Lock Out/Tag Out Kit

I-CASH | Iowa's Center for Agricultural Safety and Health

The University of Iowa ▪ Iowa State University
Iowa Department of Agriculture and Land Stewardship
Iowa Department of Public Health ▪ Non-profits for Farm Health

Kit includes:

- Lock Out tag and zip ties
- Bin stickers
- Fact sheets

Visit *I-CASH.org* for more information

See back of page for Lock Out/Tag Out instructions and directions for Lock Out/Tag Out sticker placement

Lock Out/Tag Out (LOTO)

Notify people that equipment will be shutdown and locked out

Disconnect or isolate all energy sources

Attach the LOTO tag to the disconnect switch using the zip tie

Release stored energy

Test by trying to start the equipment

Begin maintenance/service work

When finished, clean up area of tools

Ensure all people are at a safe distance

Notify people of intended start-up

Remove zip tie and start-up equipment

The only person that should remove the zip tie and LOTO tag is the person who installed it

Please put the LOTO sticker on the bin near the stairs or wherever people will see it before entering the bin

Lock Out/Tag Out
Before Entry

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www.i-cash.org

Grain Handling Safety Coalition

Grain Storage Structure Entry Procedures

Train, Plan, Prepare – Act!

NO ONE

Should enter a bin if they cannot be protected against the hazards present!

1. **Train, Plan, Prepare - then Act!**
   - A. Train - workers on hazards, LOTO, entry, and responsibilities.
   - B. Plan - Bin entry plan, LOTO, Emergency Action plan
   - C. Prepare – policy, procedures
     - i. Who is responsible for the permit/checklist
     - ii. Who can enter bins & how it will be done
     - iii. Emergency action plan
   - D. Act – ***Rushing into a bin is NEVER the right answer!***
2. **Determine need for entry**.
   - A. Reason – routine (ex. temp monitoring) vs. Problem (ex. out of condition grain)
   - B. Task to perform – PPE, equipment, tools
   - C. Trained workers – entrant and observer
   - D. Explore alternatives to entry
3. **Determine if safe entry can be made.** Evaluate the conditions of the storage structure.
4. **Complete an entry permit or checklist**. A permit/checklist addresses critical safety issues.
   - A. Trained workers - ***Untrained workers should never enter bins!***
   - B. Atmospheric Hazard Potential
   - C. Grain Conditions
   - D. Equipment & Other Hazard Potential - ***LOTO***
   - E. Personal Protective Equipment Needs – Harness & Lifeline
   - F. Rescue Equipment Available
5. **Double Check.** Hazard mitigation in place for all identified hazards.
   - A. **LOTO**
   - B. Prepare sump gates/guards. Install immediately upon entry.
   - C. Rescue equipment available.
6. **Pre-Entry Meeting** – entrant, observer, supervisor (if different).
   - A. Top, Side, Bottom entry
   - B. Review tasks to complete and how to perform
   - C. Review present & potential hazards; how to eliminate or mitigate.
   - D. Review PPE needed, tools, equipment
7. **Entrant** – completes tasks. Continually reassess hazards, constantly communicate with observer.
8. **Observer** – Must NOT leave! If the observer has to step away, the entrant must exit.
   - A. Maintains constant communication – visual is best.
   - B. Controls the lifeline.
   - C. Knows how to call for help & initiate rescue from outside the bin.

No one should enter a bin without an observer present!

9. If a new hazard arises during entry, discontinue entry until the hazard is mitigated correctly.
10. Complete work, clean up tools, discuss any problems. Clean & Store PPE properly!

Failure to LOTO is leading cause of entry fatalities!

LOTO - LOCK OUT, TAG OUT - TRY OUT!

LOTO is a BEST PRACTICE! Implementing an effective LOTO program will prevent accidents, injuries and fatalities associated with entanglement hazards, flowing grain hazards, and other hazards typically encountered in grain handling environments.

1. Who should perform LOTO procedures?

In a commercial facility under OSHA regulations, there should be personnel authorized to perform LOTO and they should be named on the LOTO procedures. ALL employees MUST be trained on LOTO to ensure they understand the procedures and who is authorized to complete them.

***ONLY* the person who did the LOTO removes the lock and tag.** Consult your OSHA regulations for specific exceptions to this.

Producers should use LOTO on their farm. Educate employees and/or family of the meaning of the locks and tags to ensure no one removes them without permission.

2. When should LOTO be used?

Before any servicing or maintenance on equipment, prior to **ANY** bin entry, and in any other circumstances when de-energizing equipment is necessary to avoid hazards. **LOTO should be followed EVERY time in these situations.**

3. What equipment should have a LOTO procedure?

All equipment should have an LOTO procedure to ensure all the energy sources to a specific piece of equipment and how to disconnect the energy sources are clearly identified. Correct identification and labeling of breakers, circuits, etc. play a vital role in ensuring LOTO procedures are followed.

4. How do you do LOTO? What are the basics of an LOTO procedure?

1. Prepare for shutdown – Notify persons of LOTO.
2. Shut down machine.
3. Disconnect or isolate **ALL** energy sources.
4. **LOTO** - Install locks on energy sources & tag machines.
5. Release stored energy.
6. **TRYOUT** – test LOTO by attempting to start the equipment.
7. Begin maintenance/service work.
8. Finish - check machine & clean up area of tools.
9. Ensure people are safe distance.
10. Notify persons of intended start-up.
11. Remove lock out devices.
12. Start-up equipment & verify it is working normally.
13. Remove tags.

5. Where can more information be found?

A variety of resources are available to assist developing LOTO procedures. The OSHA website http://www.osha.gov/SLTC/controlhazardousenergy/program.html contains several resources including 2 sample written LOTO programs with sample forms, blank procedure forms to fill out, checklists and other materials that can be adapted for your workplace.

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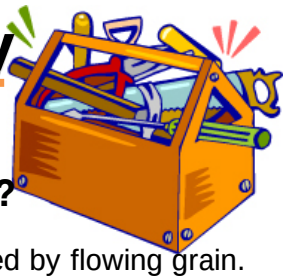
Let's Talk Lockout/Tagout - Bin Entry



What is Lockout/Tagout for Bin Entry?

Lockout/Tagout (LOTO) is used during bin entry to disconnect power sources to the unloading and conveying equipment of the bin. LOTO before entry protects entrants from engulfment and entanglement hazards associated with flowing grain, unloading augers and sweep augers.

How does it work?

Grain bins are emptied by a combination of gravitational and mechanical forces. Grain bins have openings in the bottom or along the sides often referred to as sump holes. When these holes are open, gravity pulls the grain downward through the holes into a conveyor or auger which moves the grain. When gravity no longer works, a sweep auger located in the middle of the bin rotates around to force grain into the sump holes, if equipped.

INJURY EXAMPLES:

#1 Glen entered the grain bin with the unloading equipment running to break the corn loose. When the clog cleared, the corn quickly began to flow, pulling Glen downward until he was completely under the grain. He suffocated and died.

#2 John was by himself cleaning out a grain bin. John stepped into a sump hole and fell. Another employee turned on the bottom unloading auger to unload the piles John had swept up. John's foot became caught in the auger and sustained massive injury.

What are the hazards?

Engulfment hazards are caused by flowing grain. As grain flows downward toward an open sump it forms a funnel. The pull of the funnel quickly draws a person down, entrapping the worker. An adult male can be engulfed by flowing grain within one minute.

Entanglement hazards most often occur with the unloading conveyors/augers. During unloading the sump holes are often unguarded exposing the moving conveyor or auger. When working inside a bin, a worker may inadvertently step into a sump hole or is drawn into the sump hole with the flowing grain and becomes caught in the conveyor or auger. Sweep augers have exposed moving parts due to their operation. Some portable sweep augers have exposed power transmission sources. Workers can accidently come into contact with the moving parts.

How could have these incidents been avoided? *Lockout and tagout all unloading equipment prior to bin entry.*

What other preventive measures should be taken during bin entry?

1. Always have an observer positioned outside the bin.
2. Guard sump holes upon entering if permanent guards are not in place.
3. Use a lifeline to prevent being engulfed more than waist deep.

Let's Talk about our Worksite

1. What are the LOTO procedures our workers are supposed to use prior to bin entry?
2. Who is responsible for ensuring LOTO is performed? How does an entrant ensure LOTO has been done prior to entry?
3. How do we protect each person involved in the bin entry process with LOTO?

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LOCKOUT/TAGOUT FOR BIN ENTRY

PREVENT

Engulfment & Entanglement Hazards

Lockout & Tagout

all unloading & conveying equipment

BEFORE

any bin entry.

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GRAIN BIN ENTRY HAZARDS

FACTS:

- When an auger starts you have 2-3 seconds to react
- After 4-5 seconds in flowing grain you are trapped
- After 22 seconds you are completely covered

Flowing Grain

Bridged Grain

Avalanched Grain

NEVER enter grain bins when flowing/bridged grain is present!

ALWAYS keep your head above the grain!

PERSONAL PROTECTIVE EQUIPMENT

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Respiratory Protection

Exposure of the respiratory system to grain dust can cause:

Acute Problems
- Farmer's Lung
- Chronic Bronchitis
- Grain Dust Asthma

Chronic Conditions:
- Rhinitis
- Wheezing
- Grain Fever
- Cough

Noise Exposure

Exposure to high frequency sound around grain dryers and other agricultural equipment can result in permanent hearing loss.

Have hearing tested annually if you work around high noise sources.

Eye Protection

Protect eyes from debris, chemicals, burns, lasers and impacts.

Head, Hands, Feet

Protect these vulnerable body parts with hard hats, gloves, steel toed footwear. For a complete guide on appropriate PPE see http://www.osha.gov/Publications/osha3151.pdf .

Fall Protection

Choose appropriate type for the job – fall restraint or fall arrest. Most systems require a body harness and lifeline.