Protecting Against Grain Engulfment



Safety Talk

What's at Stake?

Twenty seconds – that's all it takes for a grown man to become engulfed by grain in a storage bin or trailer used to haul grain. And even the strongest person can't overcome the weight and force of that grain. Suffocation from engulfment is a leading cause of death in grain bins, and the number of these deaths continues to rise. These fatalities are preventable if employers follow safe work practices and provide training and equipment.

What's the Danger?

You can be engulfed or suffocated if you enter a bin or trailer and:

- **Stand on moving/flowing grain.** Entering a bin or trailer while the auger is operating is dangerous. As the auger unloads the bin, grain flows to the outlet and is released, causing the grain above it to flow in and replace the released grain. If you stand on flowing grain, your weight forces the grain to flow more quickly, causing you to rapidly sink into the grain. At the average flow rate for grain, a 6-foot tall worker can be covered with grain in 11 seconds and would be unable to free him/herself after the first 5 seconds.
- **Stand on or below a grain bridge.** "Bridging" occurs when grain clumps together, because of moisture or mold, creating an empty space beneath the grain as it is released. If you step onto the bridge, it can cave in under your weight, burying you in the empty space. Standing under bridged grain is also hazardous because the grain can cave in unexpectedly, bury and suffocate you.
- **Try to loosen a pile of grain and the grain caves in on you, or you stand next to a pile of grain on the side of the bin and the grain unexpectedly caves in.** Even though a wall of grain may appear safe, one scoop of grain may weaken support and cause the grain to cave in. If you are knocked off balance by the weight of grain, you can be covered quickly and suffocate.
- **The atmospheric conditions inside the bin are at dangerous levels.** Inside a storage bin, there is a potential for oxygen levels to be at unsafe levels. Also, there is a potential for hazardous gases to be present. Because such hazardous atmospheres may be present inside a bin, you could quickly

suffocate and die.

How to Protect Yourself

- Never enter onto or below a bridging condition, or where grain is built up on the side of the bin.
- Do not walk on grain to make it flow. Instead use a pole or other tool, from a safe location (i.e. not on or under a grain bridge) to free and move stuck grain.
- Wear a body harness when entering a bin from a level at or above stored grain, or when you walk or stand on stored grain. The harness should have a lifeline positioned and of sufficient length to prevent you from sinking further than waist-deep in grain.
- Grain should not be emptied or moved into or out of the bin while workers are inside because it creates a suction that can pull the worker into the grain in seconds. De-energize (turn off) and disconnect, lockout and tag, or block off all energy sources that present a danger, particularly grain-moving equipment.
- Check that rescue equipment, specifically suited for rescue from the bin, is in place and working.
- Ensure an observer trained to aid and perform rescue operations, is outside the bin prior to entry.
- Ensure communications (visual, voice or signal line) are maintained between the observer, you and any workers who enter the bin.
- Test the air within a bin for oxygen content and the presence of hazardous gases before entry.
    - Use ventilation until any unsafe atmospheric conditions are eliminated.
    - If toxicity or oxygen deficiency cannot be eliminated, you must wear an appropriate respirator.
- Finally, never enter a bin until necessary permits have been issued.

Final Word

Grain engulfment is a dangerous and all too frequent occurrence. Fortunately, you don’t have to get sucked in to a hazardous situation if you follow safe work practices and use proper protective equipment.