Manure Storage Safety… Don’t be Complacent

Tracey Erickson, SDSU Dairy Extension Field Specialist
It can happen to You and Me…

• **February 10, 2004** – *Watertown Public Opinion, press release…*

• Lake Preston, SD – Kingsbury County authorities Monday released the cause of death in a weekend farm accident that claimed a father and son.

• Wayne Odegaard, 57, and his 28-year-old son, Josh died Saturday while working at the family’s rural Lake Preston hog barn and inhaling methane gas, Kingsbury County Sheriff Charles Smith said. The two were working in an underground lift station pump pit near a hog lagoon in an attempt to fix a freezing pipe in the pit.

Establishment of a Safety Hierarchy

Gases & Other Hazards

Ventilation, Guards, Fencing, Calibrated Toxic Gas Sensors

Proper Signage, Understand labels, Written, SOP’s

Employees & Family 911, Dangers and SOP’s

Gas masks, respirators, safety glasses, harnesses, hearing protection, gloves, foot wear

Remove Hazard

Safeguards

Warnings

Training

PPE

~Larson, et al., 2017
Hazard - Toxic Gases

- **Methane**
  - CH₄
  - Displace O₂ - Lighter than air
  - Flammable
  - Odorless
  - Top of Pit
  - Death by suffocation
  - Maintain O₂ levels above 19.5%

- **Carbon Dioxide**
  - CO₂
  - Displace O₂ - Heavier than Air
  - Odorless
  - Bottom of Pit
  - Death by suffocation
  - Maintain O₂ levels above 19.5%

- **Hydrogen Sulfide**
  - H₂S
  - Toxic in Low concentrations
  - “Rotten egg” smell at low concentrations
  - High concentrations – paralyze olfactory senses
  - Heavier than air
  - Biggest concern when agitating
  - Dizziness, headache, nausea, respiratory irritation, unconsciousness, Death

- **Ammonia**
  - NH₃
  - Irritating to eyes, respiratory tract, and mucous membranes
  - Released during storage & agitation
  - High concentrations fatal
Hazardous Gases- Open manure storage

Agitation – gases free to disperse with NO wind.

Decreasing Gas Concentration

WIND

Lower Concentration

Low Concentration

High Concentration
Hazardous Gases - Barns Pits

Concentrations can still be toxic

Under barn manure storage

omafra.gov.on.ca

~Larson, et al., 2017
Hazards - Other

• Unstable Ground –
• Drowning –
• Remote location -
Safeguards

• Ventilation –

• Guards on Equipment

• Fencing

• Calibrated Toxic Gas Sensors
Warnings

- Proper Signage
  - English, ESL Considerations
  - Visual Symbols
Warnings

- Labels
- Written Manure and Emergency SOP’s

Manure Gas Safety Checklist
Training

• Train Employees & Family

• Dangers – Gases, Drowning, No Horseplay, No Smoking, Equipment

• 911 – Address & Location on property
  - ESL considerations,

• SOP’s - Safeguards, Operation of safety equipment – harnesses, calibration of sensors, breathing equipment, PPE’s
Training

• All work handling manure should be done in pairs.

• **2nd Person** should **NEVER, EVER** enter the area attempting to rescue someone!!
  - Call 911
  - Lift person out with Harness

• NO ONE should enter manure holding area without proper training.
  - Respirator (fitted & properly selected w/ Oxygen)
  - Harness
  - Gas Sensor
  - Area properly ventilated
PPE’s – Personal Protective Equipment

Figure 3. The only safe way to enter a manure pit

SAFETY HARNESS
MUST BE WORN
What would you do different?
What would you do different?
References & Resources Available


Thank you…
Questions??????

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