University of Wisconsin
Center for Agricultural Safety and Health
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Non-Enclosed Manure Storage Safety Tips

Injuries and fatalities occur in confined space manure storages that are enclosed, such as beneath animal quarters; or below-ground reception and pump out pits; and in non-enclosed earthen, synthetic, or concrete lined manure storages. Non-enclosed manure storages are open to the atmosphere but may meet the definition of a confined space in terms of occupational safety and health based on storage design and employee exposure to hazards.

Non-enclosed manure storage should be assessed to determine employee exposure to safety and health hazards.

In the case of non-enclosed manure storage, hazards may include:

- A thick liquid and floating crust that make swimming, buoyancy, or even moving around very difficult.
- Steep and slippery slopes that can make getting out of manure storages difficult or impossible.
- An acceleration of hazardous gases (primarily methane, hydrogen sulfide, carbon dioxide, and ammonia) released from manure due to movement, agitation, removal, or addition of manure to storage.
- Localized layers of hazardous gases existing above manure surfaces, especially on hot, humid days with little to no breeze.
- Not having sufficient oxygen to breathe if a person is ‘treading’ in manure because of inability to get out.
- Not being able to see into depths of manure like you can with clear water.
- A slow response time for adequate emergency actions because of site isolation and remoteness.
- Potentially hazardous equipment in and around the manure storage.

One potential hazard is someone falling into the storage and being engulfed in the manure slurry.

Agitation accelerates the release of hazardous gases. Employees should know the signs and symptoms of these gases.

Safety guidelines to follow:

- Make sure everyone near manure storage structures understands the hazards that exist, including symptoms and effects that the various manure gases have on their health.
- Explosive gas may settle in pockets near where agitation or pumping is occurring. No smoking, open flames or sparks should be allowed.

OSHA requires warning signs to be posted in English but a recommended safety practice is to post in additional language based on your workforce.

- Make sure the non-enclosed manure storage has a fence installed around the perimeter and access gates are locked to keep unauthorized personnel from entering the area.

- Post warning signs including manure drowning hazard signs and "Danger Manure Storage" or "Danger Keep Out," or "Danger Keep Away." on all sides of non-enclosed manure storage. If possible, these signs should be located by gates.

- Keep bystanders and non-essential workers away from non-enclosed manure storage during or other accessible areas during when pump out operations are in progress.

- Wear a safety harness with life-line attached to a safely located solid object or anchor at any time you enter the fenced in area of non-enclosed manure storage. If retrieval is needed, this equipment will improve the possibility of a successful rescue.

Warning signs should be placed near gates and posted on all sides of the non-enclosed manure storage.

- Never work alone. The second person's role is to summon help in an emergency and assist with rescue without entering the manure storage.

- Move slowly around unenclosed manure storages as the ground can sometimes be uneven and may cause a person to trip or stumble.

- Understand equipment being used and have emergency shut-down procedures prepared.

- If equipment malfunctions or maintenance is required during agitating or pumping of the manure, shut all equipment off and remove it from the manure storage before servicing or repairing.

- If you feel unsure or uncomfortable with what you are getting ready to do near the manure storage; wait a moment and reconsider the action, contact a supervisor or farm manager, and review the situation before proceeding.

- Be prepared to call 911 in case of an emergency. Being prepared includes providing specific directions to the site of the emergency, accurately describing the incident, and number of victims.

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