

Upright or tower silos are long-term storage facilities for animal feed which range in diameter and height but, by the nature of their design, fit OSHA's definition as confined spaces. A confined space is that which has limited means of entry/exit, is large enough for a person to enter and is not designed for continuous occupancy. Some of the hazards in this type of a confined space are hazardous atmospheres, engulfing materials, mechanical equipment, electrical fire/shock, temperature extremes and "gravity" (falls).

There are two common types of tower silos: (1) conventional – generally constructed of concrete block or poured, wood, tile or steel which allows air to enter the silo from the top and (2) oxygen-limiting – which are constructed of poured concrete designated with a star near the top ring or steel with a glass lining – blue Harvestore type. Although the atmospheric conditions inside these two silo types differ, many of the other hazards associated with tower silos are the same.

Hazards associated with tower silos can be separated into two main categories: initial filling of the silo with feed (hay/corn) and unloading feed from the silo for animal consumption.

Hazards

1. Silo filling and unloading equipment: guards missing/damaged
2. Toxic gases (NO₂ & CO₂) produced during fermentation
3. Ladders
4. Confined space entry
5. Electrical

Recommendations

Minimum Compliance:

- Tractors and equipment used during silo filling and unloading processes have guards in place and in good condition. Routine inspection and repairs completed.
- Ladders have safety cages and are in good condition. Missing rungs are replaced.
- Warnings (No Entry) posted on oxygen-limited silos. Employees never enter this type of silo.
- Lights in feed room have explosion-proof covers.
- Silos are ventilated 20-30 minutes prior to entry.
- Electrical cords inspected regularly for frayed areas; repairs done regularly.
- Employees are trained in recognizing toxic gases and symptoms of exposure, wearing PPE and proper entry procedures.

Intermediate Compliance: (In addition to the above recommendations.)

- Outside ladders have safety cages and a resting platform every 30 feet.
- There is a "No Entry" policy for 2-3 weeks after the conventional silo filling is completed.
- Silo chute doors on conventional silos are regularly inspected and replaced when damaged (rotted).
- Doors in place on feed room and posted to keep unauthorized persons out.
- Electrical boxes can be locked for repair.
- Silo unloading mechanism is regularly inspected. Employees work in pairs when maintenance/repair work is completed.
- Smoking is prohibited in the feed room.

Best Practices: (In addition to the above recommendations.)

- A written confined space entry policy has been developed and employees are trained in entry procedures and rescue techniques.
- Lock out/tag out policy is in place and procedures are used when maintenance or repairs are completed.