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Iowa Farmer Today

Safety Watch: Plan now for safe manure handling

By Stephanie Leonard Mar 11, 2017

Steve Eickert works with a group to promote safe manure handling. The orange device at his collar is a personal gas monitor that alerts of during transfer and pumping.

Photo by Stephanie Leonard

Pit openings are risks for falls, asphyxiation and drownings.

Photo by Stephanie Leonard

Steve Eickert, of Andover, Iowa, is planning ahead to ensure safety for employees, pumping contractors and himself a few weeks from now when work gets underway to transfer and apply 1.2 million gallons of manure stored in the pit under his cattle confinement building.

Eickert is among several livestock feeders and commercial applicators working together to improve safety and increase awareness of deadly hydrogen sulfide (H2S) gas released during manure handling.

The group was spearheaded by Eickert's neighbors, Sherril and Jason Johnson, whose husband/father and a young employee died in 2005 from H2S exposure in a pit.

Sherril explains, "I don't want anyone to have to go through what we have been through."

Signage and security

One of Eickert's concerns is visitors, delivery personnel or contractors — anyone who could come onto the farm but be unfamiliar with the hazards.

He's focusing on two levels of signage.

"There need to be signs up at the entry to all confinement buildings (or any manure storage structures) that warn of the danger of gases during agitation and pumping," Eickert says. "Those should be up 365 days a year. And then during agitation, a second warning should be put out that says 'Manure Pumping in Progress — STAY OUT.'"

He put a magnetic placard at the end of his open confinement building. For the pumping-in-progress warning, he's considering a folding or saw-horse-style sign to put in the walkway approaching the

pump-out — “something they have to see and address before they go further,” he says.

For haulers and applicators, signage should warn against H2S gas in the tank and outside the tank near the hatch opening.

Fatalities have occurred when individuals leaned over manure pit or tank openings and were overcome by H2S, falling into the slurry. Even when gas levels are safe, a simple stumble, loss of balance or slip on wet slats has disastrous results if the fall is toward an unprotected opening.

Eickert relates fall prevention examples from his prior work in construction, manufacturing, and transportation to the risks working around unprotected pit openings. It was standard practice in other industries to cordon off floor or surface openings. Workers wore harnesses and lanyards to stop their fall and provide a means for retrieval.

Eickert urged others at a February meeting to cordon off pit openings with gates, railings or a cable. He is considering using cables and high-visibility safety tape to prevent falls into the 4x12-foot pit access at his site.

Other options include covering the open area on either side of the pump with heavy material that won’t slip or shift. Putting two large pallets over the hole on either side of the agitator and screwing a couple boards to them to keep them in place could also serve the purpose.

H2S monitors

Hydrogen sulfide's lack of warning properties, unpredictable release and high toxicity make investing in affordable, low-maintenance gas monitors a prudent decision.

A wide selection is available through industrial supply companies online and at regional safety supply stores, ranging from lower cost, single-gas monitors designed to be worn on the body to more expensive multi-gas monitors with sensors that detect and alert for up to four hazardous conditions (e.g., oxygen level, explosive gases, H2S, carbon monoxide).

The Johnsons, Eickert and members of their local safety group rented a multi-gas monitor and purchased several models of single-gas H2S personal monitors through a local industrial safety supplier. They used them daily to complete pumping and application work last fall.

While different models had different features, power supply and maintenance requirements, the group preferred the Single Gas Clip Plus for H2S made by Gas Clip Technologies for daily personal use (SGC Plus, # SGC-P-H, under $200).

A compatible IR link reader communicates with the monitor and allows data downloads of alarm "events" to a computer.

A glance at the display shows in-the-moment gas concentration up to 100 ppm, the level Immediately Dangerous to Life and Health (IDLH). At this concentration, the rotten-egg odor associated with low concentrations of H2S is absent, making it impossible to recognize dangerous situations without a monitor.

Eickert worked at the pump-out and wore his monitor daily last fall; he also used it in the pen to observe concentrations in different areas. His hauler wore a monitor, and an extra one was kept available for additional personnel on site.

The results were informative and compelling. He attested to the rapid and unpredictable rise of H2S concentrations, prompting him to move out of the area fast when levels reached 80 ppm.

“I didn’t fully realize the volatility and inconsistency of H2S, not until I got the monitors. Then I realized the nature of the beast and that the odds are against you” without them, he said.

Do research and planning to consider signage, pit openings and gas monitors now, so your crew and family are protected on Day 1 when pumping starts.

For more information, visit www.public-health.uiowa.edu/gpcah/manure-gases/.

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