Lockout Tagout – Checklist

PREAMBLE

Employees servicing or maintaining machines or equipment may be exposed to serious physical harm or death if hazardous energy is not properly controlled. Craft workers, machine operators, and laborers are among the 3 million workers who service equipment and face the greatest risk.

The four-page general industry standard (29 CFR 1910.147), published in September 1989, was designed to prevent the accidental start-up of machines or other equipment during maintenance and servicing. Under the rule, hazardous energy sources must be **"isolated and rendered inoperative"** before work can begin. **Hazardous energy sources include electrical, mechanical, hydraulic, pneumatic, chemical and thermal.**

Lockout / Tagout / is series of safety procedures designed to prevent accidents causing serious injuries including fatalities to employees on the unexpected startup of the equipment or energy while servicing.

Anyone who operates, cleans, services, adjusts, and repairs machinery or equipment should be aware of the hazards associated with that machinery. Failure to lock out or tag power sources on equipment can result in electrocutions, amputations, and other serious-sometimes fatal-accidents.

Causes of Accidents:

- The machine or piece of equipment was not completely shut off before a maintenance or repair operation. Not only must the machine be turned off but also the power source that goes to it.
- The machine was turned on accidentally, either out of carelessness or because the person who turned it on did not realize that another worker was there and could get hurt.
- The machine was not working correctly but was not fixed, turned off, locked or tagged, and someone who did not know

about the problem used it.
- Moving equipment was not blocked.
- Safety procedures were inadequate or had not been properly explained.

PREVENTION

According to OSHA, a lockout/tagout program must include three basic elements.

1. **Written procedures**for controlling hazardous energy releases from each piece of equipment. They should describe preparation for shutdown, actual shutdown, equipment isolation, steps for applying and removing lockout/tagout devices, requirements for testing that hazardous energy has indeed been isolated, and notification of employees.
2. **Training**for: “authorized” employees who do the maintenance and servicing work and must know how to safely isolate energy sources before beginning work; “affected” employees who might be working in the vicinity of a locked-out machine and must understand the hazards of attempting a start-up; and “other” employees who might be walking through part of a plant where a machine is locked out.
3. **Periodic audits**, at least once a year, of the overall program. This inspection must be done by an authorized employee who is not actively involved in the energy control procedures being inspected.

Lockout/tagout procedures apply in the following circumstances:

- Workers are servicing and maintaining equipment and unexpected startup of the machine or release of stored energy could o
- When, during normal production, workers must remove or bypass a guard or safety device.
- When, during normal production, workers place any part of their body into the danger zone or near the machine’s point of operation.
- During all set up activities.

Employers:

NIOSH recommends that employers comply with the OSHA regulations outlined in 29 CFR* 1910.147, the control of hazardous energy (lockout/tagout). Results of NIOSH fatality investigations indicate that the following steps are particularly important:

- Develop and implement a written hazardous energy control program, including lockout/tagout procedures, employee training, and inspections before any maintenance or service work is done.
- Be sure that workers have a clear understanding of when hazardous energy control procedures apply and training on how to properly apply the procedures.
- Ensure that procedures on lockout/tagout are developed that are specific to each machine.
- Provide training to production workers in addition to maintenance workers in methods of energy isolation and control.

Workers:

- Follow the regulations contained in your employer's hazardous energy control program.
- Complete all employer-provided training on hazardous energy control procedures.
- Before beginning machine adjustment, maintenance, or servicing work, de-energize all sources of hazardous energy:
    - Disconnect or shut down engines or motors.
    - De-energize electrical circuits.
    - Block fluid (gas or liquid) flow in hydraulic or pneumatic systems.
    - Block machine parts against motion.

Manufacturers:

- Consider designing equipment that requires fewer and more easily accessible disconnect points to facilitate the use of safe lockout/tagout procedures for maintenance and repair.

Employers Responsibilities

- Develop, implement, and enforce an energy control program.
- Use lockout devices for equipment that can be locked out. Tagout devices may be used in lieu of lockout devices only if the tagout program provides employee protection equivalent to that provided through a lockout program.
- Ensure that new or overhauled equipment is capable of being locked out.
- Develop, implement, and enforce an effective tagout program if machines or equipment are not capable of being locked out.
- Develop, document, implement, and enforce energy control procedures.
- Use only lockout/tagout devices authorized for the particular equipment or machinery and ensure that they are durable, standardized, and substantial.
- Ensure that lockout/tagout devices identify the individual users.
- Establish a policy that permits only the employee who applied a lockout/tagout device to remove it.
- Inspect energy control procedures at least annually.
- Provide effective training as mandated for all employees covered by the standard.
- Comply with the additional energy control provisions in OSHA standards when machines or equipment must be tested or repositioned, when outside contractors work at the site, in group lockout situations, and during shift or personnel changes.

Recommendations to improve Lockout / Tagout Procedures

1. **Choose the Right Devices**

Industrial machines, circuit breakers, plugs, switches, push buttons, and valves are just some of the items that often require lockout devices. There are two considerations that will help: necessity (knowing exactly what you need) and organization (using standardized devices and tools to help keep your devices organized).

First, determine exactly what you need. Create a list of all

machines or electrical components that may need lockout devices.

Second, standardize and organize your lockout devices. Lockout Stations are one effective way to store and organize necessary devices.

2. **Thoroughly Document Procedures**

Lockout procedures need to be formally documented. This will keep workers and management on the same page and help to eliminate any potential confusion. Formal documentation is required by OSHA but, given the differences in workplaces and machines, not every procedure will be the same.

Procedures should thoroughly detail the steps needed to shut down and isolate hazardous energy. The procedures also should describe how to safely place and remove all relevant lockout/tagout devices.

Procedures should be posted near the relevant machine. Machine-specific photographs detailing each step are highly recommended.

3. **Clearly Mark All Isolation Points**

All energy control points should be clearly and permanently marked with standardized tags or labels.

Tags and labels should be easily visible. It is also very important to make sure all energy isolation points are consistent with the machine-specific procedures.

4. **Develop a Rigorous Training Program**

Effective training is an indispensable part of a successful lockout program.

First, it is important for each worker to know exactly what his role is. Tasks should be clearly defined and clearly assigned to the appropriate worker. There are three types of workers involved in lockout operation: authorized, affected, or other. An **authorized** employee is directly involved in locking out equipment or machinery. An **affected** employee means any employee whose work

is affected by a lockout. Usually, this means an employee who is working on locked out equipment. An employee is classified as **other** if he or she does not work on the machine receiving maintenance or repair but still works in the same area.

Each worker needs to know what type of employee he is, and strong communication needs to be developed among all workers. **Authorized employees** must clearly alert all affected employees when a lockout device is placed or removed. In order to prevent unsafe removal of devices, only authorized employees can remove devices that they have placed. Lockout padlocks have room for workers to clearly write their names in permanent ink, which underscores the strong need for clear assignments and individual responsibility.

As with procedures and isolation points, **Documentation** is an important component of training. Recording exactly what types of training have occurred is helpful on several levels. **First**, it helps management make sure that all workers have been trained, as well as trained in the right tasks. Any gap in training can be easily found and corrected. **Second**, it documents when training took place. If you know when your last training session took place, it is easier to plan when the next one should take place. **Last**, looking at documentation of lockout training can help one see one's program from a new, more objective perspective. Suggestions can then be taken into account and improvements can be made.

OSHA requires that lockout/tagout training occur at least annually. Yearly training should be seen as a bare minimum rather than an ideal. In many cases, it would be helpful to revisit training exercises more frequently than yearly in order to ensure that critical repairs and maintenance are still being done safely. Also, repeat training helps workforces keep a "safety first" mentality.

5. **Evaluate**

Careful evaluation is an invaluable tool for improvement. Evaluation is necessary to make sure that the training exercises, procedures, and devices are working properly.

Inspections need to occur at least annually and should be performed by an **Authorized Employee** who is not involved in the procedure being inspected. Any and all deviations must be corrected and all roles must be thoroughly reviewed.

The date of inspection, procedures, the machines and equipment involved, and the names of all workers involved in the inspection must be recorded.

6. **Evolve**

A good lockout program should always be able to evolve; OSHA may introduce more requirements or more stringent guidelines.

SUMMARY

Lockout / Tagout Procedure

Lockout / tagout is a three-part procedure that is designed to protect you from accidental or unexpected start-up of equipment. This procedure serves four important purposes:

1. To protect the person working on the equipment.
2. To protect other workers in the area.
3. To protect the equipment.
4. To serve as a communication device for the above three. This is usually done in conjunction with a safe work permit.

The standards establish requirements that employers must follow when employees are exposed to hazardous energy while servicing and maintaining machinery and equipment. The **Most Critical Requirement**s from these standards are outlined below and also **Prevent Injuries:**

- Develop, implement and enforce an energy-control plan.
- Use lockout/tagout devices for equipment that can be locked out. Tagout devices may be used in place of a lockout device only if the tagout program provides employee protection equivalent to that provided through a lockout program.
- Ensure that the new or overhauled equipment is capable of being locked out.
- Develop, implement and ensure an effective tagout program if

machinery or equipment are not capable of being locked out.

- Use only lockout/tagout devices authorized for the particular equipment or machinery and ensure that they are durable, standardized and substantial.
- Ensure that the lockout/tagout devices identify the individual users.
- Establish a policy that permits only the employee who applied a lockout/tagout device to remove it.
- Provide effective training for all employees covered by the standard and offer periodic refresher training.
- Comply with the additional energy control provisions under OSHA standards when machines or equipment must be tested or repositioned when outside contractors work at the site, in group lockout situations, and during shift or personnel changes.
- Develop written procedures explaining how a lockout is done.
- Use engineering and administrative controls as much as possible to eliminate the need for lockout.
- Perform regular maintenance to prevent malfunctioning equipment.