

Silo and Grain Bin Safety Fact Sheet

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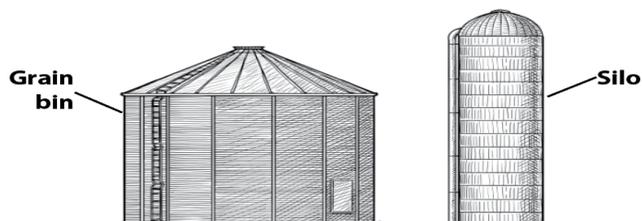
Silos and grain bins are two farm structures that are often mistaken for one another, but they serve different purposes:

- **Silos** usually store fermenting materials like **silage** (wet plant material like chopped corn or grass) for dairy cattle and other livestock feed.
- **Grain bins** store **dry grains** such as corn, wheat, or soybeans that are ready for feed, food, or fuel use. The dry grain in bins are often part of a grain-handling or elevator system.



Why the confusion? At first glance, these structures look similar on the outside, but here's a closer look at their differences:

- **Silos** are tall, narrow towers made of concrete, metal, or both. You'll usually see them on big farms or feed operations. They're built strong to handle the weight of silage and the gases that form during fermentation. Many have a chute or unloader to help move the silage out easily.
- **Grain bins** are shorter and wider than silos, with peaked roofs and vents to keep moisture out. Usually made of corrugated steel, a grain bin's main job is to keep grain dry and in good shape until it's sold or processed.



Silo and grain bin shared hazards

Both silos and grain bins can be dangerous to enter. These structures share hazards listed in OSHA regulations [29 CFR 1910.272, Grain handling facilities](#), and [29 CFR 1910.146, Permit-required confined spaces](#). These hazards include:

Engulfment and entrapment

Moving grain or silage can act like quicksand. Once you start sinking, you can get buried within seconds. To prevent engulfment or entrapment:

- Never walk on moving or bridged grain.
- Turn off and lock out all equipment before entry.
- Always wear a full-body harness with a lifeline attached to a fixed point outside the structure.
- Have a trained observer present any time someone enters a bin or silo.

Falls

Falls from ladders, catwalks, and bin roofs are common in both structures.

- Always use fall protection when working from heights.
- Keep ladders and guardrails in good shape.
- Avoid working in wet, icy, or windy conditions.

Mechanical injuries

Augers, conveyors, and sweep arms move grain quickly and can grab your clothes or body.

- Never reach into moving equipment.
- Keep guards and shields in place.
- Turn off and lock out equipment before entry or maintenance.

Hazardous atmospheres

Both bins and silos can contain toxic gases, low oxygen levels, or explosive dusts.

- Test the air before entry.
- Ventilate confined spaces before and during entry.
- Use a respirator if air testing shows danger.



Silo-only hazards

Silos pose extra risks that may not appear in grain bins. These hazards are covered under **general industry safety rules**. (See [29 CFR 1910 Subpart D, Walking-working surfaces](#), and [Subpart E, Exit routes and emergency planning](#)):

- **Toxic gases:** Fermentation produces nitrogen dioxide and carbon dioxide, which can reach deadly levels. Vent silos well before and during entry and use supplied-air respirators if gases are detected.
- **Structural collapse:** Old or damaged silos can fail due to corrosion or tip due to uneven loads. Check silos often for cracks, bulging, or shifting.
- **Heat stress:** Fermenting silage can create high humidity and heat inside silos. Work in teams, take breaks, and stay hydrated.

Grain bin-only hazards

Grain bins pose unique hazards due to the dry, dusty material inside. These include:

- **Dust explosions:** Grain dust can catch fire easily. Keep dust levels thin (below $\frac{1}{8}$ inch). Control heat and sparks, such as from hot bearings and welding.
- **Frequent entry:** Workers go into bins to check grain quality or clear clogs, which increases the chance of entrapment. Use entry permits and stay in touch by radio or line of sight.
- **Mechanical hazards:** Unloading with augers and conveyors create suction that can cause entrapment. Always turn off and lock out equipment before entering.

Follow these steps before entry

Follow confined-space entry procedures.

- Lock and tag all mechanical systems.
- Test the air for oxygen and toxic gases.
- Ventilate thoroughly.
- Wear a full-body harness with a lifeline.
- Keep a trained observer watching and talking with you.
- Use an entry permit after finishing all safety checks.

Follow OSHA standards

For full OSHA requirements, see:

- [29 CFR 1910.272](#) – Grain handling facilities.
- [29 CFR 1910.146](#) – Permit-required confined spaces.
- [29 CFR 1910.147](#) – Control of hazardous energy (Lockout/tagout).
- [29 CFR 1910.28](#) – Duty to have fall protection and falling object protection.
- [29 CFR 1910.212](#) – Machine guarding.



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