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**Storage Issues - Solid**

- Spontaneous combustion (fire) – and the runoff from fire control.
- Barn fires – and the runoff from fire control.
- Floodwaters – ponding around stored manure in fields or dry lots

**Storage Issues - Liquid**

- Overtopping storage (excess rain/flooding event) or poor management.
- Barn fires – adding unexpected water to storage.
- Structural failure – Cracks, rodents, construction errors / non-engineered modifications.

The archived presentation is available at: http://articles.extension.org/pages/21819/chronological-webcast-archive
Livestock and Poultry Environmental Learning Center Webinar Series

Iowa Summary
304 manure spills from within 10 yr (1992-2002)

Wisconsin Summary

- Land Application: 25%
- Farm: 44%
- Transportation: 27%

Wisconsin On-Farm Incidents
- 22% Storage overflow
- 44% Storage leak/mechanical
- 34% Lot runoff, other

Top months for overflow: August, April

The archived presentation is available at:
http://articles.extension.org/pages/21819/chronological-webcast-archive
A1  Survey from Iowa gives us some idea what can happen when dealing with such high volumes of swine manure.
Author, 1/8/2010
Being Prepared

- Determine what are the potential problems you could encounter
- Create both a prevention strategy and a response plan for each one
- Make sure everyone knows the plan

Example: Spontaneous Combustion-poultry manure

Photo: [Link to photo](https://www.rootsimple.com/2014/10/post-piles-on-fire/)
Prevention Strategy

- Manage pile sizes/airflow/moisture to reduce chances of spontaneous combustion
- Site windrow (or barn if under-barn storage) away from water resources
- Create a berm to contain/slow down runoff from fire fighting

Response Plan

- Think through the potential for a fire
- Where will the runoff water go?
- What are options to contain it
- Where do I put it?

Example: Storage Leak-300,000 gal in 6 hours
Situation

- Construction around pit damaged a stormwater pipe running in storage berm
- Pipe collapsed, releasing 300,000+ manure into road ditch/fields

Prevention Strategy

- Identify risks at time of construction—reroute pipes and drainage tile
- Work with a professional engineer when modifying storage
- Secondary containment?

Response Plan

- Think through the potential for leak caused by an unknown pipe or a rodent burrow
- Where would it flow to? Where is the equipment to contain it? Can I access it quickly
- Where do I put the manure?
Flooding

- The longer water is in contact with manure, the more nutrient enriched the water becomes.
- Solid manure piles will leach for weeks after saturation.

Flooding

- Do not place manure stacks/storage in areas likely to flood.
- Keep storage several feet below design capacity to handle unexpected rains/delayed spreading.
  - For those in Tropical Storm areas, this may be 3-5 feet!

Overtopping Storage

- Do not “add a few feet of soil”.
- Find other designed/engineered storage in the neighborhood to use.
  - Farms in the upper midwest are known to truck manure 80 miles ONE WAY in crisis situations.
Overtopping Storage

- Municipal sewage treatment plants an option of last resort
- Charge by the gallon and by the concentration of contaminants
  - Take the most diluted water from the top

Fires

- Divert, if possible, water from manure storage
- Alert first responders and regulators to the fact that fire fighting actions may cause a secondary manure problem

Summary

- Consider all potential disaster causes
  - Rain-delayed spreading/flooding of storage
  - Fire response that causes runoff
  - Spontaneous combustion
  - Storage failure – engineering failure, pipe failure, rodent burrowing into earthen berm

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Summary

- Create both a prevention strategy and a response plan for each one
- Make sure everyone knows the plan