EnPro Learning System

Weekly Safety Briefings

Week 46 – November 11-17, 2019

Lockout / Tagout

Lockout/Tagout is a safety procedure that ensures power to dangerous machines is properly shut off, so that the machine will not start up again prior to maintenance or repair work completion. Anyone who operates, cleans, services, adjusts, and repairs machinery or equipment should know of the associated hazards. Any powered machinery or electrical equipment that can put people in danger is a safety hazard that lockout/tagout can prevent. Failure to lock or tag power sources on equipment can result in electrocutions, amputations, and other serious and potentially fatal injuries.

This week, we will identify the importance of preparing for lockout/tagout, the most common causes of lockout/tagout failures, and some methods to prevent injury incidents from moving machinery. We will also discuss 7 steps for proper power shutdown and shutdown verification, as well as 3 steps for safe restart.

Monday- Importance of Preparing for LOTO & Common Causes of LOTO Incidents

Planning and preparation are important in many of our daily activities. With LOTO, the planning and preparation stages are necessary. Prior to placing a piece of equipment in a LOTO state, we need to step back and look at the "big picture": planning and preparing for the task.

Before beginning lockout/tagout procedures, make sure you can answer these questions:

- What equipment is needed?
- What are all the energy sources?
- What methods are used to control energy sources?
- Are there hazardous substances that need draining?
- What protective equipment is required?
- Could energy re-accumulate while maintenance work is performed?
- Does adjacent machinery need locking out?

Here are some of the most common causes of LOTO injury incidents:

- The machine or equipment was not completely shut off before a maintenance or repair operation. The machine and its power source must be confirmed to be turned off before any repairs begin.
- The machine was turned on accidentally, either out of carelessness or because the person who turned it on didn't realize that another worker was there and could get hurt.
- The machine wasn't working correctly but wasn't fixed, turned off, locked or tagged, and someone who didn't know about the problem used it.
- Moving equipment wasn't blocked properly.
- Workers were not properly trained and practiced in LOTO procedures. This happens more often with contractors and temporary workers.

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Tuesday – Prevent Accidental Startup Injury

Remember the dangers and keep your guard up around any machinery and moving equipment. Even if you aren't operating the machinery, you can still get caught and injured if it isn't properly disconnected and power turned off.

What can you do to prevent accidental injury from moving machinery?

- Know the hazardous energy associated with the equipment prior to working on it.
- Know all the energy that can affect the task (electric, gravity, water, pneumatic, hydraulic, steam, etc.).
- Control the accidental release of the energy prior to working on the equipment through lockout, tagout, or alternative measures identified for the specific equipment.
- Never reach into moving equipment. An injury can occur in the blink of an eye.
- Test the energy once you believe it is isolated. This is one of the most overlooked steps and probably the most important. Workers think they have isolated the energy at the source when they actually haven't.
- Stay aware of not only your personal safety, but also the safety of others when working with or around moving equipment and machinery. Always follow proper lockout and tagout procedures, even for a quick or minor repair!

Wednesday – Seven Steps for Shutdown

Lockout/Tagout is more than just putting a yellow lock on the main electrical disconnect to a machine or part of a machine. There are 7 very important steps you must do when putting Lockout/Tagout in place.

The seven steps for shutdown are:

1. **Notify:** Notify all affected employees that you are conducting a lockout/tagout.
2. **Prepare:** Make sure you know all types of energy involved, all energy induced hazards, and how to control the energy.
3. **Shutdown:** Turn off the machine or equipment.
4. **Isolate:** Isolate the equipment from its energy source(s). For example, turn off main circuit breaker.
5. **Lockout:** Apply the lock. Make sure that the isolating device is in the "off" or "safe" position.
6. **Release:** Release any stored energy from the machine or equipment. Relieve, disconnect, restrain, block, or otherwise ensure that all energy sources (electrical, mechanical, hydraulic, compressed, etc.) are de-energized.
7. **Verify:** Try the on-off switch or other controls to ensure the machine won't start. Return the switch to the "off" position.

After completing these seven steps, your lockout is complete!

Thursday – Verification of Shutdown

Verification is the last and most important step in the Lockout Tagout process. This step is frequently skipped over resulting in preventable injuries. Before maintenance work can begin, you must verify that the energy is no longer a hazard.

- If you're locking out a machine to enter it, push the start button to ensure the machine won't start.
- If you're locking out an electrical box, utilize a meter to ensure the energy isn't present.
- If you're locking out an air valve, trip the mechanism to ensure the pressure is truly gone and the stored energy is bled off.

It's easy to assume that because a machine is disconnected from its energy source, energy is no longer a hazard; however, that is not always the case. The verification step exists for a reason. Never take chances or make an assumption. Verify that the energy hazard is completely eliminated. Your safety depends on it.

Friday – Three Steps for Restart

When the LOTO procedures are finished, there are 3 very important steps you must do when removing a machine from a LOTO state.

The three steps for restarting a machine are:

1. **Inspect:** Inspect the equipment to make sure that all tools and materials are removed, the machine is fully reassembled, and guards and other safety devices are reinstalled.
2. **Notify:** Make sure that all employees are safely positioned and affected employees are notified of the restart.
3. **Remove:** Remove all lockout devices before restarting the machine.

Remember, the person who locked the machine is responsible for removing the lock.

Discussion: Has anyone been injured from an improperly locked or tagged machine? What happened? What could have been done to prevent the injury?