

Grain handling is a hazardous industry where workers can be exposed to numerous dangers, many life threatening. Hazards include fires and explosions from grain dust accumulation, suffocation from engulfment and entrapment in grain bins, falls from heights, and crushing injuries and amputations from grain handling equipment.

- Suffocation is a leading cause of death in grain storage bins. Suffocation can occur when a worker becomes engulfed (buried) by grain as they walk on or attempt to clear grain built up on the inside of a bin.
- Grain dust explosions are often severe, involving loss of life and substantial property damage. Grain dust is the main source of fuel for explosions in grain handling. It is highly combustible and can burn or explode if enough becomes airborne or accumulates on a surface and finds an ignition source (such as a hot bearing, overheated motor, misaligned conveyor belt, and/or nearby welding, cutting or brazing).
- Falls from height can occur from many walking / working surfaces throughout any grain handling facility. Examples include structures, roofs, unguarded holes, wall and floor openings, ladders and platforms. Falls can also occur as workers move between the vertical exterior ladders on grain bins and the bin roof or bin entrance.
- Mechanical equipment within grain storage structures, such as augers and conveyors, can create serious entanglement and amputation hazards. Workers can easily get their limbs and clothing caught in nonguarded moving parts of the mechanical equipment.
- Storage structures can develop hazardous atmospheres from gases given off from spoiling grain or fumigation. Workers may be exposed to unhealthy levels of airborne contaminants, including molds, chemical fumigants (toxic chemicals), and gases associated with decaying and fermenting silage.

Preventing Dust Explosions and Fires

- Develop and implement a written housekeeping program instructing how to reduce dust accumulations on ledges, floors, equipment and other exposed surfaces. Dust accumulations in housekeeping areas should not exceed 1/8 inch.
- Implement a preventative maintenance program with regularly scheduled inspections for mechanical and safety control equipment, which may include heat-producing equipment such as motors, bearings and belts.
- Minimize ignition sources through controlling hot work (electric or gas welding, cutting, brazing or similar flame-producing operations).
- Ensure wiring and electrical equipment suitable for hazardous locations are installed and inspected.
- Properly identify locations for dust collection systems to minimize explosion hazards.



Safety Precautions if You Must Enter a Bin

Whenever possible, don't enter a grain bin – but if you must enter the bin you should:

- From the outside of the bin use a long pole to break up crusted grain. When using a pole, check to see that it won't come in contact with electric lines.
- Wear a harness attached to a properly secured rope and anchor point.
- Stay near the outer wall of the bin when wearing a harness attached to a properly secured rope and anchor point. Keep walking if the grain should start to flow. Get to the bin ladder as quickly as possible if available.
- Where possible, ladders should be installed inside grain bins 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.
- 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 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 respirator.
- Stay out of grain bins, wagons and grain trucks when unloading equipment is running.
- If it is necessary to enter the bin, before entering shut off the power to augers and fans. A good practice is to lockout 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.
- Prohibit anyone from walking down grain and similar practices where an employee walks on grain to make it flow.
- Train all workers on the specific hazardous work operations they perform when entering and working inside grain bins.
- Before entering a bin or silo, sample the air for the presence of combustible and toxic gases to determine if there is sufficient oxygen. Vent hazardous atmospheres to ensure that combustible and toxic gas levels are reduced to nonhazardous levels, and that sufficient oxygen levels are maintained.
- Before entering a grain bin or silo do a safety check to confirm the above precautions are in place.