

Avalanches, Auger-Induced Downward Force Can Make Grain Bins Deadly

LITTLE ROCK, ARK.

A bin full of grain may appear inert, but weight, friction and flow of grain can become deadly within a matter of seconds.

According to Texas A&M University Extension, more than 200 agriculture workers have died from grain bin suffocation over the past 30 years.

As an auger unloads grain at the bottom of a bin, gravity forces the grain at the top to flow downward. The weight, friction and granular nature can turn the grain pile to quicksand. And the faster it's processed, the more quickly a person can become buried and suffocate.

"A 6-foot-tall person can be covered with grain in 11 seconds or less," said Karl VanDevender, extension engineer for the University of Arkansas Division of Agriculture.

It's the same with a steep pile of grain stacked inside the bin, he said. Even if the wall of grain appears perfectly safe, one scoop of grain removed can cause an avalanche.

There's also the risk of "farmer's lung" due to long-term exposure to airborne grain dust, microbial spores and inadequate air inside a grain bin. This can lead to an irreversible lung condition and may eventually cause death.

Workers may be tempted to enter a grain bin for several reasons, including personally inspecting the harvest, breaking up crusted or "bridged" grain, cleaning the bin, or retrieving a tool. Resist that temptation until help arrives.

VanDevender has six rules to reduce the risk of injury or death:

Rule No. 1. – Don't work alone. Have a minimum of two other crew members ready to assist in rescue, and practice line-of-sight hand signals for help – it can be difficult to hear with equipment operating.

Rule No. 2 – Never enter a bin of flowing grain. First stop the flow of grain and then take appropriate precautions before entering. No piece of equipment is worth your life.

Rule No. 3 – Be aware of a grain bin's history

before entering. Always stay in communication with co-workers and get help if there is any problem with the bin.

Rule No. 4 – Lock out/tag out related power equipment before entering any bin. Lock the lever "off" on the control box with a padlock and keep the key in your pocket. Advise others that you will be entering the bin, and personally ensure that no one will engage power or activate augers until you come out.

Rule No. 5 – Ensure a safe rescue: don't get trapped, too. Preventative measures should include ladders or scaffolds, a body harness, tether, breathing apparatus and a minimum of two other crew members to assist in rescue.

Remember, grain creates friction – 900 pounds of pull is required to raise an average adult submerged in grain. Grain resistance typically pulls a person's shoes off when he or she is drawn out, but it can also cause joint dislocation or paralysis. The grain must be removed from around the person to get him or her out. This can be done via holes created in the bin or by creating a cofferdam around the person made of plastic barrels or sheets of plywood.

Rule No. 6 – Only enter a grain bin as a last resort. Always attempt to fix a problem without having to enter the bin itself.

Remember to make specific accident response plans with employees and anyone, such as a trucker, who frequently works around the facility.

"Each person has the responsibility to be aware of potentially unsafe conditions and to take steps to remedy them," said VanDevender. "If you use a team approach, the potential for entanglement or suffocation is greatly reduced."

Fact sheet FSA-1010, "Suffocation Hazards in Grain Bins," is available online at http://www.uaex.edu/Other_Areas/publications/PDF/FSA-1010.pdf. For more information on farm safety, visit www.uaex.edu or contact your local county agent. Δ



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