Grain Handling Safety

How does “IT” happen?

Carol Jones, PhD, PE
Stored Products Research and Education Center
Oklahoma State University
Grain Handling

- 77% of grain bin accident victims unloading bins...with out-of-condition grain.

http://www.startribune.com/deadliest-workplace-the-small-family-farm/327431751/
How does it happen?

- Three ways it can happen.....all are associated with unloading grain...
  - Flowing Grain
  - Collapse of a Grain Bridge
  - Avalanche of a Vertical Grain Wall
- Grain Bin or **Gravity Wagon**...
- Sadly....children playing around bins or wagons
Flowing Grain

- 2 – 3 seconds for engulfment
- Why is the grain flowing?
- Lock out/Tag out?
Collapse of grain bridge

Out of Condition Grain
Victim may travel 5 ft. or more
Avalanche of grain wall

- Vibration or movement
- Grain “lets go”
- Worker is covered
If Grain is in **good condition** ....

- Grain transports through the reclaim system properly
- No need to enter the bin!!

If workers aren’t in the bin, **entrapment doesn’t happen**!
Major Cause:
Out-of-Condition Grain!!!
What to look for...

- Poor grain quality going into the bin
- Quality **NEVER** improves in storage
- Goal:
  
  manage moisture and temperature
What to look for…

- Leaky structures
- Aeration systems
  - not designed properly
  - mismanaged
- Temperature cable malfunctions
Inadequate or plugged roof vents/exhaust fans

Roof Vents
Passive
Powered
What to look for...

- Insect Activity
What to look for...

- Poor sanitation practices
- Reclaim system malfunction or poor design
Be Prepared if Entering

- Proper equipment
- Harness and lifeline
- Lock out/Tag out
- Bin Entry Permits or checklists

Never...ever....ever.... work alone!
PREVENTION, OF COURSE: If Grain is in good condition....

- The only good accident is one that is prevented
- Good management
- Good training
- Good preparation
The Remedy?

Be Prepared and Be Informed
Got Questions?
Jcarol@okstate.edu

Home of World-Class Stored Products Research

Stillwater, Oklahoma