide label.
- **Do not exceed the maximum labeled rate for the application site.**

**Pesticide Spills**

Maintain a two-way radio or telephone at every pesticide location.

**Be Prepared with These Materials**

- **Material Data Safety Sheet (MSDS)** for every pesticide. The MSDS will have important technical information regarding the pesticide and clean-up. MSDS will be available through your pesticide dealer.
- **Protective clothing.** To safely clean up spills, you will need the protective clothing required by the pesticide label.
- **Absorbent material to soak up liquid pesticides.** Kitty litter is a good absorbent. Commercial absorbents may be used as well as sand, sawdust, and dry soil. You should have enough absorbent material to contain your largest possible spill.
- **Dustpan, shovel, etc.,** to scoop contaminated absorbent materials.
- **Heavy duty detergent** for cleaning the contaminated area.
- **Container for contaminated clean-up materials.** Store your other clean-up materials in a drum that could be used to hold the wastes. Heavy-duty plastic bags may be used.

**If You Discover a Spill**

- **NEVER HOSE DOWN ANY PESTICIDE SPILL.** You will spread the contamination.
- Put on protective clothing. Be especially careful with pesticide concentrates.
- **STOP THE FLOW!**
  - Place a leaking container into a larger container.
  - Install a valve to cut off flow quickly if a hose bursts.
- Protect wells, bodies of water, storm sewers, and other water sources. Make a dike around liquid spills with dirt, kitty litter, etc.
- Dry pesticides may be simply scooped up in most cases and used according to the label.
- Add absorbent material until the liquid is completely absorbed.
- Place the contaminated absorbent material in a leak-proof container.
- Dispose of contaminated materials properly.
- If the spill occurred on a washable surface, wash the area with heavy duty detergent and a small amount of water. Soak up the water with an absorbent material.
- For a spill on soil, you may need to remove the contaminated soil.
- It may be possible to neutralize some pesticide spills. Consult the MSDS for information.
- You may apply contaminated soil or contaminated absorbent materials to a use site on the pesticide label if you do not exceed label rates.
- Decontaminate equipment using a strong mixture of chlorine bleach, dishwashing detergent, and water. Contain wash-water and dispose of it properly.

- Keep records of your clean-up activities.

**Pesticide Fires**

PESTICIDE FIRES ARE EXTREMELY DANGEROUS. DO NOT FIGHT THEM UNLESS YOU ARE TRAINED AND WELL-PREPARED.

- **DO NOT HOSE DOWN A PESTICIDE FIRE.** You will only spread contamination.

- **NEVER STAND DOWN-WIND FROM A PESTICIDE FIRE.** The smoke/fumes may be deadly.

- Keep a chemical fire extinguisher at all pesticide storage/mixing locations.

- Inform the fire department that it is a pesticide fire. They may need special equipment.