Great grain bin safety gives you peace of mind

Last week was designated Grain Bin Safety Week for the country. Bin safety is important to our area because outside of the port of Toledo, Hancock County has the largest grain storage capacity of any county in Ohio (commercial and on-farm combined).

It is a common practice for local farmers to store corn in on-farm bins after harvest because grain prices often increase in the spring. This may not be the case this year because of the large amount of prevented planting acres of corn, which caused a grain shortage for local processors and pushed up local prices at harvest.

Farmers that stored grain last fall may need to be more cautious this year before entering bins. The late planting conditions from wet weather, along with variable conditions during the growing season, created a situation where harvested grain was at different stages of maturity and had higher moisture content compared to most years.

In some situations, grains were harder to dry or took longer to dry. Grain that goes into the bin with higher moisture content can freeze or bind, affecting grain flow efficiencies.

Condensation during drying and storage processes can also create wet surfaces where bin fines accumulate. Bin fines are little broken pieces of grain. Accumulation of fines can form a bridge across the bin surface or clump along the bin walls.

Bridged grain is a condition where a hollow cavity is created under a clumped layer of grain. The surface over the cavity appears hard and can be extremely difficult to dislodge. The risk in this situation is for the entrant to fall when the grain bridge breaks and become buried under several feet of grain.

Another situation that may occur in bins is called a vertical mass collapse. Grain can create a vertical mass along the sidewalls of the bin due to the added weight of the bin fines binding or poor grain quality. The risk for the entrant comes when the accumulated grain collapses like an avalanche around them.

A farmer not taking precautions may try to break up clumps of grain in bridges and bin walls and potentially become engulfed. It is not easy to pull a person out of grain. The rescuer must be able to pull the weight of the victim and the force of the grain around the body.

As grain engulfs the body, exerts a force on the lungs and internal organs. When a person exhalates, the grain fills in tighter around the chest. After each breath, lung capacity is diminished by compression from the grain. Eventually, the body cannot move the grain away to maintain the necessary breathing rate to survive.

Suffocation is the leading cause of death in grain storage incidents. A death from grain engulfment is traumatic on families and the community. I can relate: My daughter-in-law lost her father as a young girl from a grain accident in Mercer County.

Best prevention of grain accidents is a no-entry policy. However, entry is required at times to check the condition of the grain and to deal with potential problems such as insects and spoilage.

When entering a bin with grain, use the following safety procedures:

- Prevent any equipment associated with the bin from start damage while a person is inside by locking it out or removing it.
- Have an observer outside the bin and maintain constant visual communication during entry.
- Wear a harness and life line for fall protection.
- Always be aware of your surroundings and changing conditions while completing tasks inside the bin.
- Do not bypass or dis- mantle guards.
- Monitor the air quality in the bin.

Preplanning for accidents is also important. Having an emergency action plan in place will save critical time for first responders to get to an entrapment or engulfment situation. A preplan should include the following items:

- Know which fire departments in your area have been trained in grain-bin rescue and where the nearest grain rescue tube is located.
- Invite the local fire department to your grain facilities to review your safety procedures.
- Create a map of the property. Number and label bins; also label fuel and electrical energy sources and other features of your facility.
- Store schematics of your bin system in a known location with contact information for the vendor/installer.
- Post emergency numbers at the bin, including gas electric and other utility suppliers.

In the event of a grain incident, the following steps will expedite rescue:

- Turn off all augers.
- Call 911, then be ready to meet the rescue team and guide them to the emergency area.
- For victims engulfed inside a bin with an aeration blower, it is okay to turn on the air to increase ventilation; however, do not turn on any heat within the bin.
- Station someone at the bin entry to maintain visual and verbal communication.
- Remove any equipment that will create obstacles for rescue vehicles when they arrive. However, some equipment, like front-end loaders, skid loaders and portable augers, may be helpful and can be staged near the bin site.

Proper management of stored grains is as much a science as it is an art. Sometimes even the best grain managers will find it difficult to prevent spoilage, hot spots, condensation on the top layer and excessive fines. Even with variability of conditions, a safe entry approach is the best method to prevent injuries.

The safety information was provided by Dr. Dee Jepsen and Lisa Pfeifer from the Ohio State University Extension Agricultural Safety and Health team. Additional information may be found on grain bin hazards at https://ohioline.osu.edu/factsheet/aex-59155 and silo safety at https://ohioline.osu.edu/factsheet/aex-59151

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