

# RESPONDING TO A MANURE SPILL: AN OHIO GUIDE

Edited in cooperation with:

Ohio State University Extension  
Ohio Environmental Protection Agency  
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KEWAUNEE COUNTY MANURE SPILL RESPONSE GUIDE

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The purpose of this publication is to encourage the development of an Emergency Response Plan for Spill Prevention and Spill Response. The time you spend planning for and preventing manure spills can easily be recuperated because a well designed and up-to-date response plan will minimize environmental damage, cleanup costs, fines and/or violations.

## Considerations for an Emergency Response Plan

Emergency Response Plans are implemented when manure or other contaminates from an operation move off-site. It is important to remember that a plan is only useful if the work and information put into it is specific to your facility and everyone involved is familiar with the plan. This guide is designed to provide practical options for responding to an animal manure spill and includes eliminating the source, containing the spill, notifying appropriate officials and initiating the clean-up. A well-designed and implemented response will minimize the risk to human health, animals, economic losses and the potential for environmental contamination.

The best solution to any emergency is prevention. Sound management practices will prevent many animal manure situations from becoming emergencies. In the event that an emergency does occur, this document will provide guidance to minimize the impact animal manure will have on the environment. **This publication is focused on preventing and minimizing environmental impacts; however, these impacts are secondary to any threat to human life.**

The primary goal for each of the emergency situations described below is to prevent manure from entering water resources. Common sense and simple approaches can be taken to interrupt the flow of manure toward and into surface waters. For example, tillage across and down slope of the manure path will slow the velocity of the flow. Dikes or dams may need to be installed to temporarily restrict the flow of manure and provide a containment area. Whereas soil with high clay content is preferred, dikes or dams can be constructed of used feed, straw, round bales, and other absorbent organic matter. Once installed, manure can more easily be collected from this area and moved to an appropriate storage structure or field applied.

## Types of Emergencies

Your response to an emergency situation will be site and situation specific, and should be addressed by an Emergency Response Plan developed for a specific facility. Your response should be based on the type of emergency you are experiencing and the steps outlined in the emergency action plan. Emergencies can be grouped according to the level of urgency and may be categorized as an imminent pollution event, a pollution event in progress, or a pollution event discovered after the fact. ***A pollution event occurs when manure or other unwanted substances reach water resources (i.e. waters of the state).***

*"Waters of the state" refers to all streams, lakes, ponds, wetlands, watercourses, waterways, wells, springs, irrigation systems, drainage systems and all other bodies or accumulations of water, surface and underground, natural or artificial, which are situated wholly or partly within, or border upon, this state, or are within its jurisdiction, except those private waters which do not combine or effect a junction with natural surface or underground waters, including those waters that are presently used, have been used or are susceptible to use to transport interstate commerce up to the head of navigation (Ohio Revised Code 6111.01 (H)).*

## Imminent Pollution

Imminent pollution is defined as a situation that has yet to produce a discharge, but by ignoring the situation the probability of a discharge is high. Examples of these types of crises are manure storage structures, lagoons and/or under building pits that are near over topping; forecasts that call for rain fall in excess of remaining storage structure capacity; or instances when there is a potential for manure to move off-site.

*Storage capacity to be exceeded:* Long periods of excessive rain or malfunctioning livestock water systems may cause existing storage volumes to be exceeded unexpectedly. Your response should be to prevent the discharge of manure to water resources.

Suggested responses to these types of problems include:

- Stop or minimize un-intended flow to the storage structure. For example, broken water lines, clean water, etc...
- Call a pumping contractor(s) and move excess volume to an alternative site or treatment facility. For example, a neighbor with a manure holding structure.
- Divert clean water from entering the manure storage structure.
- Consider maintaining some grassland near the storage for emergency manure application.
- Pump minimum quantity of manure onto a field taking adequate precautions to prevent manure from entering surface waters directly and/or through subsurface drains (tile).

*Potential for runoff from application field:* Unexpected rains within 72 hours after a manure application may increase the risk of a discharge to water resources, over application of liquid manure, malfunctioning application equipment, other. Again, the proper response is to prevent the movement and discharge of manure into surface and or groundwater resources.

Suggested responses to these types of problems include:

- Immediately stop manure application.
- Incorporate manure to prevent further runoff.
- Create a temporary diversion or berm (in areas where flow concentrates) to contain the manure on the field.
- Consider maintaining a grassed buffer around edge of field, or detention basins at the down slope side of the field (i.e., where tiles outlet or flow concentrates) to minimize off-site movement of manure.
- Till across the manure flow path to decrease velocity and increase infiltration.

## Pollution in Progress

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

*Leaking or broken pipe, pit wall, or storage/lagoon berm:* These leaks may be seepage or flowing manure. Your response will depend on the severity of the leak and the impact it is having. The level of response will depend upon the potential risk to human health, safety and the environment.

Possible solutions include:

- Stop flow into pipe, pit or lagoon or additional spill of material.
- Prevent additional leaking of material by turning off the recycle flushing system, closing valves that control outflows, and preventing siphon effect.
- Dig a holding area or construct a berm to contain manure.
- Repair defective components such as berm leaks caused by animals; trap or remove animals such as rodents and fill holes with compacted clay soil. Problems with storage and/or treatment structures may require consultation with the local Soil and Water Conservation District for recommendations on how to make permanent repairs.

*Manure tanker overturn:* There is a good chance that this emergency will be off-site and may include personal injuries (e.g., car accident). As in any manure emergency, **human injuries take precedence over all other responses**. Once the threat to human life or injury is under control, limiting the environmental impact becomes the main goal in responding to this type of emergency. You should implement necessary warning devices to protect on-coming motorist and individuals assisting with the clean-up, e.g., flares, flags, flashing lights, etc... Once the site is safe, make every effort to immediately contain or block the flow from moving further downstream and implement removal and recovery procedures to abate or lesson the impact to water resource resulting from the spill.

*Manure application equipment leak:* These types of emergency tend to be from large volume systems such as dragline and irrigation pumps. Although a relatively small volume of manure spilled in close proximity to an environmentally sensitive area may have adverse impacts. The goal with an equipment malfunction is to stop the overland flow of manure from moving into these environmentally sensitive areas.

Possible solutions include:

- If manure/soil is spilled on a public roadway, clean manure off immediately to limit further risk of injury and liability for the spill.
- Till the soil ahead of the flow and across the flow path to slow flow velocity and increase infiltration.
- If flow is concentrated in a ditch or stream, create a set of earthen dams: first, downstream to minimize the movement of manure; second, upstream (if needed) to minimize additional clean water from becoming contaminated; and third, another dam further downstream to act as a backstop for the first earthen dam. Refer to your spill response resource list to quickly access equipment, and/or labor necessary to pump or remove contaminants from the drainageway or other surface waters.
- Apply captured manure on cropland

### After-the-Fact

This situation occurs when considerable time has passed before a discharge is discovered. There is potential for increased environmental impact due to the late discovery of manure moving off-site. Response should be immediate to minimize additional environmental impacts.

Possible responses include:

- Stop the leak and/or discharge.
- Contain spilled manure (see above).
- Attempt to re-apply captured manure on cropland.
- Notify the appropriate officials.
- Note environmental impacts such as fish kill, surface water pollution, well or ground water impact, and amount of manure released and for what duration.

### **Developing an Emergency Response Plan**

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 Response 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. Your plan should contain the elements below that are needed to meet the needs of your facility.

#### Strategy for implementing your Emergency Response Plan:

1. Eliminate the source of manure.
2. Contain the spill.
3. Assess the extent of the spill and potential damage.
4. Report spill to appropriate official(s): ODNR-DOW (800-762-2437); OEPA (1-800-282-9378); ODA (614-387-0470 or 1-800-282-1955).
5. Clean-up the spill and restore damage where possible.
6. Document all aspects of the spill and your response.
7. Prepare a written report and submit to the appropriate official(s).

#### Eliminate the source of the spill:

Remember the objective is to **prevent, minimize or eliminate a manure discharge to water resources**. However, depending on the situation, this may not be possible so suggested responses to several problems are listed below and should be included in your plan when relevant.

1. Lagoon or slurry basin overflow responses.
  - Pump manure and wastewater to appropriate field(s) at an acceptable rate.
  - Stop all additional flow into the storage structure.
  - Call a pumping contractor and move excess manure off-site, then find an empty storage at an alternative site, for example, a neighbor who no longer has livestock.
  - Prevent surface water from entering the storage structure.
2. Runoff from manure application field responses.
  - Immediately stop application.
  - Create a temporary diversion or berm to contain manure on the field.
  - Plug or break subsurface drain (tile) line to prevent further discharges.
  - Incorporate manure, reducing further runoff.
  - Evaluate and eliminate the situation that caused the runoff.
  - Evaluate the application rates for the fields where runoff occurred.
  - Install subsurface drain control structures.

3. Leakage from the manure distribution or irrigation system. Pipe and sprinkler responses include:
  - Stop flushing system pump.
  - Stop irrigation pump.
  - Close valves, eliminating further discharge.
  - Make sure no siphon effect has been created.
  - Separate pipes, creating an air gap to stop flow.
  - Repair all leaks prior to restarting pumps.
  
4. Leakage from base or sidewall of lagoon or earthen storage structure. Possible responses are as follows:
  - Dig a small, temporary basin 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 clay soil.
  - Contact Soil & Water Conservation District for assistance in making permanent repairs.
  - Manure leakage or discharge from tile drains. Responses are as follows:
    - Install control structure.
    - Plug or break subsurface drain (tile) flow path or outlet.

Contain the spill when it occurs by minimizing the movement of manure off-site or downstream:

1. Manure spill or discharge into a stream or ditch.
  - Contain manure by creating a dam in the field, ditch, or stream.
  - Pump collected manure onto field, into storage structures or into manure tankers.
  - Aerate stream to minimize wildlife impacts

**When working in roadside ditches or other right-of-ways be alert for underground utilities.**

2. Seepage or manure flowing from a lagoon or storage facility.
  - Construct a temporary basin down-slope from the seepage area. Do not damage the existing embankment while creating the temporary basin.
  - If accessible, place soil over the point of seepage, but do not drive over or compact the seepage point. This may speed up rather than slow down the loss of manure.
  - Pump out stored manure and wastewater to a depth below the seepage point

Assess the extent of the spill and note any obvious damages:

1. Did manure reach any surface water or groundwater?
2. Approximately how much manure was released and for how long?
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 water supply from the release?
5. Did manure leave the property?
6. Can the manure potentially reach surface waters?

7. Could a future rain event cause manure 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*

State law requires immediate reporting of all spills to the appropriate agency:

- Ohio Environmental Protection Agency, Emergency Spill Response Unit (**1-800-282-9378**).
- Ohio Department of Agriculture, Livestock Environmental Permitting Program (**614-387-0470 or 1-800-282-1955**),
- Ohio Department of Natural Resources-Division of Wildlife (**1-800-WILDLIFE**)
- Local Soil and Water Conservation District office (see county government section of local phone director).

Before calling, some action should have occurred or is occurring to address the problem before calling, because you will be asked is what you have done to mitigate the problem.

For National Pollutant Discharge Elimination System (NPDES) permit holders, the 24-hour reporting requirement appears in the facility's permit language where all permit violations need to be reported within 24-hours, spills included. For example, if a NPDES permit facility has a spill and reports it to OEPA, the facility also is required to contact their permit regulator within 24-hours to report a permit violation (i.e., manure spill).

Ohio offers a spill reporting hotline number that is staffed 24 hours a day. The hotline is staffed so specific information can be collected. Only leaving a message does not meet spill-reporting requirements. **The toll-free spill reporting hotlines are**

**Ohio EPA: 1-800-282-9378;**

**Ohio Dept of Agriculture Livestock Environmental Permitting Program: 614-387-0470 or 1-800-282-1955;**

**Ohio Department of Natural Resources, Division of Wildlife: 1-800-WILDLIFE**

Information to provide when reporting a manure spill:

**Your name**

**Facility name and/or location**

**Telephone number**

**Details of the incident**

**Exact location of the facility and the location or direction of movement of the spill**

**Weather and wind conditions**

**What corrective actions have been taken?**

**Seriousness of the situation**

### Clean up the spill and make repairs:

Perform recommended modifications to restore any damages, repair broken and/or defective components in the manure handling and storage system, and reassess the manure management and emergency response plan to ensure the likelihood of this event reoccurring has been minimized.

The emergency response plan must include provisions for emergency spreading or transfer of manure from all manure storage structures at the facility. This may include emergency pumping or spreading during periods when soil or crop conditions are not conducive to normal spreading or application. Contact your Local Soil & Water Conservation District for guidance on land application of manure. Assess fields that are best able to hand manure without further environmental damage. Application rates, methods, and minimum buffer distances must be addressed.

### Post-spill assessment and reporting:

If you are responsible for a manure spill, you must file a written report following the incident. The report is due within three (3) weeks of the spill. The following information should be included in the post-spill report. (Source/citation)

1. Assess the extent of the spill and note any obvious damages.
  - Did the manure reach any surface water, wetlands, tile drains, or wells?
  - Approximately how much manure was released and for what duration?
  - Did any damage occur, such as employee injury, fish kills, or property damage?
2. Response to the 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 consulted?
  - What corrective actions are necessary to repair any damage to your manure storage structure, manure transfer or application equipment?
3. Cause of the spill
  - Can you determine the cause of the spill or discharge?
  - 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 state or local representatives give you any special instructions?

Remember, no matter how a manure spill happens, immediate action is required to prevent more serious problems. A well-designed and implemented response can reduce the severity of emergencies, the risk to humans and animals, the economic losses and the potential for environmental contamination.

Prior management is the key to minimizing the potential of a manure related emergency.

- Monitor manure holding structures regularly, maintain appropriate storage volumes and apply manure frequently throughout the year to minimize the potential of exceeding existing storage volumes.
- Establish a regular maintenance program for manure handling, storage and application equipment.
- Provide a list of spill resources and contacts to all employees and make available in all vehicles.
- Establish monitoring and spill clean-up locations for each location on the farm where pollutants may migrate to waters of the State. Identify any special concerns with each site (i.e., underground utilities, soil borrow areas, special equipment needs, and/or site access issues such as depth of ditch and property rights).
- Develop and communicate your emergency response plan with the appropriate individuals:
  - Family members, employees, local emergency responders, local agency personnel responsible for manure related emergencies and others deemed appropriate.