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## (Using Rodenticide)

Glue-boards and traps are devices that can be used to control rodent populations. In small areas, these devices can be efficient. In a 12,000- to 20,000-square-foot house, however, baits often are more practical.

## Rodenticides

A wide variety of rodenticidal compounds and formulations are available. The selection of the right material for a specific situation is important. (See listings under multiple-dose and single-dose rodenticides later in this section.) An understanding of the basics is necessary to know how to use a particular compound and formulation most effectively.

Rodenticides are formulated as pellets, bar baits, tracking powders and concentrates. Pellets are formulations of poisons mixed with grain products and a binder. They may be packaged loose or in individual pitch packs. Bar baits are formulated with rodenticide, grain products and a binder with a high wax content to withstand moisture for long periods.

Tracking powders are compounds formulated with talc or other inert material. They are intended for use along rodent runways. Rodents pick up the poison on their fur, tail and feet and ingest it during grooming. Concentrates are designed to be mixed with feed or water.

The most important thing to know about a rodenticide is that the type of active ingredient determines how the material is to be used. Failure to use a particular rodenticide correctly will result in poor control and may present a hazard to nontarget animals.

In general, rodenticides can be classified as either multiple- or single-dose poisons. All of the multiple-dose and two of the single-dose products affect the rodent's nervous system or other bodily functions.

Multiple-dose poisons must be eaten every day for seven to 21 days for the rodent to accumulate a lethal dose. Any interruption of exposure breaks the cycle, and although rodents may become ill, they will not die. In such cases, rodents may learn to avoid the bait.

## Active Ingredients in Multiple-Dose Rodenticides

- Warfarin
- Fumarin
- Chlorophacinone
- Diphacinone

Single-dose poisons have a decided advantage over multiple-dose rodenticides since rats and mice receive a lethal dose after only one or two feedings.

## Active Ingredients in Single-Dose Rodenticides

- Brodifacoum
- Bromadiolone
- Bromethalin
- Cholecalciferol
- Zinc phosphide

Once a rodenticide has been selected, it must be used properly to be effective. Random placement of bait or tracking powder around a poultry facility rarely is successful. Always remember that rodents will not go out of their way to eat poison bait if they have other food readily available. Similarly, tracking powders will not work as intended if rodents do not run through the material on their way to and from their feeding or nesting areas.

Since baits are the most efficient and economical way to deliver rodenticide, we will limit our discussion to the proper use of baits to control rats and mice. Because baiting methods differ for rats and mice, they will be discussed separately.

## Rat Baiting

Rats are much easier to bait than mice. Their burrows are conspicuous and, once located, can be baited by placing the rodenticide directly in the burrow. The following method is called pulse baiting and is an effective way to kill rats.

- 1. Locate and mark all burrows.
- 2. Seal all burrows with newspaper or soil.
- 3. Inspect burrows the next day and place a packet of bait well inside each open burrow. It is not necessary to open the packets.
- 4. Bait all open burrows for two consecutive days if using a single-dose product and 10 to 14 days if using a multiple-dose rodenticide.
- 5. Close all burrows and wait one week.
- 6. Repeat step 4.
- 7. Close all burrows and monitor for activity. Bait all new burrows when they first appear.

Where rat burrows are located in inaccessible areas such as the manure under slats and along steep banks, bait stations should be used (Figure 4). Place stations against walls or on rodent runways with the first station as close to the burrows as practical. Orient the entry holes along the wall or path. Well-used runways are easy to spot (by the large amounts of droppings, rodent tracks,

greasy-looking rub marks, etc.) and are the best place to locate bait stations. Position stations at 10- to 15-foot intervals to cover a large area and give rats ample opportunity to find the bait before reaching their normal feeding sites. Put one or two stations around feed bins, as well. Inspect the stations every few days and add 1 ounce of fresh, loose bait as needed. If the bait has not been taken within several days, place the station at a new location.

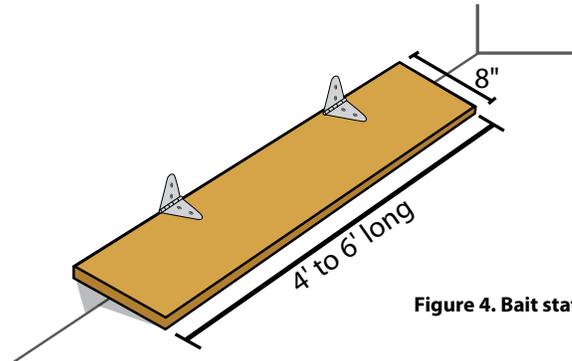


Figure 4. Bait station.

## Mouse Baiting

Large numbers of mice often will nest in the walls and ceilings of poultry houses. Consequently, mouse baiting is a matter of quantity and persistence. Bait bars or stations baited with an ounce of loose bait should be placed at 5- to 10-foot intervals throughout the house. Sill plates and horizontal wall braces often are good locations to place bait in breeder, turkey and other open-floor houses. Bait stations may also be placed along alleyways in facilities where birds are caged or penned. Egg rooms, offices and attic spaces also should be baited. As with rat baiting, placement is important.

Bait stations and bar baits should be placed next to walls or on the horizontal surface of sills and braces. Corners are good locations, as are cool cells and housings for exhaust fans. In all cases, care should be taken to attach stations firmly and in such a way that birds cannot reach the bait.

Once bait has been placed, inspect the locations frequently and replenish the bait as needed. Inspection intervals depend on the severity of the mouse infestation and type of bait used. Where multiple-dose baits are used or the infestation is heavy, check locations daily for the first week. Try increasing the amount of bait placed in each station if mice have eaten it all. This will allow for less-frequent inspections. In time, it will be necessary to inspect stations only once a week. Bar baits are partially useful in locations, such as sill plates, that are near the ceiling. Most bars have a hole in the center that allows the bait to be nailed in place (Figure 5). Bar baits generally last much longer than loose baits because mice cannot carry them to their nests

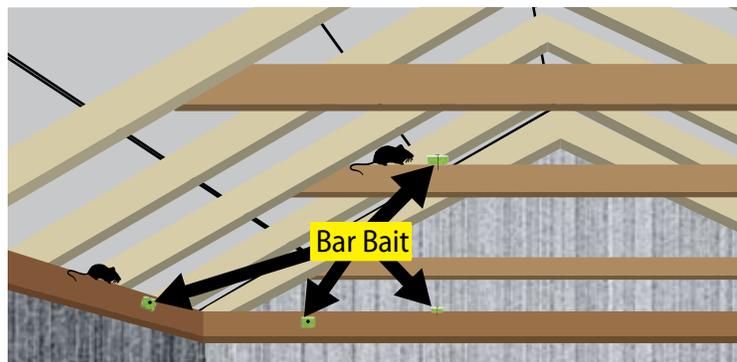


Figure 5. Bait bar placement.

# Responding to Complaints

It only takes a drive through any parish back road to see that more and more families are moving into rural areas of Louisiana. These families typically come from a nonfarmer background and do not understand contemporary agricultural practices. For a variety of reasons, they also are increasingly sensitive to issues related to agriculture, environmental quality, food safety and quality. Concerns about agricultural odors, dust and chemicals are exacerbated by both limited knowledge of agriculture and the desire of these rural immigrants to have a home in the country. Balancing the expectations of rural landowners and the needs of poultry producers to provide a safe and economical supply of meat and eggs will become more challenging in the years to come. There are some things that can be done, however, to make the situation better.

Being friendly and courteous to people who are neighbors to your farm can go a long way to help improve the image of the operation. The appearance of the farming operation also helps. A clean atmosphere is much more pleasing to look at than a dirty and unclean one. The way a manager handles complaints and concerns also is a vital part in keeping good relations with neighbors.

Be caring to neighbors. Give advance notice when you are planning to spread manure that may cause offensive odors. Talk with your neighbors to avoid spreading manure around outdoor weddings, barbecues, picnics and other social events that potentially could be ruined. Let your neighbors know you are willing to talk about odor problems and that you care. Ask your neighbors if they would like some compost or separated solids for their gardens.

A system of communication also may need to be set up. This will help solve any problems before they get out of hand. Some people feel more comfortable talking to someone other than the person with the problem. Give concerned members of the community a contact person to talk to. This third-party can be separated from the issue, be less emotionally involved and can likely identify simple and mutual solutions. Finally, poultry producers need to work with community leaders and regulatory agencies before complaints get out of hand. Today, in most parts of the country, community leaders set and enforce the regulations on farming operations. A poultry producers working with community leaders may reduce the demands for regulations against odor. If poultry producers farmers do not work with neighbors and community leaders, it could mean losing profits or even your farm.



# Farmstead Management

Farmstead Management is a generic term to describe several BMPs that might be necessary on your farm. Many of these may only apply if an operation is producing both poultry and cattle on the same land. Consult with your local NRCS office or LSU AgCenter county agent to determine which if any of these practices might benefit your situation.

## Fuel storage tanks

Above-ground fuel storage tanks in Louisiana are regulated by the State Fire Marshal's Office and by the EPA if surface water is at risk. Above-ground tanks containing 660 gallons or more require secondary containment. The state fire marshal recommends that some sort of secondary containment be used with all fuel storage tanks. This could include the use of double-walled tanks, dikes around the tank for impoundment or remote impoundment facilities.



These practices are to be followed:

- Additional secondary containment measures are required for operations that store more than 1320 gallons of fuel. NRCS Code 710 is designed to prevent accidental discharge of petroleum products into the environment. Additional information can be obtained from your local NRCS office in consultation with the local LSU AgCenter agent.
- The tank and storage area should be located at least 40 feet from any building. Fuel storage tanks should be placed 150 feet and down slope from surface water and water wells.
- It is recommended that the storage tank be on a concrete slab to prevent any spillage from entering surface water and groundwater.
- The storage area should be kept free of weeds and other combustible materials.
- The tank should be conspicuously marked with the name of the product that it contains and "FLAMMABLE—KEEP FIRE AND FLAME AWAY."
- The bottom of the tank should be supported by concrete blocks approximately 6 inches above the ground surface to protect the bottom of the tank from corrosion.
- If a pumping device is used, it should be tightly and permanently attached and meet NFPA approval. Gravity discharge tanks are acceptable, but they must be equipped with a valve that will automatically close in the event of a fire.
- Plans for the installation of all storage tanks that will contain more than 60 gallons of liquid must be submitted to the State Fire Marshal's Office for approval.
- All tanks that catch on fire must be reported to the State Fire Marshal's Office within 72 hours of the fire.
- Underground storage tanks are defined as containing more than 10 percent of their total volume beneath the soil surface. Underground tanks represent more of a problem than above-ground tanks, because leaks can often go for long periods without being detected. This poses a serious threat to groundwater sources in the vicinity of the tank. If you have an underground fuel storage tank, you need to contact the State Fire Marshal's Office for regulations affecting these storage tanks.

## Heavy-Use Area Protection (NRCS Code 561)



Open, unpaved, bare areas are common on many Louisiana farms – especially those producing livestock. Examples are feeding or watering areas, pathways to the barns, pre-milking staging areas, shaded animal areas and transition areas from pavement to dirt. These areas may be considered to need runoff controls in most cases, and improvements to these areas will minimize the effects of runoff into streams.

Unpaved areas of high livestock density, such as around open feed areas or transition areas from pavement to dirt, may be underlaid with suitable surface materials to reduce muddy conditions. One option might be geotextile fabric or filter cloth. If used, the surface on which the non-woven geotextile is placed should be graded smooth and free of loose rocks, depressions, projections and standing or flowing water. The geotextile is unrolled and placed loosely on the graded soil surface, overlapping at the seams by 18 inches. Approximately 6 to 8 inches of crusher-run gravel is placed on top of the geotextile. This installation allows surface liquids to drain through and provides a firm footing for the animals, thereby preventing miring of their hooves.

When possible, dirt lots should be located at least 100 feet away from perennial streams or 25 feet away from intermittent streams and drainage ways and have a permanently vegetated buffer. These lots should not

have an unfenced stream or wet area within their boundaries. All surface water from above these lots should be diverted around them. Sloping lots should have cross terraces to reduce erosion and collect eroded sediment and manure solids. At the lowest point of the lot edge, earthen or concrete settling basins should be placed to help trap solids that may otherwise leave in rainfall runoff. Where possible, these lots should be rotated and the surface manure pack scraped from the unused lot before reseeding with grass. Waterers located within these areas should be kept in good repair to minimize leakage and spillage.

## Trough or Tank (NRCS Code 614)

Some livestock are managed on pastures in partial confinement. While animals are on pasture, their waste should not be a resource concern if stocking rates are not excessive, grazing is evenly distributed and grazing is minimized to the degree possible during rainy periods when the soil is saturated.

It is best for pasture feeding areas to be located on the higher points of the pasture and away from streams. Portable feed bunks should be moved periodically. Permanent waterers should be located away from streams and have an improved apron around them of concrete, gravel or gravel and geotextile fabric.

If using rotational grazing, where pastures are divided into paddocks separated by electric fencing, paddock subdivisions that allow a one- to three-day rotation of the livestock have been found to be successful. When subdividing long slopes, make the paddocks cross the slope so animals are not forced to graze up and down steep, narrow hillsides, if applicable. Lanes that provide access to shade and water should be as centrally positioned as possible for efficient livestock movement. Lane surfaces will likely need to be improved with gravel, geotextile fabric or both.

Drinking water, when provided in every pasture or paddock, increases the amount of time the livestock graze and reduces the amount of manure in the vicinity of the primary waterer. Shallow tubs beneath fence lines can serve two or more paddocks. Water can be piped in through underground lines (NRCS Code 516). Quick couplers can be installed in water mains to allow one to two tubs to be moved with the cattle from paddock to paddock.

## Stream and Stream Bank Protection (NRCS Code 580) and Access Road Requirements (NRCS Code 460)

Livestock movement from pasture to pasture or paddock to paddock is best done by improved walking lanes and stock trails. These lanes should be planned efficiently for animal movement, should follow the contour of the land whenever possible and should be as far away from streams as possible. Lane surfaces, in many cases, will need to be improved with gravel, geotextile fabric or both to reduce muddy conditions and erosion.

Improved crossings in pasture or dry-lot areas where livestock must cross a stream can help to maintain bank integrity and reduce erosion. These crossings may be in conjunction with fenced stock trails, or they may be in open pastures. In open pastures, an approach segment of the stream above and below the crossing may need to be fenced to train the animals to use the crossing.



One method to improve a stream crossing (NRCS Code 578) is to uniformly grade a 10- to 15-foot section of the bank on each side, as well as the stream bottom. If it is not solid, use geotextile fabric and gravel on the surface of the graded section. Concrete slabs also have been used to hard-surface crossings.

Another crossing method is to install a culvert covered with compacted soil in the stream. Care must be taken to size the culvert with enough capacity to handle storm events. A third method is to construct a bridge for livestock to cross larger or wider streams. Professional advice should be sought to ensure bridges and culverts will be structurally sound.



## Stream Fencing (NRCS Code 382) and Access Control (NRCS Code 472)

Fencing livestock out of streams is needed only when the water quality or stream banks have been or will be significantly degraded because of the presence of animals congregating or lounging in the stream. Stream segments through feedlots, near heavy-use areas or where stream banks have been severely eroded probably will need to be fenced to restrict livestock access. Wetlands or spring-fed water courses also may need to be fenced. Streams in pasture or wooded areas where stream bank integrity is maintained and stream edges have permanent wooded or vegetated buffers may not need to be fenced.



## Sediment Basin (NRCS Code 350) or Waste Storage Facility (NRCS Code 313)

This is a basin or storage facility constructed to collect and store manure and sediment generated from livestock. Its purpose is to prevent deposition on bottom lands and to trap sediment, agricultural waste and debris. Another application of the sediment trap can be used to help prevent field borders or filter strips from becoming inundated with solids. A sediment basin placed before the vegetative filter to separate manure solids from the wastewater is good management practice, when practical, to prevent the upper side of the vegetative filter from clogging with solids and reducing soil infiltration. The most common type of settling basin is a shallow, reinforced concrete structure with a sloping entrance ramp to permit equipment access for solids cleanout. The basin should have a drain in one sidewall so liquids can be removed. Solids should be removed from the basin monthly or after each heavy rainfall, when practical.

Vegetated areas receiving settling basin liquid overflow consist of either an overland flow plot or a shallow grassed channel or waterway. These areas should be bermed or terraced so that all surface water outside the infiltration area is diverted.

Care should be taken during construction of a vegetative filter. Since infiltration is most important, every effort should be made to maintain soil

integrity and permeability. Mulching, fertilizing, liming and even watering should be used to establish a healthy sod as soon after seedbed preparation as possible to prevent soil erosion.

Vegetative filter areas should be prepared and seeded at least one growing season before use. A combination of seasonal forage species that can tolerate wet conditions is suggested. Foliage should be clipped periodically and removed from the filter area. Do not remove late-fall foliage. Foliage growth will help filter winter and spring runoff. Vegetative filters can provide low-cost, low-management control of most barnyard runoff. Studies indicate vegetative filters can remove more than 95 percent of the nutrients, solids and oxygen-demanding material from wastewater. They are not effective, however, on farms where large areas of paved feedlot drain into the filter. See Section on Vegetated Buffers and Filter Strips in this manual for additional details.



## Roof Runoff Management (NRCS CODE 558)

This practice can be used if rainfall runoff from barns or other structures is flowing across animal waste areas or bare ground areas where significant erosion is occurring. Management of this runoff ensures manure waste and sediment are not transported into drainage branches or small creeks that ultimately can carry pollutants into surface water off the farm. The practice also can sometimes have the added benefit of protecting the foundation of the

building from water inundation and weakening. In some cases, if desired, roof runoff can be collected, stored and used for other purposes such as lot wash-down water.

Gutters and downspouts are commonly used with care taken to ensure water from downspouts is directed away from the building foundation and areas of concern. Water velocity from downspouts is emptied onto the ground surface with velocity dissipation systems such as rock pads, rock-filled trenches or concrete to prevent erosion and to ensure ground infiltration.



## Critical Area Planting (NRCS Code 342):

Examples of applicable areas are levees, cuts, fills and denuded or gullied areas where vegetation is difficult to establish by usual planting methods. The easiest and most effective way to protect these areas is to maintain perennial plants in these locations. These plants provide soil stabilization, control erosion, protect water quality and supply wildlife habitat.

The roots of native grasses, low shrubs and aquatic plants bind to the soil and provide the necessary benefits. Proper treatment of a critical area involves the planting of vegetation, such as trees, shrubs, vines, grasses or legumes, on highly erodible or critically eroding areas. This practice does not include planting trees for wood products.

Although any rooted plants growing in these areas are helpful, some plants give better protection than

others. Low grasses and shrubs that provide deep, strong, fibrous root systems are the best and grow faster than trees. One group of native trees that grows relatively fast and provides the necessary root system is the willows (*Salix*). Unlike other trees, these are woody shrubs that love water and develop deep, strong root systems in wet soil. Plants that are suitable for planting in these areas can be found in most nurseries or can be transplanted from existing stands. For advice on the proper plants for your situation, contact your nearest NRCS office or LSU AgCenter Extension Service county agent.

Survival of these plants depends on proper planting and care until the plants are firmly established. Bank shaping, weeding, fertilization, mulching and fencing from livestock may also be necessary depending on individual circumstances.



## Conservation Tillage Practices (NRCS Code 329):

This system is designed to manage the amount, orientation and distribution of crop and other plant residues on the soil surface year-round. In conservation tillage, crops or forage are grown with minimal cultivation of the soil. When the amount of tillage is reduced, the stubble or plant residues are not completely incorporated, and most or all remain on top of the soil rather than being plowed or disked into the soil. The new crop is planted into this stubble or small strips of tilled soil. Weeds are controlled with cover crops or herbicides rather than by cultivation. Fertilizer

and lime are either incorporated earlier in the production cycle or placed on top of the soil at planting.

A sequence of changing tillage practices in several watersheds in Oklahoma enabled comparison of surface water and ground water effects associated with native grasses, conventionally tilled wheat and no-till wheat. Conversion of native grasses to conventionally tilled wheat increased soil loss dramatically. In areas where no-till cultivation was practiced, however, dramatic soil losses were minimized. Substantial reductions in nutrient runoff were a consequence of soil retention, and soil moisture increased as an added benefit.

Reduced tillage practices in agronomic crops from forages such as corn, wheat and other forage species were introduced more than 50 years ago to conserve soil and water. Experience over that 50 years has proven crops grown without tillage use water more efficiently, the water-holding capacity of the soil increases and water losses from runoff and evaporation are reduced. For crops grown without irrigation in drought-prone soils, this more efficient water use can translate into higher yields. In addition, soil organic matter and populations of beneficial insects are maintained, soil and nutrients are less likely to be lost from the field and less time and labor are required to prepare the field for planting. In general, the greatest advantages of reduced tillage are realized on soils prone to erosion and drought.

There also are disadvantages of conservation tillage, however. Potential problems are compaction, flooding or poor drainage, delays in planting because fields are too wet or too cold, and carryover of diseases or pests in crop residue. A further consideration is the difficulty of planting typical no-till systems, the field is prepared for planting by killing the previous crop with herbicidal desiccants such as glyphosate (for example, Roundup) or gramoxolin

(for example, Paraquat). The no-till seeders available for agronomic crops were designed to plant into these dried residues. Recently, agronomists have been developing no-till systems where cover crops are planted for weed control and then killed with flail or other types of mechanical cutters instead of herbicides. No-till seeders must be modified to work on these tougher residues.

This practice may be applied as part of a conservation management system to supplement one or more of the following:

- Reduce sheet and rill erosion.
- Maintain or improve soil organic matter content and tilth.
- Conserve soil moisture.
- Provide food and cover for wildlife.

## Irrigation Water Quality

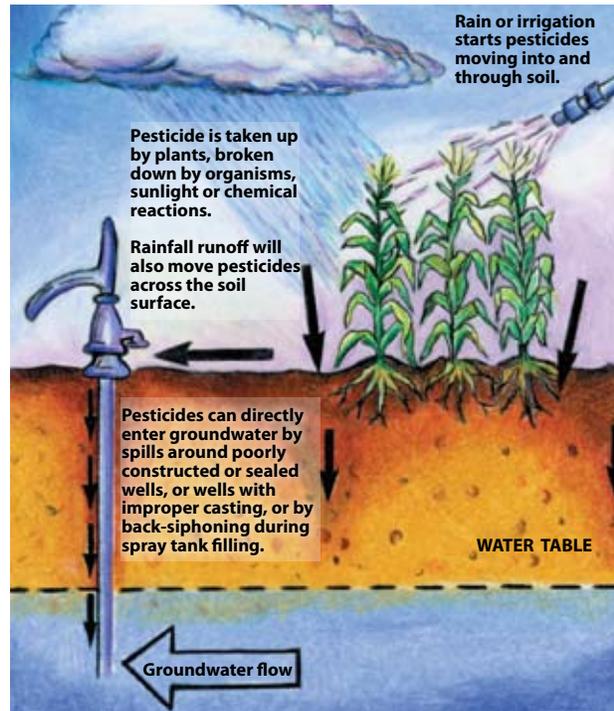
Irrigation water (surface and/or well) should be tested in the spring to determine the salinity (salt) level before irrigating a field or pasture. Take samples to an approved laboratory for analysis.



# Pesticide Management and Pesticides

## Introduction

To preserve the availability of clean and environmentally safe water in Louisiana, contamination of surface water and groundwater by all agricultural and industrial chemicals must be reduced. Some sources of contamination are easily recognizable from a single, specific location. Other sources are more difficult to pinpoint. Nonpoint-source pollution of water with pesticides is caused by rainfall runoff, particle drift or percolation of water through the soil. Pest management practices should be based on current research and extension recommendations. By using these recommendations, pesticide use will follow environmentally sound guidelines.



Soil-incorporated systemic pesticide

Pesticide is carried into and through soil. Movement through soil is affected by soil and pesticide properties and amount and timing of water. Pesticide residue and byproducts not absorbed are broken down into the groundwater.

Movement with groundwater - additional breakdown generally slowed, but depends on chemical nature and groundwater.

## Pest Management Procedures

Pesticides should be applied only when they are necessary to protect the crop. The pesticide should be chosen following guidelines to assure that the one chosen will give the most effective pest control with the least potentially adverse effects on the environment.

Water quality, both surface and ground, will be protected by following all label recommendations and guidelines dealing with water quality.

- Carefully read all label statements and use directions designed specifically to protect groundwater.
- Closely follow specific best management practices designed to protect surface water.
- Use erosion control practices (such as pipe drops, etc.) to minimize runoff that could carry soil particles with adsorbed pesticides and/or dissolved pesticides into surface waters.

## Pesticide Application

Management practices such as the pesticide selected, the application method, the pesticide rate used and the application timing influence pesticide movement. Pesticides should be applied only when needed to prevent economic loss of a crop.

In pesticide application, “the label is the law.” Using chemicals at rates higher than specified by the label is ILLEGAL as well as an environmental hazard because more pesticide is exposed to erosion, runoff or leaching. Poor timing of a pesticide application (application just before rain falls) can result in pesticide movement into water sources, as well as give little control of the targeted pest.

Certain areas on your farm, such as streams and rivers, wellheads and lakes or ponds, are sensitive to pesticides. You should create buffer zones around these areas where pesticide use will be reduced or eliminated. By buffering these areas, you may reduce water quality problems. Areas such as roads, off-site dwellings and areas of public gatherings should be identified. You may want to limit the use of pesticides near these types of areas, too.

## Follow these practices:

- Select the pesticide to give the best results with the least potential environmental impact outside the spray area.
- Select application equipment with care and maintain it carefully.
- Carefully calibrate application equipment at the beginning of the spray season and periodically thereafter. Spray according to recommendations.
- Minimize spray drift by following the label instructions and all rules and regulations developed to minimize spray drift (the physical movement of spray particles at the time of or shortly after application).



- Before applying a pesticide, make an assessment of all of the environmental factors involved in all of the area surrounding the application site.
- Carefully maintain all pesticide applications, not just restricted use pesticides.



## Pesticide Selection

When selecting pesticides, consider chemical solubility, adsorption, volatility and degradation characteristics. Chemicals that dissolve in water readily can leach through soil to groundwater or be carried to surface waters in rainfall or irrigation runoff. Some chemicals hold tightly to, or are adsorbed on, soil particles, and these chemicals do not leach as much. But even these chemicals can move with sediment when soil erodes during heavy rainfall. Runoff entering surface waters may ultimately recharge groundwater reserves. Chemicals bound to soil particles and organic matter are subject to the forces of leaching, erosion or runoff for a longer period, thus increasing the potential for water pollution.

When selecting pesticides:

- Base selections on recommendations by qualified consultants, crop advisors and published recommendations of the LSU AgCenter / Louisiana Cooperative Extension Service.
- Select the pesticide to be used based on its registered uses and its ability to give the quality of pest control required.
- Consider the effects a pesticide may have on beneficials (beneficial insects), other non-target organisms and on the general environment.

## Pesticide Storage and Safety

Farmers and commercial pesticide applicators are subject to penalties if they fail to store or dispose of pesticides and pesticide containers properly. Each registered pesticide product, whether general or restricted use, contains instructions for storage and disposal in its labeling. The Louisiana Pesticide Law addresses specific requirements for storage and disposal. The applicator must follow these requirements carefully and ensure that employees follow them as well.

The recommended procedures do not apply to the disposal of single containers of pesticides registered for use in the home and garden. These containers may be disposed of during municipal waste collection if wrapped according to recommendations.

For other containers, storage sites should be chosen to minimize the chance of pesticides escaping into the environment. Pesticides should not be stored in an area susceptible to flooding or where the characteristics of the soil at the site would allow escaped chemicals to percolate into groundwater. Storage facilities should be dry, well ventilated and provided with fire protection equipment. All stored pesticides should be carefully labeled and segregated and stored off the ground. Do not store pesticides in the same area as animal feed. The facility should be kept locked when not in use. Further precautions include appropriate warning signs and regular inspection of containers for corrosion or leaks. Protective clothing should be stored close by but not in the same room as the pesticides to avoid contamination of the protective clothing. Decontamination equipment should be present where highly toxic pesticides are stored.



## Exceptions for Farmers

Farmers disposing of used pesticide containers for their own use are not required to comply with the requirements of the hazardous waste regulations provided they triple rinse or pressure wash each container and dispose of the residues on their own farms in a manner consistent with the disposal instructions on the pesticide label. Note that disposal of pesticide residues into water or where the residue is likely to reach surface water or groundwater may be considered a source of pollution under the Clean Water Act or the Safe Drinking Water Act and therefore is illegal.

After the triple-rinse procedure, the containers are then “empty,” and the farmer can discard them in a sanitary waste site without further regard to the hazardous waste regulations. The empty containers are still subject to any disposal instructions contained within the labeling of the product, however. Disposal in a manner “inconsistent with the labeling instructions” is a violation of EPA guidelines and could lead to contamination of water, soil or persons and legal liability.



The EPA regulations hold the producer on a farm, forest, nursery or greenhouse ultimately responsible for compliance with the worker safety standards. This means the landowner or producer must ensure compliance by all employees and by all independent contractors working on the property. Contractors and employees also may be held responsible for failure to follow the regulations.

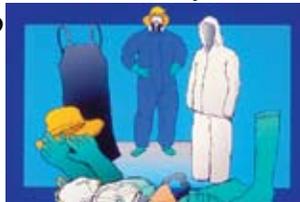
## The Occupational Safety and Health Act (OSHA)

The federal government also regulates farm employee safety under the Occupational Safety and Health Act (OSHA). OSHA applies to all persons (employers) engaged in business affecting interstate commerce. The federal courts have decided that all farming and ranching operations, regardless of where goods produced are actually sold or consumed, affect interstate commerce in some respect and thus are subject to OSHA’s requirements. In general, every employer has a duty to provide employees with an environment free from hazards that are causing or are likely to cause death or serious injury.

## Agricultural Chemicals and Worker Safety

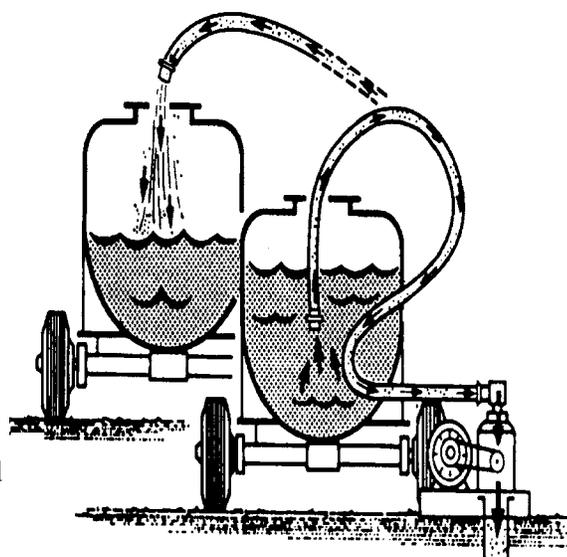
The EPA has general authority to regulate pesticide use to minimize risks to human health and to the environment. This authority extends to the protection of farm workers exposed to pesticides. All employers must comply with ALL instructions of the Worker Protection Standard concerning worker safety or be subject to penalties. Labels may include, for example, instructions requiring the wearing of protective clothing, handling instructions and instructions setting a period of time before workers are allowed to re-enter fields after the application of pesticides (Restricted Entry Interval).

Employers should read the Worker Protection Standard regulations governing the use of and exposure to pesticides. The regulations set forth minimum standards that must be followed to protect farm workers and pesticide handlers. The regulations include standards requiring oral warnings and posting of areas where pesticides have been used, training for all handlers and early re-entry workers, personal protective equipment, emergency transportation and decontamination equipment.



## Pesticide summary:

- All label directions should be read, understood and followed.
- The Louisiana Department of Agriculture and Forestry (LDAF) is responsible for the certification of pesticide applicators in Louisiana. All commercial and private pesticide applicators applying restricted use pesticides must successfully complete a certification test administered by the LDAF. The LSU AgCenter conducts training sessions and publishes study guides in various categories covered by the test. Contact your LSU AgCenter county agent for dates and times of these sessions.
- All requirements of the Worker Protection Standard (WPS) should be followed, including, but not limited, to:
  - Notifying workers of a pesticide application (either oral or posting of the field).
  - Abiding by the restricted entry interval (REI).
  - Maintaining a central notification area containing the safety poster; the name, address and telephone number of the nearest emergency medical facility; and a list of the pesticide applications made within the last 30 days that have an REI.
  - Maintaining a decontamination site for workers and handlers.
  - Furnishing the appropriate personal protective equipment (PPE) to all handlers and early entry workers and ensuring that they understand how and why they should use it.
  - Assuring that all employees required to be trained under the Worker Protection Standard have undergone the required training.
- Pesticides should be stored in a secure, locked enclosure and in a container free of leaks, abiding by any specific recommendations on the label. The storage area must be maintained in good condition, without unnecessary debris. This enclosure should be at least 150 feet away and down slope from any water wells.
- All uncontained pesticide spills of more than one gallon liquid or four pounds dry weight will be reported to the director of Pesticide and Environmental Programs with the Louisiana Department of Agriculture and Forestry within 24 hours by telephone (225-925-3763) and by written notice within three days. Spills on public roadways will be reported to the Louisiana Department of Transportation and Development. Spills into navigable waters will be reported to the Louisiana Department of Environmental Quality, U.S. Coast Guard, U.S. EPA.
- Empty metal, glass or plastic pesticide containers should be either triple rinsed or pressure washed, and the rinsate will be added to the spray solution to dilute the solution at the time or stored according to the LDAF rules to be used later. Rinsed pesticide containers will be punctured, crushed or otherwise rendered unusable and disposed of in a sanitary landfill. (Plastic containers may be taken to specific pesticide container recycling events. Contact your county agent for dates and locations in your area.)
- All pesticides should be removed from paper and plastic bags to the fullest extent possible. The sides of the container should be cut and opened fully, without folds or crevices, on a flat surface; any pesticides remaining in the opened container should be transferred into the spray mix. After this procedure, the containers may be disposed of in a sanitary landfill.
- Application equipment should be triple rinsed and the rinsate applied to the original application site or stored for later use to dilute a spray solution.
- Mix/load or wash pads (NRCS production code Interim) should be located at least 150 feet away and down slope from any water wells and away from surface water sources such as ponds, streams, etc. The pads should be constructed of an impervious material, and there must be a system for collecting and storing the runoff.
- Empty containers will not be kept for more than 90 days after the end of the spray season.
- Air gaps should be maintained while filling the spray tank to prevent back-siphoning.





*The complex nature of nonpoint pollution means programs designed to reduce its impact on the environment will not be easy to establish or maintain. Controlling these contaminants will require solutions as diverse as the pollutants themselves. Through a multi-agency effort, led by the LSU AgCenter, these BMP manuals are targeted at reducing the impact of agricultural production on Louisiana's environment. Agricultural producers in Louisiana, through voluntary implementation of these BMPs, are taking the lead in efforts to protect the waters of Louisiana. The quality of Louisiana's environment depends on each of us.*

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