

UF/IFAS Extension Hendry County

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Pesticide Spill Management

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A pesticide spill refers to unplanned spill or leakage of a pesticide into the environment that occurs during storage, use, transport, or disposal of a pesticide.

If you are transporting pesticides, have an emergency plan in place for accidents. Since accidents are often caused by others, you must be ready with a spill action plan.

After reading this module you will:

1. Have a better understanding of spill management including first aid to injured people, keeping others from exposure and using appropriate personal protective equipment (PPE) before responding to a spill.
2. Spill prevention, control and clean up procedures
3. Know the three “C’s” of spill management
 - a. Control the spill (minimize the quantity released)
 - b. Contain the spill (into as small an area as possible)
 - c. Clean up the spill right away
4. Practice good spill prevention habits including
 - a. Methods of handling and storing pesticides
 - b. Shop safety and fire procedures
 - c. Properly securing pesticides in vehicles and storage areas
 - d. Inspection procedures for storage areas

A spill is any accidental release of a pesticide. The spill may be a minor one involving only one or a few leaking containers, or it may be a major accident in which a piece of equipment malfunctions and releases its contents or a tank truck or rail car overturns and spills its cargo.

You can minimize the chance of pesticide spills by checking facilities regularly, having a contingency plan, and scheduling training and training updates for employees.

In spite of planning and training, spills do occur. Typical spills range from a one-gallon service container falling off a vehicle, to several 55-gallon drums punctured by a forklift. The worst case of a spill would be exploding containers in a fire. The problem for all persons concerned is the management of the spill, the cleanup and the proper disposal of all the residual material.

All pesticide users must be thoroughly familiar with the laws and guidelines governing chemical spills. The inability to respond properly to such an emergency, no matter how minor the problem, could seriously endanger public health and environmental quality.

When a spill occurs, the focus should be on individual safety, spill containment and cleanup, and who to notify.

One of the first steps should be to determine if there has been any personal injury. If personal injuries have occurred, immediately seek emergency medical assistance.

The suggested guidelines in the event of a chemical spill are known as the three Cs:

- CONTROL the spill,
- CONTAIN the spill, and
- CLEAN up the spill.

Control the Spill

If a spill occurs priority should be given to taking immediate steps to control the release of the pesticide product(s) being spilled. If a sprayer has tipped over, if a pesticide is leaking from a damaged tank truck, or if a container on a storage shelf is leaking, do whatever you can to stop the leak or spill at once. For instance, smaller containers can be put into larger containers to prevent further release of the chemical. For larger leaks, try to plug the leak if possible. Outside assistance and heavy equipment is often required to control large leaks.

Never expose yourself unnecessarily to leaking chemical. Always wear protective equipment before attempting to control a spill. Make sure you wear at least the minimum PPE listed on the chemical label for the products involved in the spill. Never enter a scene blindly, even if someone is injured; first, make sure you are properly protected.

A cellular phone should be standard equipment on every vehicle transporting pesticides. Have all phone numbers you may possibly need saved in your phone and available at your office. Save the following phone numbers on your cellular phone:

- CHEMTREC (Chemical Transportation Emergency Center): 800 262-8200

- Florida Poison Control Center: 800-222-1222
- Florida Department of Environmental Protection: 850-245-2010
- Florida Department of Agriculture and Consumer Services: 850-617-7996

CHEMTREC® serves as the world's foremost emergency call center for information on hazardous materials to be recognized by emergency responders, industry, government, and others. CHEMTREC provides a round-the-clock resource for obtaining immediate emergency response information for accidental chemical releases. CHEMTREC is linked to the largest network of chemical and hazardous material experts in the world, including chemicals and response specialists within the American Chemistry Council membership, response specialists within the carrier community, public emergency services, and private contractors.

Alert the state and local police if the spill occurs on a public highway. If the spill involves pesticides regulated as hazardous wastes, contaminants must be disposed of properly, usually by a licensed hazardous waste contractor. Check the product safety data sheet (SDS) to determine if it is a hazardous waste. In certain cases, it may be necessary to alert the fire department, public health officials, and/or the nearest hospital emergency room. Be sure to have the product label(s) and SDS available for emergency responders.

If the spill is large or dangerous, have someone get help. Do not leave the site unattended. Operators need radio or telephone communication available in the vehicle in case they need to call for assistance. The first contact you should make in case of a spill is to your county 911 emergency number, which can help coordinate the emergency response. They will assume command of the cleanup unless they know you are capable of handling the situation. In addition, CHEMTREC provides access to emergency response information and technical assistance from chemical industry experts. They can be reached at 1 800-262-8200 or chemtrec@chemtrec.com.

There is also an emergency telephone number on many product labels and on transportation or shipping papers. These lines are answered 24 hours per day by people who are prepared to handle pesticide emergencies involving the company's products.

A "safe" perimeter should be set to prevent unauthorized persons from entering the area. Rope or tape or a similar material should be used to separate the area and keep unauthorized persons from entering the area.

Keep people at least 30 feet away from the spill. Avoid contact with any drift or fumes that may be released.

The danger of fire must be minimized or preferably eliminated. Do not use road flares if you suspect the leaking material is flammable. In some cases, it may be necessary to evacuate people from residences or businesses downwind from the spill.

Contain the Spill or Leak

At the same time that the leak is being controlled, contain the already spilled material in as small an area as possible. Do everything possible to keep it from spreading or getting worse. In some situations, you may need to use a shovel or power equipment to construct a dike or dam. The most important thing to do is try to not let the spilled material get into any body of water, including storm sewers or drains.

If the chemical contaminates a stream, pond, or any other waterway contact the Florida Department of Environmental Protection - Florida Pollution Prevention Program (1-800-741-4337). Do not delay in notifying authorities because they must alert downstream users as soon as possible to prevent accidental poisoning of livestock and to avoid contamination of irrigated crops and soil.

You can further contain liquid spills by spreading absorbent materials such as fine sand, vermiculite, clay, or pet litter over the entire spill. Avoid using sawdust or sweeping compounds if the pesticide is a strong oxidizer (see label or SDS) because such a combination may present a possible fire hazard. In addition, absorbent materials packed in pillows, tubes, or pads can be placed directly on the spill or used to dike around the spill area. Waste disposal is then simplified because the contaminated pillows, tubes, or pads can be placed into heavy-duty disposal bags without dust or spillage. Keep adding absorbent material to the contaminated area until all the liquid is soaked up.

In the case of dust, wettable powder, or granular spills, you can reduce spreading by lightly misting the material with water or covering the spill using some type of plastic cover. After covering the dry material with a tarp or plastic, pick up the tarp in a small area at a time and use a broom and/or shovel to sweep up the material. Discard the cover after use. Disposal of all hazardous wastes must be done in strict accordance with state and federal laws.

Clean Up the Spill

Once the spill has been contained, sweep it up the absorbent material and place it in a steel or fiber drum lined with a heavy-duty plastic bag. It may then be necessary to decontaminate or neutralize the area. Use ordinary household bleach in water (approximately 30 percent bleach), hydrated lime, or a commercial decontamination preparation to help neutralize the spill area. Check the SDS to see if there are recommendations for use of specific decontaminants. Remember to wear protective equipment.

Do not use bleach and lime together. Work this cleaning material into the spill area using a coarse broom. Then add fresh absorbent material to soak up the now contaminated cleaning solution. Sweep up this material and place it in a plastic bag or drum for disposal. It will be necessary to repeat this procedure several times to ensure that the area has been thoroughly decontaminated.

If at all possible, assess the volume of spilled material, review label and application rates, and then apply the spilled product as a legal application. Use of the product, though not necessarily for pest control, is legal and allows the material to breakdown under normal application conditions; thus, negating the need to handle the material as an expensive hazardous waste. If application is not possible, dispose of the material as a hazardous or non-hazardous waste depending on the product.

The only effective way to decontaminate soil saturated with a pesticide is to remove the soil down to the depth of contamination. This contaminated soil is now considered hazardous waste and must be disposed of according to state guidelines. Once the contamination has been removed, cover the area with at least 2 inches of lime or a material recommended by the SDS, and finally, cover the lime with fresh topsoil. Soils contaminated as the result of application errors or minor spills can sometimes be cleaned up by applying activated charcoal to the contaminated surface immediately after the spill or misapplication. The charcoal may adsorb or tie up enough chemical to avoid significant plant injury and long-term contamination. However, application of activated charcoal to areas where large spills have occurred does little to reduce soil contamination and subsequent plant damage.

Porous materials such as wood may not be adequately decontaminated. If contamination is great enough to warrant, they must be removed and replaced with new materials.

Nonporous surfaces should be washed with detergent and water. The appropriate decontamination solution should be thoroughly worked into the surface using a long-handled broom, scrub brush, or other equipment as needed. Then the decontamination solution is soaked up using absorbent material. The spent absorbent material is then placed into a labeled leakproof container for disposal.

Clean any vehicles and equipment that were contaminated either as a result of the original accident or during the cleanup and disposal procedures. Before you begin, be sure you are properly clothed and protected to avoid contact with the chemical. Use ordinary household bleach in water (approximately 30 percent bleach) or an alkaline detergent (dishwashing soap) solution to clean your equipment. Do not mix bleach and alkaline detergent together. All tools and

surfaces must be thoroughly rinsed with sparing amounts of clean water. All rinse water and spent decontamination solution should be collected in drip pans or other suitable containers and transferred to a properly labeled leakproof drum for disposal.

Equipment such as brooms, leather shoes, and cloth hats cannot be effectively decontaminated and must be discarded. Also, do not save disposable garments and gloves or badly contaminated clothing. As soon as you are finished with the spill and equipment cleanup, wash yourself thoroughly with soap and water. Wash any part of your skin that might have been exposed and always wash your face, neck, hands, and forearms.

All contaminated materials, including cloth, soil, wood, etc., that cannot be effectively decontaminated as described in this guide must be removed and placed in a sealed leakproof container. All containers must be properly labeled and transported in accordance with Department of Transportation (DOT) 49 CFR Part 172 regulations by EPA-permitted hazardous waste haulers for disposal in a hazardous waste disposal facility (incinerator, landfill site, etc.) under current EPA or state permit.

For legal protection, it is advisable to keep records of your activities and conversations with regulatory authorities, emergency response personnel, and the general public when dealing with a pesticide spill. Take photographs to document any damage as well as the cleanup process. This is another good reason to have a cellular phone available.

Spill Prevention

The first steps in preventing pesticide spills are education and planning. Most pesticide spills occur in areas where the concentrated product is handled. Areas such as loading docks, storage, and mixing areas are high risk zones. Concentrate your precautionary measures on providing adequate storage facilities, instituting monthly inspection of pesticide storage, stocking emergency equipment for spill cleanup and providing training for all pesticide handlers.

Many applicators use existing buildings, or areas within existing buildings, for pesticide storage. However, if you use large amounts of pesticides and/or equipment, it would be best to build a special storage facility just for your pesticide needs. If possible, use a separate building for pesticide storage. If you do not have a separate structure, choose a wing or corner on the first floor of a building.

Before you build a new structure, look into suggestions and plans for pesticide storage put out by state colleges, chemical companies, county extension agents, etc. When you are setting up any new storage, check federal, state, and local regulations on storage areas.

The mixing and loading site should be carefully chosen. It should be outside, away from other people, livestock, and pets. Pesticides should not be mixed in areas where a spill or overflow could get into a water supply. If possible, mix and load pesticides on a concrete pad so that spilled pesticides can be removed without entering the soil. Because of the need for water, handling areas are sometimes found near a pond or stream bank. If this is the case, grade the slope away from the water. If you must work indoors, or at night, be sure there is adequate ventilation and light to minimize the chance for an accident. Have a supply of clean water and soap available and, if possible, do not work alone.

Training program

1. Train all employees in proper handling procedures during:
 - a. Receiving
 - b. Storage
 - c. Mixing
 - d. Loading
 - e. Application
 - f. Disposal
 - g. Spill containment and cleanup
2. Train pesticide handlers in proper spill prevention, emergency response and containment of pesticide spills.
3. Drill and rehearse spill handling procedures regularly to prepare pesticide handlers to respond appropriately to an accident.

Facility Management

1. Identify locations and work procedures where spills are likely to occur.
2. Take steps to improve spill-prone areas, such as improving storage and mixing facilities for all pesticides.
3. Properly secure pesticides in vehicles for transport.
4. Inspect storage areas for leaks and for damaged containers on a scheduled basis. Pesticide storage facilities need to be inspected at least monthly to minimize the risk of a spill occurring.
5. Make sure that emergency equipment including a spill kit is on hand in case a spill occurs.
6. Post emergency phone numbers.
7. Post emergency procedures near work areas.

Spill Kits

Spill kits should be labeled and designated for use in handling pesticide spills only, and should be strategically placed where spills are most likely to occur. The label should list the contents, and the kit should be sealed to discourage item loss.

Spill kits should be located in all pesticide storage and mixing facilities as well as any vehicles used to transport pesticides.

Most pesticide applicators are likely never to have the need for materials that are used in a pesticide spill cleanup. However, should a spill occur while handling concentrated pesticides, a cleanup kit will be well worth the small investment. Simple spill kits contain

- chemical-resistant gloves;
- chemical-resistant coveralls;
- chemical-resistant boots or foot covers;
- chemical splash goggles;
- respirator;
- temporary hazardous material storage bags, such as heavy duty contractor trash bags;
- absorbent pad for water- or solvent-based chemicals;
- absorbent tube sock (containment snake);
- bentonite/polymer mix paste for plugging leaking containers;
- floor absorbent granules;
- shovel or broom;
- dust pan;
- warning sign.

More elaborate kits intended for larger facilities may also include

- pop-up containment pools (various holding capacities are available);
- weatherproof, incinerable drum rated for hazardous materials.

Spill kit materials may be stored in permanent fixtures or structures or in portable containers as simple as a 5-gallon bucket. The spill kit/location should be clearly labeled. Containers that may be mounted to the cabs of application equipment are also commercially available.

Spill kits should always be ready to use. To make sure that all of the contents remain available, seal the spill kit with an easily breakable seal. It is recommended to monitor spill kits when other safety checks or inspections are being completed.

Spill Contingency Planning

Contingency plans prepare your response to an emergency such as a spill. These plans should be site-specific for storage, transport and mixing areas. The plan should outline specific procedures to be followed when a pesticide spill occurs, and clearly identify the roles and responsibilities of each individual involved. An effective plan should be prepared for each individual site. The contingency plan, coupled with employee training, will reduce response time and human and environmental risk from an accidental spill.

A complete contingency plan includes but is not limited to an inventory of pesticides, a list of proper handling procedures for pesticide containers and application equipment, the location of spill kits and a diagram of all facilities.

At least seven major items should be included a contingency plan.

1. A list of phone numbers and people to notify
 - a. Fire department
 - b. State and local police
 - c. Emergency medical help
 - d. Poison control center
 - e. CHEMTREC 800-424-9300
 - f. Florida Department of Environmental Protection: 850-245-2010
 - g. Florida Department of Agriculture and Consumer Services: 850-617-7996
 - h. Local emergency planning committee (LEPC)
2. Description of proper handling procedures for pesticide containers and application equipment.
3. Inspection and repair methods for equipment.
4. Spill containment.
5. Spill recovery and its legal application at label rate or disposal procedures.
6. Up-to-date pesticide inventory (or manifest of products being transported). A sketch of the facility and surrounding runoff patterns and water sources, drainage systems, location of spill kits and equipment.
7. Spill kits at all pesticide storage and mixing facilities and in vehicles that transport pesticides.

Notifying Officials of a Pesticide Spill

When does a spill need to be reported?

The federal laws that cover pesticide spills are the Clean Water Act (CWA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Most pesticide spills occur in areas such as loading docks, warehouses and mixing areas. If the spill did not result in a release to the environment (i.e., no lost material such as might occur in a confined area, diked pad with no outlet, or on a sealed concrete floor of an enclosed facility) and there is no threat to air, soil, or water environments, then the spill is not reportable to external regulatory agencies.

Federal law applies when a spill happens under uncontrolled conditions, such as on the ground or street, and the quantity of the spill is equal to, or more than, the reportable quantity (RQ) or Part 117 of the Clean Water Act (CWA) or Part 302 of the Comprehensive Environmental

Response, Compensation, and Liability Act (CERCLA). Such spills must be reported to the authorities because they will affect the environment.

State laws may also govern when a spill must be reported and may be considerably more restrictive than federal law. Find out your state's requirements and incorporate them into your contingencies plans for the storage area, mix location, and transportation. The state agency that typically is responsible for spill reporting and response is the environmental agency for the state. If your state does not have regulations related to spill reporting, use the guidelines below.

The local fire department should be notified when a spill occurs if there is a chance of a fire occurring. The poison control center can advise you on what to do to avoid any type of poisoning from the spilled material.

Rule of thumb: Report a spill if there is any potential for harm to human health or the environment from the spill, or if the spill occurs in an area frequented by the public. The spill is not reportable when it does not result in pesticide lost to the environment, and there is no threat to air, soil, or water, such as when it occurs on a concrete floor, or in an enclosed area, and is removed by proper spill clean-up procedures.

Report the location of the incident and any contamination or injuries as well as any threat of fire or water contamination.

Spill response requires regular education and training of personnel in prevention, control, and cleanup procedures.

Education can effectively reduce the risk of a pesticide spill and the harm it may cause.

Resources

Frederick M. Fishel. Pesticide Emergencies: Fires and Spills. PI258, one of a series of the Agronomy Department, UF/IFAS Extension. December 2015. <http://edis.ifas.ufl.edu/pi258>

Emergency Response Guidebook. 2016. US Department of Transportation Pipeline and Hazardous Materials Safety Administration. <http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/Hazmat/ERG2016.pdf>

Pesticide Spills – Prevention and Cleanup. Pesticide Environmental Stewardship. <https://pesticidestewardship.org/spills/>

Frederick M. Fishel. Pesticide Spill Kits. PI159, one of a series of the Agronomy Department, UF/IFAS Extension. November 2016. <http://edis.ifas.ufl.edu/pi196>

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MANAGEMENT. August 2009. [http://www.acq.osd.mil/
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