Grain Bin Safety Talk

WHAT'S AT STAKE?

It's long been known that grain bins are one of the biggest safety hazards for farmers who work in and around them. Serious and life threatening dangers lurk throughout grain facilities, so it is imperative that farmers and workers are aware of these threats in order to protect themselves from serious injury and fatalities. Farm workers die by suffocation every year.

These workers, enter grain bins for several reasons, such as to monitor the grain condition, break a cluster layer or check the grain or bin during loading or unloading.

WHAT'S THE DANGER?

HAZARDS/DANGERS

Engulfing and Suffocation

Engulfing and suffocation are major hazards. One of those being that bins have an opening in the center where grain is pulled from, so when the door is opened and grain is being pulled out, the grain on the inside is pulled down. Workers in the bins can become engulfed and suffocated in mere moments. Alternatively, if a worker is pulling grain that is vertically crusted inside the bin, this can cause an "avalanche" of grain that can also engulf and suffocate. Grain that is crusted on the surface can create holes underneath, called bridging; an unbeknownst farmer can climb into the bin without seeing these voids and fall under the surface.

Any time you enter a grain bin, be aware of constantly changing conditions and possible hazards – like lowered oxygen levels and toxic gases – all which can cause serious injury or death. Toxic gases can present themselves from fumigants that are used to

prevent insect infestation while grain is stored in bins. It is recommended to wear appropriate respirators when the aforementioned situations cannot be avoided.

An unintentional cause of death occurs when coworkers try to save a person from the bins in an accident. Due to grain being more resistant and having a strong pulling force, rescuers are discouraged from any attempts to save their coworker. Instead, OSHA recommends having a rescue system designed and built.

HOW TO PROTECT YOURSELF

SAFETY PRECAUTION/PREVENTION

Whenever possible, don’t enter a grain bin. If you must enter the bin, as a farm owner/operator you should:

- Break up crusted grain from the outside of the bin with a long pole. When using a pole, check to see that it doesn’t come into contact with electric lines.
- Wear a harness attached to a properly secured rope.
- Stay near the outer wall of the bin and keep walking if the grain should start to flow. Get to the bin ladder or safety rope as quickly as possible.
- Have another person, preferably two people, outside the bin who can help if you become entrapped. These people should be trained in rescue procedures and should know and follow safety procedures for entering the confined space.
- Grain fines and dust may cause difficulty in breathing. Anyone working in a grain bin, especially for the purpose of cleaning the bin, should wear an appropriate dust filter or filter respirator.
- Stay out of grain bins, wagons and grain trucks when unloading equipment is running.
- If it is necessary to enter the bin, remember to shut off the power to augers and fans. It is a good idea to lock out any unloading equipment before you enter a bin to prevent someone from unintentionally starting the equipment while you are in the bin.

- Children should not be allowed to play in or around grain bins, wagons or truck beds.
- Where possible, ladders should be installed inside grain bins to for an emergency exit. Ladders are easier to locate inside a dusty bin if there are brightly painted stripes just above or behind the ladder.

More Safety Information

- Grain being stored is removed through an opening in the center of the bin. This process pulls the grain down and toward the center of the bin. A depression in the middle of the grain is formed.
- Grain wagons can be a hazard, particularly to youngsters. The grain in a grain wagon acts just like the grain in a bin when moving. It pulling down on whatever might be in the grain and children are not strong enough to pull themselves out of the moving grain.
- Vertically crusted grain can collapse on a farmer attempting to break it up while in the bin.
- Vertically crusted grain can collapse on a farmer attempting to break it up while in the bin.
- Grain crusted on the surface can be over voids (open spaces) and a person’s weight can cause the grain to collapse and the person can be covered with grain.
- If someone is in the bin when the grain is removed, they, too, will be pulled down and toward the center of the bin. If grain continues to be removed the person will be covered with grain in a matter of seconds!
- Persons pulled down into the grain and pulled toward the center of the bin. Once a person as been pulled into the grain above their knees, they cannot get out of it by themselves. The pressure of the grain on their legs and the grain flowing down as they try to move gives them no place to go.

GRAIN BIN SAFETY TIPS AND DANGERS

- Today’s large grain augers can transfer from two to four

times as much grain as augers of the past. Your body can become completely submerged in about 8 seconds, leaving you helpless.

- Crusted, spoiled and wet grain associated with wet harvest (as well as remaining grain from last year's wetter harvest) can also contribute to grain bin suffocation. As grain is removed from the bin it can bridge and form a cavity under the crusted surface. There's little chance of survival if you are walking on the surface when the crust breaks and you plunge into flowing or hot grain.

Reminders and Safety Measures

1. **Keep children out of grain bins,** beds and wagons at all times. Grain flow can cover them before anyone realizes what is happening.
2. **Lock out the control circuit before entering** a bin, whether or not grain is flowing. Be especially careful around automatic unloading equipment.
3. **Have three people involved when you enter** a grain bin, and enter with a rope and safety harness. In the case of an accident, it will take two people to lift you out using the equipment.
4. **Don't count on someone outside the bin** to hear your shouted instructions. Equipment noise may block out your calls for help.
5. **If you become trapped in a bin** of flowing grain with nothing to hold onto but you are still able to walk, stay near the outside wall. Keep walking until the bin is empty or grain flow stops. If you are covered by flowing grain, cup your hands over your mouth, and take short breaths until help arrives.
6. **If another person becomes submerged in grain**, assume he is alive and begin rescue operations immediately. Turn on the fan to move air into the bin. Cut large holes around the bin, approximately 5 ft. up from the base, to empty grain. (If you cut too many holes, the bin may collapse on you.) Use the front-end loader of a tractor, an abrasive saw or an air chisel. A cutting torch is a last resort – it could

cause a fire or an explosion from dust and fumigant residue.

7. **Never attempt a rescue** by going into the grain yourself. Call 911. Your local emergency team has the training and equipment to do the job safely.

Question Checklist

- Has equipment been powered off at main disconnect and locked and tagged?
- If there is potential for combustible gas, vapors or toxic agents, has the oxygen level been tested with a gas monitor?
- Is a rope and harness available for anyone entering a grain bin?
- If a worker enters, is an observer present and in communication?
- Is the observer trained and able to initiate rescue?
- Is rescue equipment provided and specifically suited for entry?
- Are there NIOSH approved masks or respirators available?
- Are grain and feed bins clearly labeled to warn of the hazards of flowing grain or feed?
- Do all bins have permanent ladders inside and outside?
- Are hearing protectors available for wearing around noisy equipment?
- Are equipment guards and shields in place and in good condition?

FINAL WORD

When you work with grain – loading it, unloading it and moving it from bin to bin – you need to know about the hazards of flowing grain and how to prevent injury.