

## PESTICIDE STORAGE AND HANDLING

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*Pesticides* are a general category of agricultural chemicals that kill or otherwise control insects, rodents, nematodes, and weeds, and that prevent or control the infection of plants by viruses, fungi, and bacteria. Use of pesticides is not a new concept. Pesticides have been used for centuries to control pests that destroy crops. Today, we use dry, soluble, and liquid pesticides in agriculture to protect food and fiber, and domestically to protect humans, pets, and property from mosquitoes, ants, termites, and other pests.

The pros and cons of using pesticides are the subject of much debate among agricultural producers, chemical companies, government regulators, and environmental activist groups. One of the primary concerns is the long-term effect of synthetic pesticides on the environment, ecosystem, and human health. However, the benefit of pesticide use in recent history is evident, especially in terms of food production and cost. According to the U.S. Department of Agriculture, when compared to other countries, Americans spend the lowest proportion of their family income—10.1 percent—on food. In contrast, families in France, Italy, and the Philippines spend approximately 14.6, 15.2, and 51.3 percent, respectively, of their income on food.

The U.S. government regulates the use of pesticides and the manner that they are stored, handled, and applied. The primary law governing pesticide use is the *Federal Insecticide, Fungicide and Rodenticide Act of 1947*. It has been amended several times, most recently by the *Food Quality Protection Act of 1996*. The primary intent of this law is to provide federal control of pesticide distribution, sale, and use. Added amendments require that pesticide applicators be certified and that all pesticides used in the United States be registered by the Environmental Protection Agency. Registration assures that pesticides will be properly labeled and that, if used in accordance with label specification, will not cause unreasonable harm to the environment.

### PESTICIDE STORAGE AND HANDLING

When storing, transporting, mixing, loading, or applying pesticides, or cleaning pesticide spills, it is good practice to treat all pesticides as though they are toxic. Read all pesticide labels before use, and train all employees or pesticide handlers on personal protection procedures. Always keep unauthorized people, especially children, away from pesticide mixing, handling, and storage areas. Following are additional suggestions to use while storing and handling pesticides.

#### **STORAGE**

Proper storage of pesticides can greatly reduce the risk of unauthorized personnel, especially children, from contacting, spilling, or ingesting pesticide material.

- Keep the storage area locked. Pesticides can be very harmful when in the wrong hands.
- Post storage areas and buildings with signs reading "Danger - Pesticides." The signs will also inform fire fighters that pesticides are present.

- Always keep children, animals, and unauthorized persons away from pesticides.
- Store pesticides in well ventilated, dry areas.
- Don't keep large amounts of pesticides on hand; only purchase the amount you need.
- Keep an inventory of pesticides and other chemicals, and their respective locations.
- Keep pesticides in their original containers. Never put them in unmarked or food containers.
- Never store pesticides with food products, livestock feed, or fertilizer.
- Store personal protective equipment in a clean area away from pesticides.
- Periodically check pesticide containers for leaks or corrosion; some pesticides are caustic.

## **TRANSPORT**

Use caution when loading and transporting pesticides. Make sure handlers know how to properly load and secure pesticide containers, and know how to react to pesticide accidents.

- Inspect the vehicle being used to transport the pesticides. Make sure it is functioning properly.
- Transport the pesticides in the back of the truck bed or in locations away from passengers.
- Secure pesticide containers to ensure that they will not roll around or fall out. Prevent the containers from moving by tying down, blocking, and bracing them.
- During loading, check the containers for leaks, make sure caps are secure, read the labels, and inventory the number and type of containers being transported.
- Never transport pesticides with food or feed.
- Never allow anyone to ride with the pesticides.
- Never carry pesticides in the passenger seating area.
- Be prepared for a spill during transportation.
- Carry a safety kit for use during clean up. The kit should contain an index card with emergency numbers, duct tape, shovel, respirator, goggles, rubber gloves, protective clothing, soap, and wooden dowels to plug leaks. Also carry kitty litter or sand as an absorbent material.
- If a spill happens, control and contain it. Put on safety equipment, and dike off the area. Contact the proper authorities for help.

## **MIXING**

Only authorized and trained personnel should be allowed to mix pesticides. Treat all pesticides as if they are potentially dangerous.

- Mix pesticides carefully and accurately, using only the recommended amount specified on the label.
- Read the label carefully, and follow the directions exactly.
- Utilize appropriate personal protective equipment including gloves, splash-proof goggles or face shield, and protective clothing.
- Keep hands away from the face, head, and neck when mixing.
- Open liquids on a level surface and below eye-level to avoid spilling and splashing.
- Pour liquids below eye-level and as close to the ground as possible.
- Do not try to pour from a container that is too heavy.
- Open pesticide powders with scissors to avoid dusts.
- Use proper measuring tools when mixing pesticides.
- Mix pesticides outside or in a well lit and ventilated area.

## LOADING AND MIXING INTO LARGE TANKS

Most loading and mixing of pesticides into large tanks such as agricultural machinery sprayers requires special caution due to the effect of wind drift and the potential for contamination into clean water supplies.

- Recognize weather conditions when loading and mixing pesticides, especially the direction the wind is blowing.
- Stand with your back to the wind so the pesticide will be blown away from you, not on you.
- Keep your head well above the tank opening to prevent pesticides from splashing in your face.
- Do not use your hands to stir pesticides or retrieve something that has fallen into the tank.
- Close all containers as you finish with them.
- Select the right equipment; use and maintain equipment properly.
- Install an approved anti-siphoning device to prevent back siphoning into the water supply.
- Maintain an air gap between the source and the spray tank.
- Fill the spray tank with water and add the pesticide last, preventing the fill hose from becoming contaminated.
- Add pesticides to the water-filled tank away from the water source. If possible, add pesticides to tanks while the sprayer is in the field.
- If a pesticide must be added first, secure the hose to the top of the tank out of the liquid so it is not drawn in. Use check valves to prevent backflow into the water supply.
- Avoid run-overs. Never leave filling operations unattended.
- Protect well heads; never store chemicals near wells.

## APPLYING

It is unlawful to apply pesticides in a manner inconsistent with label instructions. For agricultural producers, strict re-entry restrictions have been established for fields that have been recently sprayed with pesticides. Applicators should understand the risks and take proper measures to avoid them.

- Set application equipment for the correct delivery rate, and operate equipment at the recommended speed for proper coverage.
- Check the sprayer for any loose connections or worn hoses.
- Know and maintain the proper pressure and speed to avoid damage.
- Check weather conditions when applying pesticides. It is against the law to apply pesticides on windy days when they might drift on to nearby fields.
- Turn the sprayer off when turning around at the end of rows.
- Turn the sprayer off when you are moving from field to field.
- Don't apply pesticides when heavy rain is likely. Rain may wash pesticide residue into non-target areas.
- Should the equipment become clogged or not work properly when spraying, take the necessary precautions when fixing it.
- Wear appropriate personal protective equipment including gloves, eye protection, respirators, and special clothing.
- Use a brush or soft copper wire to clean out clogged nozzles. Never use your mouth.
- After spraying fields, obey re-entry periods. Post warnings around treated areas, and verbally warn others to stay out until it is safe to re-enter.
- Use extreme caution when applying chemicals near bodies of water. Use grass buffer zones to minimize pesticide run-off.

## CLEANING

In the event of a pesticide spill, use proper cleaning practices to avoid contaminating workers, animals, equipment, tools, and other objects. Make sure the appropriate cleaning materials are available near storage and handling facilities.

- Pressure wash or triple rinse all empty containers and flush hoses.
- Put the rinse water into a tank for use on a labeled crop.
- Safely dispose of empty containers and excess chemicals as suggested by the manufacturer, dealer, or agricultural authority.
- Know the laws for disposing of pesticide containers. Never dump them where they could pollute groundwater, wells, or streams, or could contact people and animals.
- Clean up all spills and leaks immediately. Some pesticides are caustic and could cause damage to floors and other structures.
- Keep others away from the spill area, and make sure it does not move off-site.
- Keep clean-up supplies such as a containment drum, kitty litter, sand, sawdust, shovel, broom, and dustpan in your storage facility and ready to use.
- Clean up spills with soil, sand, rags, or paper towels.
- Scoop up dry, contaminated material, place it into a leak-proof container, and properly dispose of it.
- Rinse the area, but do not let the rinse water flow into ponds or streams.
- Clean all equipment and protective clothing when finished.
- Wash hands and face before eating, drinking, smoking, or chewing gum or tobacco.
- Make sure you wash your hands before using the toilet at work.

## POISONING

Despite all efforts to store and handle pesticides safely, accidents can and do happen. Knowing how to react to pesticide poisoning is essential. Be prepared for pesticide accidents. Have a written plan-of-action to respond quickly. The life you save may be your own.

- Know the signs and symptoms of pesticide poisoning for all materials you use.
- Make sure your employees and family members know how to recognize signs of overexposure.
- Post the telephone number of the Poison Control Center, your physician, and the nearest hospital in close proximity to pesticide handling and storage areas. When you call, have the label handy.
- If you go to the physician or hospital for a poisoning emergency, take an original container or label with you.
- Check the pesticide's Materials Safety Data Sheet for more detail on first aid procedures.

