



Grain Handling Safety

What if “IT” happens to you?

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The Facts

- **Farming...#6** on US Bureau of Labor Standards' list of most dangerous occupations (adults and children)
- Estimated **300 US** children die each year in farming accidents
- **Under 16** account for **20%** of farm fatalities
- Not to mention permanent disabilities (**estimated 1000 each year**)



Grain Handling

- 77% of grain bin accident victims unloading bins.
- More than 40% of accidents involved grain out of condition.
- Trapped in 4-5 seconds, buried in 20 seconds.



How does it happen?

- Three ways it can happen; all are associated with unloading:
 - **Flowing Grain**
 - **Collapse of a Grain Bridge**
 - **Avalanche of a Vertical Grain Wall**
- Grain Bin or **Gravity Wagon...**



Flowing Grain



2 – 3 seconds
for engulfment

Collapse of grain bridge



Out of Condition Grain

Victim may travel 4 – 5 ‘





Avalanche of grain wall



Vibration!!!



Prevention

- **Warn** family, employees, visitors of dangers.
- Place warning **decals** on all bin entrances, gravity wagons.
- Use “**lock out/tag out**” procedures prior to entry of bin



Prevention

- Attempt to do **work from outside**.
- Install **ladders** inside/outside of all bins.
- Wear **safety harness** tied off, or boatswains chair.
- **Don't walk on grain**.



Prevention

- 3 people if entering bin.
- Stay above height of grain.
- Post bins.
- Assume hazardous atmosphere.
- **Monitor children always!!!!**
(even older children).



Rescue

- Always assume the victim is **alive**.
- **LOTO**.
- Emergency **Notifications**.
- Establish **scene control/prevent entry**.
- Safely assess **position/location of victim**.



Rescue

- Reassure victim.
- If possible and safe, secure and tie off victim.
- Manage vibration.
- Start aeration. No heat.
- Ensure no fumigant present.



Rescue

- Contact an emergency **rescue team or fire department.**
- **Backboards** may fit through bin entries to be used as grain retainers.
- Cold grain may have effect of cold water drowning. If victim out within 5 hours, **attempt CPR.**



Rescue

- **Avoid putting additional pressure on victim:**
 - Stay away from area immediately around victim until retainers in place.
 - Use ladder, plywood, or other material to distribute weight.
 - Keep unnecessary personnel out of grain bin.



Rescue

- **Protect rescuers:**
 - Attach safety lines and harnesses (connected to anchorage above grain) to rescuers.
 - Use respiratory protection: dust filter masks, filter respirators, SCBA.



Rescue

- ***DON'T TRY TO PULL VICTIM OUT!!!***
 - 53 lb. child, knee-deep grain = 71 lbs.
 - 53 lb. child, shoulder-deep grain = 240 lbs.



Rescue

■ Cut holes in bin, drain:

- Do immediately if victim completely submerged.
- Cut 3-4 holes symmetrically spaced around bin to avoid collapse. More holes for large bins.
- Observer to monitor grain flow.
- Control flow through openings; be prepared to stop flow.
- Use air chisel, power saw, tractor loader, or cutting torch.
- Drain grain uniformly from 2, 3, or 4 holes around bin.



Rescue

- **Construct retaining wall** if surrounding grain slope is above victim's head:
 - Use plywood, sheet metal, large trash cans with bottoms removed, or heavy cardboard cylinders to keep grain from victim's chest area or higher.
 - Build self-supporting box/brace walls to prevent collapse.
 - Scoop or vacuum grain to knee deep or lower around victim.
 - Rock side to side, don't pull.



Rescue

- **Talk** with victim if possible.
- ***Don't Give Up!***

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BE PREPARED

- Have **emergency numbers** handy.
- **Know where everyone is ALWAYS.**
- Talk about a **plan** ahead of time.
- **Get training when available.**
 - Coming to OSU this summer!
 - First responder teams, producers, elevator personnel, and YOU!



Questions?



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