Lesson 50

Emergency Action Plans

By Ron Sheffield, North Carolina State University
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Intended Outcomes
The participants will
• Recognize the need for developing an Emergency Action Plan.
• Identify the steps involved in reporting and responding to a manure spill.
• Identify activities related to their manure management system that may lead to an increased environmental or human health risk.
• Be prepared to develop an Emergency Action Plan for their facility.

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Activities
• Complete an assessment of the emergency response principles that have been implemented on your livestock/poultry operation.
• Discuss the events surrounding previous manure spills.
• Develop a Spill Response Plan.
Introduction

Behind most manure spills and discharges is a chain of events that leads up to an unsafe act, improper judgment, unsafe conditions, or a combination of factors. Preventing and properly responding to discharges on a farm is everyone’s concern. Communication between the farm owner, supervisors, and employees generates ideas and awareness that leads to accident prevention and quick response if a spill does occur. Education programs, response plans, and regular inspections of your manure management and application system are essential links in maintaining a safe, accident-free operation. Since accidents happen, be prepared.

What is an Emergency Action Plan and Why Have One?

An emergency action plan is a basic, yet thorough, common-sense plan that will help you make the right decision during an emergency. Such a plan is needed to

- Thwart Murphy’s Law: accidents happen.
- Show responsible preparation.
- Protect you and others against environmental damage.
- Meet state requirements.

If it is written down, you will use it.

Emergency action plans are needed to minimize the environmental impact of manure spills, discharges, or mishaps. In several states, these plans are required to be developed and maintained on all livestock and poultry operations, especially those with liquid manure management systems. Using resources found in this lesson, you can develop an emergency action plan for your manure handling and application system.

Prevention

Prevention is the best way to prevent spills and other emergencies from occurring in the first place; have low-pressure, low-flow, or other automatic shut-off switches installed on pumping equipment for liquid irrigation systems. If that is not possible, keep radio or cellular communications with someone who will remain close to the pump. Check all irrigation lines prior to pumping, and look for defects and insecure or worn connections. Place solid pipes over any watercourses, wetlands, ditches, or containment areas.

Be extremely cautious about spreading manure on areas with steep slopes. These areas may require larger buffers than those stipulated by your state or local regulations to avoid runoff of applied manure.

Manure applications on fields with tile drainage may require some cultivation before application. Manure should be applied at rates that avoid surface runoff. Monitor tile outlets immediately prior to, during, and for two days after application for any visible sign of manure leachate. A change in color or odor may indicate a possible spill. If you notice or suspect any manure in the drainage water, plug the outlet.

Conduct inspections of your manure storage or lagoon on a regular basis. Embankment areas should be kept mowed, and if possible, free of trees and shrubs, allowing you to visually inspect the embankment for any seepage or...
cracks. For more information on regular inspections, please consult Lesson 24, *Operation and Maintenance of Manure Storage Facilities*. If you notice any seepage, consult the Natural Resources Conservation Service (NRCS) or the engineer who designed the facility to discuss the extent of seepage or cracking and what measures can be taken to further investigate or repair the situation. Consult NRCS, a professional engineer, or tank manufacturer before making any modifications or repairs to your storage structure or lagoon. In many instances, specific procedures must be taken to ensure that the structural integrity of the unit or embankment is not compromised in the process of making modifications or repairs. When these procedures were not followed, they have caused major spills and lagoon breaches.

Several animal producers across the country are using electronic monitoring devices to assist them in managing their lagoon or storage basin levels. These monitors (Figure 50-1) consist of a liquid level sensor, microcomputer, rain gauge, and phone connection (typically cellular). Lagoon levels and rainfall values are recorded twice a day and transmitted to a service provider who prepares weekly records. The monitors can also warn producers, by either phone or pager, of potential environmental or operating hazards such as maximum storage levels or regulatory freeboards being approached or reached. Breach alarms that contact producers in the event of a tank rupture or lagoon spill can also be set on the monitors. Some lagoon monitors can be modified to monitor livestock buildings in case of power outages. Similar power- and liquid-level monitoring devices can be used on other areas of the manure handling system such as pump/lift stations (Figure 50-2).

Managers of animal facilities should also consider secondary containment around existing storage facilities, pump/lift stations, recycle pumps, or production houses. These structures should be designed to collect the spilled manure and excess rainfall that may collect in an area. The collected liquid can then be transported and applied to cropland at agronomic rates. In several states, if the concentration of several nutrients is below regulatory levels, the collected liquid can infiltrate into the ground or be released into natural drainage ways. Check with your state regulatory agency for design and operating guidelines for secondary containment structures.
Types of Emergencies

Your response to emergency situations will be governed by site- and situation-specific circumstance, which your own emergency action plan should address. However, you should consider certain responses based on the type of emergency you are experiencing. These responses can be grouped by the type of emergency:

1. Imminent pollution or emergency
2. Pollution in progress
3. Pollution discovered after the fact

The following instructions pertaining to these three types of emergencies should be available to all employees at a facility because accidents, leaks, and breaks can happen at any time.

Imminent Pollution or Emergency

In this situation, no leaks or spills have yet occurred. If ignored, however, this emergency will probably result in a spill or leak within a short time. This type of emergency generally happens when lagoons, holding ponds, or pits are nearing capacity or when wastes can potentially run off an application field.

Storage capacity about to be exceeded. Long periods of excessive rain or malfunctioning livestock water systems may cause your storage to unexpectedly reach capacity. In response, you must attempt to prevent the release of wastes. While this may not be possible depending on your situation, suggested responses are as follows:

- Add soil to the berm, increasing the dam’s elevation.
- Begin a planned emergency utilization of manure by pumping it onto fields at acceptable rates.
- Stop all additional flow (waterers, flushing system, etc.) to the storage.
- Call a pumping contractor.
- Prevent any surface water from entering the storage.
- Consider maintaining some grassland near the storage for emergency manure application.

These activities should be initiated when your lagoon has exceeded its temporary storage level. For more information, see the lagoon sizing section of Lesson 21, Sizing Manure Storages, Typical Nutrient Characteristics.

Potential runoff from the application field. This situation could result from unexpected rains during the field application of manure. Again, you must attempt to prevent the release of wastes to neighboring areas. Possible solutions are as follows:

- Immediately stop additional waste application.
- Contain the waste on the field by creating a temporary diversion or berm.
- Prevent further runoff by incorporating the waste.

Hurricanes and tropical storms. These severe storms are unpredictable, and depending on their intensity, can cause a great deal of damage to an area. The storms, which may occur from June 1 to November 30, can produce tornadoes and cause severe flash flooding. Hurricanes and tropical storms also can deliver large amounts of rainfall in very short periods of time. In areas prone to these storms, producers should prepare for their possibility
months in advance. Before the hurricane season begins, temporary storage levels in lagoons and storage basins should be as low as possible. Be prepared for multiple storms. In September 1999, many producers in the coastal regions of North Carolina, South Carolina, and Virginia received over 30 inches of rainfall from two hurricanes and one tropical storm.

Regardless of their size, hurricanes should be respected. Be aware of the following two types of notices that the National Hurricane Center issues:

1. A **hurricane watch** is issued when there is a threat of hurricane conditions within 24 to 36 hours.
2. **Hurricane warnings** are issued when hurricane conditions (winds of 74 miles per hour or greater) or dangerously high water and rough seas are expected in 24 hours or less.

**Seasonal heavy rainfall.** From year to year, areas of the country may receive periods of high rainfall that are atypical of long-term averages. The wet periods may delay crop planting and thus manure removal from storage facilities, which then exceed their designed storage capacity. In this situation, discuss your options for manure removal with your comprehensive nutrient management planner, technical specialist, and design engineer.

**Flooding.** Several floods in Midwestern and Eastern states have shown the vulnerability of animal facilities located in or near floodplains. Before the floodwaters begin to rise, consider the following questions:

- Will the farm be isolated because the roads will become flooded?
- How many days of protected feed are on the farm?
- How will animals be evacuated from the farm?
- How will animal mortalities be managed? If burial is the preferred option, is an upland site dedicated to that purpose?
- Which of the following items are at a higher risk of flooding—buildings, manure storage, feed storage, or mortality disposal sites?

**Catastrophic animal loss.** One of the most devastating emergencies on a farm is the catastrophic loss of animals. Floods, tornadoes, power loss, and manure gas buildup in buildings can all result in significant loss of animals. Lesson 52, *Mortality Management*, discusses the catastrophic loss of animals in more detail. When developing your emergency action plan, consider the following questions:

- What is your greatest risk for catastrophic animal losses?
- How will animal be removed from production houses?
- What disposal options do you have?
- Does your state veterinarian have to approve the disposal method?
- Has an appropriate site been set aside for buying animals?

**Pollution in Progress**

In this situation, the storage or waste handling system is actively leaking. Your main goals are to stop the flow and minimize the leak’s impact on the environment.

**Leaking or broken pipe, pit wall, or lagoon berm.** These leaks may be seepage or flowing wastes. Your response will depend on the impact of the leaking waste (is it on your property or off?). Possible solutions are as follows:

- Stop the flow into the pipe, pit, or lagoon.
- Prevent the additional leaking of material by turning off the recycle
flushing system and irrigation pumps; closing valves controlling outflows; and preventing a siphon effect.

- Dig a holding area or construct a berm to contain waste waters.
- Repair defective components such as berm leaks caused by animals; trap or remove animals and fill holes with compacted clay soil.

To permanently repair lagoon problems, you may need to consult an individual experienced in lagoon design and installation.

**Tank spreader leak or overturn.** Most likely, this emergency will occur off your property and may include personal injuries (e.g., car accident). As in any animal waste emergency, human injuries take precedence over all other responses. Once the injury is handled, limiting the environmental impact of this emergency becomes the main goal. Possible solutions are as follows:

- Stop the additional spill of material.
- Contain the material that has spilled.
- Begin clean-up procedures.
- Notify the appropriate agencies, informing them if the waste is on or off your property or if there is surface or groundwater impact.

**Pollution discovered after the fact**

This situation occurs when as many as several days have passed before a leak is discovered. Because the discovery was delayed, its environmental impact may potentially be increased. Thus, response should be swift to minimize the damage as much as possible. Responses should be as follows:

- Stop additional leakage.
- Contain spilled wastes.
- Attempt to apply spilled wastes on cropland.
- Notify agencies and local authorities.
- Assess the environmental impact of fish kills, surface water pollution, well water or groundwater impact, and amount of waste released and for what duration.

**Manure Spills, Accidents, and Discharges**

Learning from the mistakes of the past provides the opportunity to make appropriate changes for the future. With this thought in mind, learn from prior “mishaps” to avoid making them in the future. The following six case studies review several manure spills that occurred to livestock and poultry operations. These events actually happened, and unfortunately reflect other manure discharges and spills that have recently occurred to North American surface waters and groundwaters. As you read these case studies, ask yourself the following questions:

- Was the manure spill an accident?
- What could have been done to prevent this spill from happening?
- Could this spill occur on my farm?
- Would I know how to handle or would I have the resources to address a similar spill on my farm?
- Do I have an emergency action plan if a spill occurs?
Case Study 1. Equipment Failure

**Location:** Ontario, Canada

**Operation:** Swine

**Background**
- To apply swine lagoon effluent to a field, a portable irrigation system was laid over a stream.
- When the pump was turned on, a section of pipe over a bridge became disconnected.
- The farmer wired the pipes back together and then continued the manure application.
- No attempt was made to collect the effluent released into the stream.
- The farmer did not notify regulators of the incident for two days.

**Result**
- Lagoon effluent leaked from the separated pipes and flowed directly into the stream below.
- Fish were killed in the creek downstream of the spill.

**Response**
- Ontario investigators confirmed the spill had caused the fish kill in the stream.
- Charges were brought against the farmer, citing a lack of “due diligence” and “failure to notify” regulatory authorities in a timely manner.

**Action**
- The farmer took no further action.
- He was convicted and fined.

**How could this spill have been avoided?**
- Use a section of flexible pipe to carry manure over streams and bridges.
- Monitor the pipeline during application.
- Be prepared to shut down immediately. If a problem develops, have manpower and radios on hand.
- Notify the appropriate state and local authorities as soon as possible.

Case Study 2. Improper Modification of Storage Structure

**Location:** Southeastern North Carolina

**Operation:** Swine

**Background**
- A lagoon exceeded its temporary liquid storage.
- Irrigation equipment was not onsite, and neither was sufficient land cleared for application if a pump and equipment had been available.
- Approximately a week before the spill, farm workers had improperly installed a pipe in the lagoon embankment.
- Rainwater from a tropical storm ponded above and then scoured out the embankment near where the pipe was installed.
- The lagoon breached, releasing lagoon effluent and sludge.

**Result**
- Over 20 million gallons of effluent and sludge were discharged into a nearby river.
- Fish were killed in the river downstream of the spill.

**Response**
- Television and print media reported the lagoon spill throughout the state and country. In fact, the spill was reported in newspapers as far away as De Hague, Netherlands.
• State water quality investigators confirmed the spill had caused the fish kill in the creek.
• The farmer was charged with violating state water quality standards.
• The farmer was also required to depopulate until repairs were made to the lagoon, irrigation equipment was purchased, and sufficient land application fields were cleared and planted.

**Action**
• The farmer was required to depopulate and make repairs.
• The farmer was also convicted and fined.
• Repairs and land clearing were completed approximately one and a half years after the lagoon breach.

**How could this spill have been avoided?**
• Consult and follow plans provided by NRCS or a professional engineer before installing any pipe or electrical line on a lagoon embankment.
• Ensure that trenches on an embankment are dug in a “V” shape and backfill soil is mechanically tamped. Excess soil should be placed over the backfilled trench, allowing for any settling.
• Ensure that land application fields are cleared and planted prior to populating a new farm or delivering manure to a new storage basin or lagoon.

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**Case Study 3. Overapplication of Manure**

**Location:** Southern Ohio

**Operation:** Dairy

**Background**
• The gasoline-powered drive engine on a traveling gun irrigation system ran out of fuel while the irrigation pump was still running.
• Excessive amounts of liquid manure were applied to a level, untilled field.

**Result**
• Manure leached down to the field tile system and drained into an open drainage ditch.
• The water quality was impaired by low dissolved oxygen levels downstream in the drainage ditch and adjoining stream.
• The farmer observed discolored water and foam discharging from the field tile into the open drain.

**Response**
• State water quality officials responded to an anonymous call.
• Water samples were taken to identify the contamination source.
• Discolored water and foam were found discharging from a field tile outlet into the drainage ditch.
• The farmer was charged with applying manure at a rate that exceeded his manure utilization plan and with violating the state’s water quality standards.

**Action**
• The farmer took no further action.
• He was convicted and fined.

**How could this spill have been avoided?**
• Check engine fuel and oil levels before each “pull” on a traveling gun irrigation system.
• Delay manure application until field tiles stop flowing.
• Inspect irrigation systems during application events. Ensure that drive engines and turbines are operating.
• Before selecting application rates and pumping duration, check soils for their “antecedent” moisture condition.
• Postpone irrigation of manure and wastewater until drainage from tile drains stops.
Case Study 4. Lack of Storage Capacity

**Location:** Southern Pennsylvania

**Operation:** Dairy

**Background**
- The farm’s manure storage basin was overflowing into a field.
- An irrigation gun and a tank wagon were used to apply manure onto a bottomland field of wheat stubble.
- The application occurred in the evening and throughout the night in November, following several days of rain and snow.
- Application rates of 7,200 gal/acre were reported, but investigators believed the rate was higher.

**Result**
- Manure from the overflowing storage basin first entered a nearby field tile system that drained into a community drain system across the property and then entered a stream on the neighbor’s property.
- Liquid manure entered the community drain via a tile blowout and open catch basins, eventually contaminating two, in-stream ponds on the neighbor’s property.

**Response**
- The producer informed state water quality officials who investigated the following day.
- Water samples were taken, identifying the source of the contamination.
- The producer was charged with violating state water quality standards by failing to provide adequate storage and discharging manure into surface waters.

**Action**
- The stream was temporarily dammed to prevent further movement of manure-laden water downstream.
- The producer pumped contaminated water from the stream and applied it onto adjacent fields under the supervision of state investigators.
- The farmer was required to depopulate until repairs were made to the lagoon, irrigation equipment was purchased, and sufficient land application fields were cleared and planted.
- The producer paid a fine with no contest.

**How could this spill have been avoided?**
- Ensure that adequate storage is available to allow application flexibility during bad weather.
- Do not apply manure when soil is nearly saturated from snow or rain.
- Inspect fields regularly, especially before a manure application, to ensure that tile blowouts are repaired.
- Monitor tiles during and after manure application.
- If a problem occurs, notify your state water quality agency as soon as possible.
Case Study 5. **Transport Accident**

**Location:** SE Virginia

**Operation:** Poultry layer sludge

**Background**
- Contractor tanker driver failed to check for oncoming train.
- Slow-moving train severed tanker, releasing 8,500 gallons of lagoon sludge.
- Startled but unharmed driver immediately contacted supervisors and fire department.

**Result**
- Lagoon sludge released from the tanker flowed directly into a nearby stream.
- Fish were killed in the stream downstream of the spill.

**Response**
- Contractor contacted state water quality agents.
- Stream was dammed to contain the spilled sludge and contaminated water. Vacuum tanker, already on site, pumped and applied the material to an application field.
- Due to the company’s quick response, which mitigated the spill, the contractor received only a warning.

**How Could this Spill have been Avoided?**
- Be especially careful when transporting manure and sludge on public roads.
- Minimize transport of manure in areas of high traffic, high speeds, or railroad crossings.

Case Study 6. **Manure Gas Emergency**

**Location:** Northern Iowa

**Operation:** Dairy

**Background**
- 28-year-old dairy farmer entered a 10-foot-deep manure pit to replace a shear pin on an agitator shaft.
- While he was climbing out, he was overcome by gas and fell onto the pit floor. The man’s 15-year-old nephew observed the event, climbed into the pit, and also collapsed.
- One by one, others entered the pit to help—the boy’s father, his cousin, and his grandfather, who owned the farm—and all were overcome.
- An owner of a local farm implement business and two workers rescued victims with a rope; they did not go into the pit.
- The emergency rescue squad arrived 20 minutes after the tragedy began.

**Result**
All five family members died.

**How could these deaths have been avoided?**
- Never enter a manure pit without proper ventilation.
- When you must enter a pit, wear an air-supplied respirator or a self-contained breathing apparatus. Cartridge-type masks are NOT safe.
- Rescuers entering the pit area should wear a safety harness attached to a rope attended by two people at the pit’s entrance. Another recommendation—attach the safety rope to a winch or hoist.

**General recommendation for working in a space over a manure pit**
Keep the manure agitator below the liquid surface because gas is released in greater volumes with vigorous surface agitation.
Confined Spaces and Manure Pits

Working in a confined space

A confined space is defined as a space that has limited means of entry and exit, has an adequate size and configuration for employee entry, and is not designed for continuous worker occupancy. Most states classify the tanks designed for waste storage, transport, and application as confined spaces. Under new Occupational Safety and Health Act (OSHA) regulations, certain confined spaces require a permit for entry. A permit-required confined space is defined as a confined space that has one or more of the following characteristics:

- It contains or potentially contains a hazardous atmosphere.
- It contains a material that can potentially engulf an entrant.
- Its integral configuration, inwardly-converging walls or a floor that slopes downward and tapers to a smaller cross-section, could trap or asphyxiate an entrant.
- It contains any other recognized serious safety or health hazard.

Confined spaces on farms may include
- Manure pits.
- Silos.
- Tank spreaders.
- Below-ground storage pits.
- Grain bins and dryers.

To be in compliance with the new OSHA regulations, a facility with permit-required confined spaces, must develop and implement a written confined space entry program. Enclosed facilities used to handle wastewater or wastewater solids, such as tanks and/or tanker trucks, fall under the permit-required confined space regulations. Do not enter a permit-required confined space without proper training, equipment, and support personnel. (The confined space regulations can be found in the Code of Federal Regulations 29 CFR 1910.147.)

When working in a space that does not require a confined space permit, the following safety actions should still be taken:

- Always assign a standby person to remain outside of the confined space. It is this person’s responsibility to be in constant contact (visually, verbally, or both) with the workers inside the confined space as long as anyone is in the space.
- Wear ear protection as needed. Noise within a confined space can be amplified because of the space’s design and acoustic properties.
- Use only an air-supplying respirator, such as a self-contained breathing apparatus (SCBA) or a supplied-air respirator with an auxiliary escape-only SCBA in confined spaces where there is insufficient oxygen.

Recommendations for farms with manure pits

- Never enter a pit without proper ventilation. Before entering the pit, evaluate its atmosphere by testing for sufficient oxygen and the presence of toxic gases. Continue to test the atmosphere while workers are in the pit. When going in, wear an air-supplied respirator or a SCBA, as well as a safety harness attached to a rope attended by two
people at the pit’s entrance. Note: Respirator masks must be checked for proper fit, and persons using respirators should receive training in their use. Attaching the safety rope to a winch or hoist is also recommended. As stated in Case Study 6, cartridge-type masks are NOT safe.

- Keep people and animals out of any building where manure is being agitated or emptied. If animals cannot be removed before agitating the storage, provide strong mechanical ventilation during agitation and pumping, and for a few hours after pumping has stopped.
- If an animal collapses during pit agitation, do not immediately try to rescue it. Turn off the pump and ventilate the building until the gases have escaped.
- Never fill a manure pit completely; allow 1 to 2 feet of airspace to accommodate gas concentrations. To reduce the possibility of gas being forced above floor level, lower liquid manure levels in a storage facility before starting agitation.
- Keep the agitator below the liquid surface because greater volumes of gas are released with vigorous surface agitation.
- Do not permit smoking, open flames, or spark-producing operations in the immediate vicinity of a storage area. Keep all guards and safety shields in place on pumps, pump hoppers, tank wagons, and power units, and maintain electrical motors, fixtures, and wiring in good condition.
- Do not leave temporary access ladders leaning against aboveground tanks. Permanent ladders on the outside of aboveground tanks should not extend within the reach of people, or they should have locked entry guards.
- Do not walk, ride, or allow animals on the crust-like surface of open-air storages. Like ice, the crust is not uniformly solid and can suddenly break.
- Warn visitors and guests of the hazards of manure storages. You are legally responsible for their safety while they are on your property.

For more information, order the following free publication:
NIOSH Alert: Preventing Deaths of Farm Workers in Manure Pits, NIOSH #90-103 at 1-800-35-NIOSH or from the National Institute for Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, Ohio 45226.

Plan Components
Emergency Action Plans are implemented when manure or other wastes from your operation are leaking, overflowing, or running off the site. Do not wait until manure or wastewater reaches a stream or leaves your property to acknowledge that you have a problem; make every effort to ensure that this situation does not happen. Your Emergency Action Plan should be available to all employees, and they should be trained in its use because accidents, leaks, and breaks can happen at any time. To be most effective, your Emergency Action Plan should be enacted as follows:
1. Eliminate the source.
2. Contain the spill, if possible.
3. Assess the extent of the spill and note any obvious damage.
4. Notify the appropriate agencies.
5. Clean up the spill and make repairs.
6. Prepare and submit a summary report.

Eliminate the source
Depending on the situation, this may not be possible. Suggested responses to several problems are listed below.

1. Lagoon or slurry basin overflow responses are as follows:
   - Add soil to the berm, increasing the dam’s elevation.
   - Pump manure and wastewater to fields at an acceptable rate.
   - Stop all additional flow (waterers, flushing system, etc.) to the structure.
   - Call a pumping contractor.
   - Prevent any surface water from entering the storage structure.

Note: These activities should be initiated when your lagoon level exceeds the temporary storage level of your storage structure. (For more information, consult Lesson 24, Operation and Maintenance of Manure Storage Facilities.)

2. Runoff from manure application field responses are as follows:
   - Immediately stop application.
   - Create a temporary diversion or berm to contain manure on the field.
   - Incorporate manure, reducing further runoff.
   - Evaluate and eliminate the situation(s) that caused the runoff.
   - Evaluate the application rates for the fields where runoff occurred.

3. Leakage from the manure distribution or irrigation system
   - Pipe and sprinkler responses are as follows:
     - Stop recycle (flushing system) pump.
     - Stop irrigation pump.
     - Close valves, eliminating further discharge.
     - Separate pipes, creating an air gap and stopping flow.
     - Repair all leaks prior to restarting pumps.
   - Flush system, house, and solids separator responses are as follows:
     - Stop recycle (flushing system) pump.
     - Stop irrigation pump.
     - Make sure no siphon effect has been created.
     - Separate pipes, creating an air gap and stopping flow.
     - Repair all leaks prior to restarting pumps.

4. Leakage from base or sidewall of lagoon or earthen storage structure
   Often these are seepage rather than flowing leaks. Possible responses are as follows:
   - Dig a small well or ditch to catch all seepage, put in a submersible pump, and pump back into lagoon.
   - If holes are caused by burrowing animals, trap or remove animals, fill holes, and compact with a clay-type soil.
   - Other holes may be likewise temporarily plugged with clay soil.
Note: Problems with lagoons and earthen storage structures require the services of an individual experienced in the repair of lagoons.

5. Manure leakage or discharge from tile drains responses are as follows:
   • Contain manure by damming the field drain.
   • Plug the tile outlet, forcing manure infiltration into the field.

**Contain the spill when it occurs, if possible**
Minimize manure movement off the farm or downstream, thus minimizing its environmental impact.

1. Manure spill or discharge into a stream or ditch
   • Contain manure by creating a dam in a field, ditch, or stream.
   • Pump collected manure onto fields, into storage structures, or into manure tanks.

2. Seepage or flowing manure from a lagoon or storage basin
   • Construct a temporary basin downslope of the seepage area. Ensure that you do not damage the existing embankment while creating the temporary basin.
   • If accessible, place soil over the point of seepage, ensuring that you do not drive over or compact the seepage point. This action may speed up rather than slow down the loss of manure.
   • Pump manure and wastewater to a depth below the point of seepage.

**Assess the extent of the spill and note any obvious damages**
1. Did the waste reach any surface waters?
2. Approximately how much was released and for what duration?
3. Did any damage occur, such as employee injury, fish kills, or property damage?
4. What is the distance and direction to the nearest neighbor, town, or public well from the release?
5. Did the spill leave the property?
6. Can the spill potentially reach surface waters?
7. Could a future rain event cause the spill to reach surface waters?
8. Are potable water wells in danger (either on or off the property)?
9. Review any actions that were taken to contain or minimize the spill or discharge.

**Notify the appropriate agencies**
During normal business hours, call your state water quality agency office; after hours, your state may have an emergency number to use for reporting manure spills. Your phone call should include your name, facility name, telephone number, the details of the incident (see above), the facility’s exact location, the spill’s location or direction of movement, weather and wind conditions, what corrective measures have been undertaken, and the seriousness of the situation.

1. If spill leaves property or enters surface waters, call local emergency medical services (EMS).
2. Instruct EMS to contact local Health Department.
3. Contact CES, local SWCD office, and local NRCS office for advice/technical assistance.
4. If none of the above works, call 911 or the Sheriff’s Department and explain your problem to them. Ask them to contact the agencies listed above.
**Clean up the spill and make repairs**

Perform any modifications that your state water quality agency and technical assistance agencies or professional engineers recommended to rectify the damage, repair the system, and reassess the manure management plan to ensure that the problem does not happen again in the future.

The emergency action plan must include provisions for the emergency spreading or transfer of waste from all waste storage structures at a facility. This may include emergency pumping or spreading (to prevent overtopping of a storage structure) during periods when the soil or crop conditions are not conducive to normal spreading or application. Contact your state water quality agency and local soil and water conservation district for guidance on land applying waste in this instance. Assess which fields are best able to handle the waste without further environmental damage. Application rates, methods, and minimum buffer distances must all be addressed. If transferring waste to another location for application, consider the limitations that may be involved with the transfer of waste to that site and application considerations at that location. For more information on selecting land application sites, refer to Lesson 33, *Selecting Land Application Sites*.

**Post-spill assessment and reporting**

If a spill occurs on your farm, the water quality agency in your state will normally require a written report to be submitted following the accident. Reports are typically due within one week of the spill, but check with your state water quality agency about the length of time you have before the report is required. Assessments or “follow-up” reports give you and the regulatory agency an opportunity to reflect and learn from the events that led up to the spill and those actions that were taken following the spill. The following suggestions provide the information that should be included in a post-spill assessment report. Check with your state water quality agency to determine if they require any additional information.

1. Assess the extent of the spill and note any obvious damages.
   - Did the waste reach any surface waters, wetlands, tile drains, or wells?
   - Approximately how much manure was released and for what duration?
   - Did you note any damage, such as employee injury, fish kills, or property damage?

2. Response to spill
   - When and where was the spill contained?
   - What measures were taken to avoid additional contamination and threat to the environment or human health?
   - Did anyone or any local group assist in the cleanup?
   - Was a technical specialist (NRCS, Conservation District, or engineer) consulted? What corrective actions are necessary to repair any damage to your storage structure, manure transfer, or application equipment?

3. Cause of the spill
   - Can you determine the cause of the spill or discharge?
   - If appropriate, were signs present of the condition before the accident occurred?
4. Contact the appropriate agencies
   • When were local and state agencies contacted, notifying them of the spill?
   • Did a representative of the state water quality agency or health department respond to the notification? List names, titles, and agencies.
   • Did state or local representatives give you any “special” instructions?

Creating a Community Response Plan

When an emergency arises, you may need the assistance of neighboring farmers, fire departments, or other county services. Communities have developed and are encouraged to develop Community Response Plans that help producers respond to large manure spills, emergencies, or catastrophic animal losses. These plans allow the producers to review or develop the components of their farm’s Emergency Action Plan with the assistance of neighboring producers and farmers as well as community emergency response personnel. Collectively, this process gives producers the opportunity to determine who in the community (producers, farmers, or community services) owns equipment that may be locally available for use in the event of a manure spill. Large equipment that may be necessary to respond to and clean up a manure spill includes
   • Grader.
   • Bulldozer.
   • Backhoe.
   • Front-end loader.
   • Portable electric generators.
   • Portable diesel pumps and irrigation pipe.
   • Vacuum tank wagons.
   • Dump trucks.

In the event of a manure spill, several states require or suggest that the local Emergency Medical Services (EMS) be contacted. Traditionally, EMS is contacted to report a fire or medical emergency. Several communities use the EMS network for other emergencies including manure spills. The EMS network organizes local and state agencies such as the Soil and Water Conservation District, county health departments, state water quality agencies, fire department, and the local police or county sheriff to respond and address any manure spill. This level of response may seem excessive, but depending on the spill size and nature, each of these groups may be needed to minimize the extent of environmental damage or risk to public health.

As with most emergencies, it is always better to be prepared than to “test” a response plan during an actual emergency. Several communities have taken this lesson to the farm. Mock “spills” have been conducted to train Manure Spill Teams and test the effectiveness of a community’s response plan. Animal producers, farmers, volunteer fire departments, county health departments, and local police or sheriff offices work together to form the Manure Spill Teams. These exercises are not meant to address every possible type of spill or area that may be affected by a spill. Rather, these drills enable the Manure Spill Team (or responding agencies or groups) to work together, develop communication protocols, and establish general procedures that need to be implemented to protect human health, minimize environmental impact, and foster a quick cleanup.
Partnerships: Animal Producers and Regulatory Agencies

Pollution prevention and environmental stewardship should be a primary goal for animal producers and regulatory agencies. Both groups should work together before accidents occur to shorten the response time and minimize the impact when spills do happen. Accidents happen, but some can be avoided through proper planning, maintenance, and preparation. Animal producers need a healthy environment and supportive community to produce meat, milk, and eggs for our country and the world. Management plans and structures should be in place to prevent spills from occurring. When dealing with regulatory agencies, be proactive rather than reactive in responding to spills. Remember the following points when developing or reviewing an emergency action plan for your farm.

- Preventing pollution is a partnership that protects both human and environmental health.
- Producers should report all spills regardless of size. Let the regulatory agency determine what constitutes a spill.
- Contain and clean up spills by responding vigorously.
- Remember that enforcement and penalties usually reflect the response to and impact of a spill.
### APPENDIX A

#### Regulatory Compliance Assessment: Emergency Action Plans

<table>
<thead>
<tr>
<th>Regulatory Issue</th>
<th>Is this issue addressed by regulations?</th>
<th>Is my livestock/poultry operation in compliance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What agencies are involved in administering regulations related to emergency action plans?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you required to develop an Emergency Action Plan for your farm?</td>
<td>Yes No If Yes, summarize:</td>
<td>Yes No Not applicable Don’t know</td>
</tr>
<tr>
<td>Are there specific items that must be included in the plan?</td>
<td>Yes No If Yes, summarize:</td>
<td>Yes No Not applicable Don’t know</td>
</tr>
<tr>
<td>Is it feasible to contain a manure spill or discharge on your farm?</td>
<td>Yes No If Yes, summarize:</td>
<td>Yes No Not applicable Don’t know</td>
</tr>
<tr>
<td>Are specific structures or practices required on your farm to prevent or minimize spills?</td>
<td>Yes No If Yes, summarize:</td>
<td>Yes No Not applicable Don’t know</td>
</tr>
<tr>
<td>Do you own or have access to the equipment needed to contain and clean up a spill?</td>
<td>Yes No If Yes, summarize:</td>
<td>Yes No Not applicable Don’t know</td>
</tr>
<tr>
<td>Are you required to contact a regulatory agency following a spill or discharge?</td>
<td>Yes No If Yes, summarize:</td>
<td>Yes No Not applicable Don’t know</td>
</tr>
<tr>
<td>Does a summary report, detailing the cause and response to a spill, have to be submitted to a regulatory agency?</td>
<td>Yes No If Yes, list name, address, and summarize:</td>
<td>Yes No Not applicable Don’t know</td>
</tr>
<tr>
<td>Other:</td>
<td>Yes No If Yes, summarize:</td>
<td>Yes No Not applicable Don’t know</td>
</tr>
</tbody>
</table>
APPENDIX B
Spill Response Plan

In Case of a Manure Spill

1. Eliminate the source.
   - Stop manure application or pumps.
   - Close valves.
   - Separate pipes, creating an air gap and stopping flow.
   - Transfer manure/liquid to another basin or lagoon.

2. Contain the spill, if possible.
   - Create containment dam in field, ditch, or stream. Check for tile flows.
   - Construct a temporary holding basin downslope. Ensure that you do not damage the embankment while creating the temporary basin.
   - If accessible, place soil over the point of seepage, ensuring that you do not drive over or compact the seepage point.

3. Assess the extent of the spill and note any obvious damages.
   - Did the spill reach any surface waters, well casings, or other sensitive areas?
   - How much was released? What time?
   - Did any damage occur (employee injury, fish kills, or property damage)?
   - Can the spill reach any streams?

4. Contact the appropriate agencies.

5. Clean up the spill and make repairs.

6. Prepare and submit summary.

   • Report all spills, regardless of size.
   • Respond vigorously to contain and clean up spills.
   • Think SAFETY—Protect Lives.

Farm Information

Name: __________________________

Permit number: ______________________

Farm office phone number: ____________

Street address: ______________________

Town: ___________________________ County: ___________

Directions to farm (from major crossroad or highway exit)

________________________________________

Emergency Phone Numbers

Owner
Name: __________________________

Phone number: ______________________

Certified operator or livestock manager
Name: __________________________

Phone number: ______________________

Pumping contractor
Name: __________________________

Phone number: ______________________

Equipment contractor
Name: __________________________

Phone number: ______________________

EMERGENCY SERVICES
Ambulance (EMS) phone number: ___________

Fire Department phone number: ___________

County Sheriff phone number: ___________

STATE
Water Quality Agency phone number: ___________

Department of Agriculture phone number: ___________

LOCAL/COUNTY
Public Health Department phone number: ___________

Cooperative Extension Service phone number: ___________

USDA-NRCS or Conservation District phone number: ___________
APPENDIX C
Emergency Response Plan Checklist

Developing an Emergency Action Plan
The remaining portion of this lesson presents an emergency action plan that can be implemented on your farm. Once completed, this plan should be available to and understood by all farm employees. The main points of the plan (order of action) along with the relevant phone numbers should be posted by all telephones at the site. A copy should also be available in remote locations or vehicles if the land application sites are not adjacent to the facility office. Facility owners or managers should ensure that all employees understand what circumstances constitute an imminent danger to the environment and/or to the health and safety of workers and neighbors. The employees should be able to respond to such emergencies and notify the appropriate agencies of conditions at the facility.

Environmental/Emergency Protection Plan Contents

- **Emergency Phone Numbers** *(Page 24)*: An emergency phone notification list that includes the telephone number of the operator and the local offices of the fire dept, sheriff’s dept, EMS, Public Health Office, State Water Quality Agency, and State Dept of Agriculture.

- **General Farm Information Sheet** *(Page 25)*: Fill in all general farm information.

- **Designated Spokesperson**, if desired *(Page 25)*: Consider contacting the news media, because they will eventually learn about the problem. Assign a spokesperson to meet with them when they arrive at the scene. That way, the printed story may focus on your organized, effective response rather than on the magnitude of the problem.

- **Farm Map** *(Page 26)*: Include a drawing with written directions to your farm.

- **Effluent Spill Emergency Response Information Sheet** *(Page 27)*: Information that includes 2nd and 3rd contact people.

- **Runoff Retention Plan** *(Pages 28-31)*: Instructions detailing the Action Plan to be taken in an emergency involving effluent spill, discharge, leak, etc.

- **Facility Map** *(Page 31)*: Draw facility layout, including location of telephones; shutoffs for water, electric, natural gas, and propane tanks; recycle systems; schematic of waste management system; pumping pits; areas of no entrance without assisted breathing devices; hazardous materials; ingress/egress for emergency vehicles; and identity of adjacent landowners with emergency phone numbers.

- **Aerial Map** *(Page 32)*: Maps of the facility and surrounding areas, including drainage patterns and locations of spoil materials for forming emergency dikes and location of surface waters, waterways, wells, and any other environmentally sensitive areas.

- **Prearranged Sample Land Access Agreement** *(Page 33)*: List of neighboring landowners and their emergency phone numbers.

- **Prearranged Emergency Response Agreements** *(Page 34)*: List of equipment owners who have agreed to assist in an emergency and inventory of on-site equipment that can be used, including location *(Page 34).*

- **Manure Handling System Maintenance Record** *(Page 35)*: Inspect equipment regularly to verify that it is in working condition, preferably using a dated checklist and log book.

- **Lagoon Pumping Services** *(Page 36)*: List of companies available on short notice.

- **Fire Emergency Response Information Sheet** *(Page 37-38)*: Information that includes names of your electric and propane companies plus a list of any hazardous materials you have on your farm.


- **Power Outage Information Sheet** *(Page 40)*: Information that includes the name of your electricians.

- **Personal Information** *(Page 41)*: List any medical conditions you or your farm personnel may have that emergency medical personnel need to know about (i.e., diabetes, heart or respiratory problems, medications, etc.).

- **Emergency Action Plan for Serious Injury** *(Page 42)*: Action plan in the event of a medical emergency.

- **Post-Emergency Assessment and Documentation** *(Page 43)*: State reporting requirements.
### Emergency Response Plan Worksheets

Please fill in all information sheets as thoroughly and neatly as possible. The plan requests the same information more than once, enabling the Emergency Response Team to respond to specific types of emergencies in a professional manner with the proper information.

#### Emergency Phone Numbers

<table>
<thead>
<tr>
<th>Site location</th>
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</table>

**Owner**

Name: 

Phone number: 

**Certified livestock manager**

Name: 

Phone number: 

**Ambulance (EMS) phone number:**

**Fire Department** phone number:

**County Sheriff** phone number:

**STATE**

**Emergency Management Agency** phone number:

**Water Quality Agency** phone number:

**Department of Agriculture** phone number:

**LOCAL/COUNTY**

**Public Health Department** phone number:

**Natural Resources Conservation Service** phone number: 

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1 Provide directions that anyone could use to direct others to the site by phone.
<table>
<thead>
<tr>
<th><strong>General Farm Information Sheet</strong></th>
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<tbody>
<tr>
<td><strong>Farm name:</strong> ____________________________</td>
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<td>Phone number: ____________________________</td>
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<td><strong>Operator’s name:</strong> ____________________________</td>
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<td>Phone number: ____________________________</td>
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<td><strong>Manager’s name:</strong> ____________________________</td>
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<td>Phone number: ____________________________</td>
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<td><strong>Designated spokesperson name:</strong> ____________________________</td>
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<td><strong>OTHER</strong></td>
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Farm Map

Draw a map with written directions to the farm.

Written directions:
# Effluent Spill Emergency Response Information Sheet

**Farm name:**

__________________________________________________________

**Fire district:**

__________________________________________________________

**Size and type of operation:**

__________________________________________________________

**Owner/Operator:**

__________________________________________________________

**Phone number:** __________________________________________

**2nd Contact person if owner is not available:**

**Name:** __________________________________________

**Phone number:** __________________________________________

**3rd Contact person if owner/operator and 2nd contact person are not available:**

**Name:** __________________________________________

**Phone number:** __________________________________________

**Engineer name:** __________________________________________

**Phone number:** __________________________________________

**Location of manure storage from buildings:**

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________
### Runoff Retention Plan

For emergencies involving an unplanned release of manure, the action plan normally involves the recognition and assessment of the problem, notification of authorities, enlistment of help from cooperating producers and others to correct the problem, and restoration of the affected area to its original condition.

#### Planning for containment below the lagoon in direction of runoff

Study the drainage patterns from your farm and envision where a manure discharge will move while it is still on your property and after it leaves your property. Determine the point at which the discharge might enter surface waterways. On some farms, manure may travel long distances before entering a ditch or stream. In other cases, a stream may be nearby, demanding a much faster response. Describe the procedures to be followed for retaining runoff. Include any equipment that would be required and how it is to be used. Note the location where spoil piles would be located. For easy identification, denote storm drains and runoff ditches on the aerial site map.

### Emergency Action Plan for...

Dike overtopping or eroding, or aboveground storage leak.

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<td>Emergency Action Plan for...</td>
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<td>Full lagoons, ponds, or pits, and planned application areas are not available.</td>
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</table>
Facility Map

Attach a site map or drawing of the facility. On the map, indicate the location of buildings, lagoons, wells, hazardous materials, property boundaries, and possible direction of lagoon runoff. Also, indicate the location of materials that could be used for temporary berms, i.e., dirt piles, old hay bales, sawdust, etc.
Prearranged Emergency Response Agreements

To deal with an emergency quickly and effectively, most operations need assistance from other individuals. Therefore, it is essential that prior arrangements be made so every person involved knows what to do when an emergency arises. Often neighbors can quickly bring equipment such as tractors with plows, backhoes, bulldozers, or even personnel with shovels. You can establish reciprocal agreements with these neighbors and form a response team to deal with any emergency that might occur in a certain area.

If an effluent spill occurs, it is very important to have access to nearby land, irrigation, and earth-moving equipment. In most cases, the producer, farmer, or emergency response personnel must contact people who own the equipment needed to respond to an effluent spill. Having a prearranged written agreement with these people simplifies matters. The terms of these arrangements should include such things as financial compensation and a description of the equipment that would be used.

List any arrangements made with other producers and neighbors to share personnel and/or equipment, supplies, and land access during an emergency.

*Prearrangements can keep future problems from arising after the immediate emergency is over!*

Prearranged Sample Land Access Agreement

**ACCESS AGREEMENT**

This document will serve as an access agreement between ________________________________

(hereafter called PRODUCER) and ________________________________

(hereafter called NEIGHBOR.) In the unlikely event that a manure discharge originating from PRODUCER’S property enters NEIGHBOR’S property, NEIGHBOR hereby grants permission to PRODUCER or his agents to enter NEIGHBOR’S property and take any reasonable steps to control, contain, and remediate the manure discharge. PRODUCER agrees to restore NEIGHBOR’S property to its original condition.

Signed ________________________________ Date ________________________________

Signed ________________________________ Date ________________________________
## Prearranged Emergency Response Agreements

List any arrangements made with other producers to share personnel and/or equipment, supplies, and land access during an emergency.

### Prearranged land access agreements

<table>
<thead>
<tr>
<th>Contact #1</th>
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</thead>
<tbody>
<tr>
<td>Contact #2</td>
<td></td>
</tr>
</tbody>
</table>

### Location of Prearranged Emergency Equipment and Supplies

Available 24 hours a day. Include phone numbers and primary contacts. Put list in the order you want equipment operators contacted. Post a copy in each animal building onsite, in site office, and owner's residence. Preferably posted by a phone, or if no phone, by main doorway.

<table>
<thead>
<tr>
<th>Owner</th>
<th>Phone</th>
<th>Location</th>
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<tbody>
<tr>
<td>Irrigation pumps</td>
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<tr>
<td>Bulldozer/Track loader</td>
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<tr>
<td>Backhoe</td>
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<td>Vacuum slurry tank</td>
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</table>
# Lagoon Pumping Services

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<th>Name:</th>
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<td>Adress:</td>
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</tbody>
</table>
# Fire Emergency Response Information Sheet

**Farm name:**

**Farm Fire Protection District:**

**911 coordinates for farm:**

**Size and type of operation:**

**Owner/Operator:**

Name: ____________________________ Phone number: ____________________________

**2nd Contact Person if owner/operator is not available:**

Name: ____________________________ Phone number: ____________________________

**3rd Contact Person if owner/operator and 2nd contact person are not available:**

Name: ____________________________ Phone number: ____________________________

**Electrical power company**

Name: ____________________________

Phone number: ____________________________

Is there a disconnect between the meter base and the buildings?  __Yes  ___No

If so, where?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Give the location (sketch preferable) of electrical panels in buildings.

**Propane company**

Name: _______________________________________

Phone number: ________________________________

Location and size of propane tanks: ______________________________

_________________________________________________

_________________________________________________

_________________________________________________

Other fuels and locations: ___________________________

_________________________________________________

_________________________________________________

Are hazardous materials stored in facilities?  __Yes  __No

If yes, provide the location(s) and list of materials. __________________________________________

_________________________________________________

_________________________________________________
Emergency Action Plan for...

Facility fire.

Emergency Actions

________________________________________________________________________

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________________________________________________________________________
<table>
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<th><strong>Power Outage Information Sheet</strong></th>
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<tr>
<td><strong>Farm name:</strong> ____________________</td>
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<tr>
<td><strong>Farm Fire Protection District:</strong> ____________________</td>
</tr>
<tr>
<td><strong>Size and type of operation:</strong> ____________________</td>
</tr>
<tr>
<td><strong>Owner/Operator:</strong> ____________________  Phone number: ____________________</td>
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<tr>
<td><strong>2nd Contact Person if owner/operator is not available:</strong></td>
</tr>
<tr>
<td>Name: ____________________  Phone number: ____________________</td>
</tr>
<tr>
<td><strong>3rd Contact Person if owner/operator and 2nd contact person are not available:</strong></td>
</tr>
<tr>
<td>Name: ____________________  Phone number: ____________________</td>
</tr>
<tr>
<td><strong>Electrical power company</strong></td>
</tr>
<tr>
<td>Name: ____________________  Phone number: ____________________</td>
</tr>
<tr>
<td><strong>Size of electrical service:</strong> ____________________</td>
</tr>
<tr>
<td><strong>Do you have a standby alternator?</strong>  __Yes  __No</td>
</tr>
<tr>
<td><strong>If so, is there a double-throw disconnect to isolate the farm from the utility during alternator operation?</strong>  __Yes  __No</td>
</tr>
<tr>
<td><strong>Do you have a disconnect between the meter base and panel?</strong>  __Yes  __No</td>
</tr>
<tr>
<td><strong>Give the location (sketch preferable) of electrical panels in buildings.</strong>  __Yes  __No</td>
</tr>
<tr>
<td><strong>Name and number of electricians who perform service on your barns.</strong></td>
</tr>
<tr>
<td>Name: ____________________  Phone number: ____________________</td>
</tr>
<tr>
<td>Name: ____________________  Phone number: ____________________</td>
</tr>
<tr>
<td>Name: ____________________  Phone number: ____________________</td>
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Below, list any medical conditions that EMS personnel should know about.

Name: ____________________________________________________________
Condition: _______________________________________________________
_________________________________________________________________
_________________________________________________________________
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_________________________________________________________________

Name: ____________________________________________________________
Condition: _______________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Name: ____________________________________________________________
Condition: _______________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
Emergency Action Plan for...

Serious injury to persons.

Emergency Actions

________________________________________________________________________

________________________________________________________________________

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________________________________________________________________________

________________________________________________________________________
Post-Emergency Assessment and Documentation

1. Assess the extent of the spill and note any obvious damages.
   a. Did the waste reach any surface waters?
   b. Approximately how much was released and for what duration?
   c. Did any damage occur, such as employee injury, fish kills, or property damage?

2. Contact the appropriate agencies to report a release of animal waste from a lagoon.
   a. An owner or operator of an animal waste lagoon should report any release of animal waste from the lagoon within 24 hours after the discovery of the release. Reports of releases to surface waters, including to sinkholes, drain inlets, broken subsurface drains, or other conduits to groundwater or surface waters, should be made upon discovery of the release, except when such immediate notification impedes the owner’s or operator’s response to correct the cause of the release or to contain the animal waste. In that case, the report should be made as soon as possible but no later than 24 hours after discovery.
   b. The report required under Section a. should be given to your state Water Quality Agency.

Contents of Report

The report should include, as a minimum, each of the following items to the extent that it is known at the time of the report.

1. Name and phone number of the person reporting the release
2. County, distance, and direction from the town, village, or municipality nearest to the release
3. An estimate of the quantity in gallons that was released and of the flow rate, if the release is ongoing
4. Area into which the release occurred (field, ditch, stream, or other description) and apparent environmental impacts of the release
5. Time and duration of the release
6. The names and phone numbers of persons who may be contacted for further information
7. Dangers to health or the environment resulting from the release
8. Actions taken to respond to, contain, and mitigate the release
9. Name of facility and mailing address
Implement procedures to prevent similar occurrences. Seek professional assistance if problem is berm or structure related.

**Documentation of Clean-Up Efforts**

All responses to emergencies should be documented and kept with the manure management plan. This documentation should include all agency and local authority contacts made during the response phase. This information can be used to assess response to the emergency, prepare for future problems, and train employees.
### About the Author

This lesson was written by Ron Sheffield, extension specialist in animal waste management at North Carolina State University, Raleigh, who can be reached at the following e-mail address:

ron_sheffield@ncsu.edu

### Glossary

**Best management practice (BMP).** Structural and managerial practices found to be the most effective, practical means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

**Slope.** Vertical rise or fall over a given horizontal distance.

**Soil survey.** Report prepared by the Natural Resources Conservation Service that contains detailed maps depicting the occurrence of different soil types, presence of natural and man-made physical features of the landscape, and the slope of the land’s surface.

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**Reviewers**

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Livestock and Poultry Environmental Stewardship Curriculum: Lesson Organization
This curriculum consists of 27 lessons arranged into six modules. Please note that the current lesson is highlighted.

Module A.
Introduction
1. Principles of Environmental Stewardship
2. Whole Farm Nutrient Planning

Module B.
Animal Dietary Strategies
10. Reducing the Nutrient Excretion and Odor of Pigs Through Nutritional Means
11. Using Dietary and Management Strategies to Reduce the Nutrient Excretion of Poultry
12. Feeding Dairy Cows to Reduce Nutrient Excretion
13. Using Dietary Strategies to Reduce the Nutrient Excretion of Feedlot Cattle

Module C.
Manure Storage and Treatment
20. Planning and Evaluation of Manure Storage
21. Sizing Manure Storage, Typical Nutrient Characteristics
22. Open Lot Runoff Management Options
23. Manure Storage Construction and Safety, New Facility Considerations
24. Operation and Maintenance of Manure Storage Facilities
25. Manure Treatment Options

Module D.
Land Application and Nutrient Management
30. Soil Utilization of Manure
31. Manure Utilization Plans
32. Land Application Best Management Practices
33. Selecting Land Application Sites
34. Phosphorus Management for Agriculture and the Environment
35. Land Application Records and Sampling
36. Land Application Equipment

Module E.
Outdoor Air Quality
40. Emission from Animal Production Systems
41. Emission Control Strategies for Building Sources
42. Controlling Dust and Odor from Open Lot Livestock Facilities
43. Emission Control Strategies for Manure Storage Facilities
44. Emission Control Strategies for Land Application

Module F.
Related Issues
50. Emergency Action Plans
51. Mortality Management
52. Environmental Risk and Regulatory Assessment Workbook