Solutions For Safety And Facility Management

Proper Lockout-Tagout Procedures Result in Increased Safety, Improved Productivity, and Reduced Costs

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We've all heard stories of catastrophic injuries on the job – even fatalities. It's a tragedy for workers and their families, a disaster for friends and co-workers, and a nightmare for supervisors, managers, and business owners:

> *In June 2001, a worker in Marietta, Georgia was tamping down cardboard inside a compactor when his feet became caught in the cardboard. Pinned inside the machine, both of his legs were severed above the knee when the machine unexpectedly restarted.*

This man's tragedy is one of many. It is estimated that 10 percent of industrial accidents are lockout/tagout related. Because of the frequency and seriousness of these accidents, OSHA seeks to improve worker safety with a special focus on lockout/tagout standards. LOTO procedures are the standard most often cited by OSHA for manufacturers, and lack of procedures or inadequately documented procedures are among the most commonly cited LOTO violations.

OSHA inspectors are specifically instructed to look for documented procedures during lockout/tagout inspections. According to STD 1-7.3 –29 CFR 1910.147, Inspection Procedures and Interpretive Guidance, OSHA inspectors are instructed to "ask the employer for documentation including procedures for the control of hazardous energy."

Why Effective LOTO Procedures Pay Off

Effective lockout/tagout procedures save lives, time and money by reducing workplace accidents, limiting downtime, and increasing the efficiency of inspection and maintenance procedures.

Studies have shown that an effective lockout/tagout program can reduce accidents by 30-50%, and some insurance companies even offer lower premiums to companies with demonstrated, effective lockout programs.

Accidents take their toll on your company in many ways. In addition to the personal trauma to injured workers and the loss of employee morale, there are myriad hard costs, including machine repair and downtime, health-care and litigation costs, and hefty fines levied by OSHA. In the case cited above, the company was fined $140,000, including $70,000 for failure to use documented lockout procedures to render the compactor inoperable while the employee was in the machine's chamber. Costs for one catastrophic accident can spiral into millions of dollars.

Effective LOTO procedures can also dramatically increase your company's productivity by making lockout activities more efficient. The procedure serves as a checklist that allows workers to quickly move through the steps without confusion or mistakes, reducing downtime.

Creating Procedures that Work

Creating effective procedures is a four-step process:

1) Hazard analysis to determine the type and magnitude of hazardous energy associated with each piece of equipment.

2) Identification of steps necessary to isolate that energy and lock out the relevant control points.

3) Documentation of the proper steps to isolate and lock out energy.

4) Employee training and periodic procedure review/updates.

Brady offers an easy-to-use program, Lockout PRO™ Graphical Procedure Writing Software, that allows you quickly create a lockout procedure in as little as 3 minutes - a major time saving advantage.

Standardized templates and user-friendly prompts speed the process of creating, editing and managing procedures. For those companies that just don't have the time and resources to create their own procedures, Brady can also come on-site and create the procedures as a fully turnkey service. Either way, you end up with OSHA-compliant procedures that help prevent mistakes and increase maintenance efficiency.

Policies Vs. Procedures

General energy control rules and guidelines are often contained in a separate document called an energy control plan or policy. OSHA requires that employers document the scope and purpose of the lockout program, group lockout and shift transfer procedures, as well as procedures for the emergency removal of an absent worker's lock. Documents should also include enforcement policies that address disciplinary and other actions to be taken when procedures are not followed. Information such as policies for coordination with contractors, methods for updating procedures as well as training methods and responsibilities can also be included in the energy control policy.

In addition to the energy control policy, employers are also required to create detailed energy control procedures for each piece of machinery where workers may be exposed to hazardous energy during service or maintenance activities. More than one piece of equipment may be grouped under a single procedure only if it has **1)** the same hazardous energy sources and **2)** the same or similar methods for controlling that energy.

The procedures must inform workers not only WHAT to lock out but also HOW to lock it out in order to create a safe work condition. Procedures must be written in sufficient detail, clearly outlining all steps for shutting down, isolating, blocking, securing, and relieving hazardous energy. The procedure must also identify the specific steps for the placement, removal and transfer of lockout or tagout devices, as well as the specific requirements for testing the equipment to verify that it is in a zero energy state.
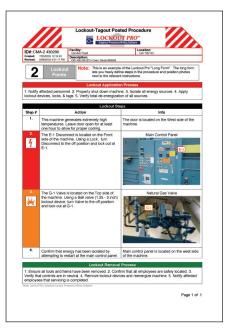
While OSHA requires the creation of procedures that provide detailed steps from shutdown through to re-energization, some companies also create abbreviated procedures that simply identify the energy control devices and describe how to operate and lock them out. Such abbreviated procedures typically fit on one page, making them excellent for use as placards that can be posted right at the machine. Procedures created by Brady's procedure writing service show the abbreviated form on one side and the detailed steps on the other.

Lockout PRO software also allows users to select between detailed and abbreviated procedure formats. The formats can also be modified to accommodate individual requirements.

What Makes an Effective Procedure?

The key to writing effective procedures is to make them as easy as possible to follow. Standardized formats help meet this goal by increasing comprehension, and helping ensure that procedures are followed correctly. Standard formats also help workers who are responsible for locking out multiple machines, because they can quickly scan the procedure rather than having to search for information.

Detailed and abbreviated procedures created with Brady's Lockout PRO software.

Photos and pictograms also help workers understand the nature and location of specific energy points that must be locked out on a machine. This eliminates guesswork, speeds up the lockout process, and ensures that the correct controls are locked out. Photos can be easily incorporated into your procedures using Lockout PRO, with arrows added to indicate the exact locations of energy sources. Different colors and symbols are used for the various types of hazardous energy such as electrical, pneumatic, and hydraulic.

Identifying Energy Sources

Even if you include a photo within the procedure, it may be difficult to differentiate between energy isolating devices located in the same area. Labeling or tagging the actual energy controls, such as valves, circuit breakers, and disconnect switches, helps decrease the chances of a lockout mistake. OSHA standard 1910.303 says that all electrical energy sources must be identified

for magnitude and purpose, unless located and arranged so the purpose is evident. In this standard, identifying the "purpose" means indicating the equipment serviced. The magnitude of the energy can be expressed in terms of volts for electrical, pounds-per square inch for pneumatic pressure, etc. The new American National Standard (ANSI® Z244.1-2003, Control of Hazardous Energy Lockout/Tagout and Alternative Means) expands on the OSHA Standard and requires that all energy sources be labeled or tagged.

Lockout PRO software streamlines the identification process by automatically creating labels for each energy source in the procedure. These labels can be printed to either standard inkjet or laser printers, or to one of Brady's industrial label printing systems. The creation and installation of energy source tags and labels is also included as a component of Brady's turnkey procedure service.

When You Don't Need a Written Procedure

In some cases, a written procedure is not necessary. Procedures do not need to be documented if all of the following criteria are met:

■ The machine has a single energy source that completely de-energizes the equipment to be worked on.

■ The machine can be locked out with a single lockout device.

■ There is no potential for the machine to store or re-accumulate energy during the shutdown period.

■ There are no hazards posed to other employees.

■ The machine has no history of lockout/tagout accidents.

In these cases lockout is still necessary, but a formal written procedure is not.

OSHA does not currently require documented procedures for minor servicing that is routine, repetitive and integral to the production operation. But the latest version of the ANSI® LOTO Standard says, "When LOTO is not used, the alternative measures shall have procedures developed and documented." Minor servicing activities often prove to be hazardous. Therefore, while not required by OSHA, having written procedures for all equipment and processes where workers may be exposed to hazardous energy is the safest choice.

Sometimes it is impossible to have a documented procedure for every circumstance, as a procedure may vary based on the specific task being performed. In these cases, a work permit system may be the best solution. Before a worker begins a task, a safety manager can perform a hazard analysis and document the task-specific safe work procedures in the work permit. This is a "just-in-time" procedure that is created each time a job is to be done, and is best limited to situations where procedures are subject to change.

Providing Access to Procedures

Ensuring that procedures are visible and accessible is vital to the success of your lockout/tagout program. Even the best procedures are of little help if employees do not have easy access to them. The means of providing access to procedures depends on your particular circumstances and needs. The following four methods are all acceptable for providing access to lockout procedures:

■ **Binders:** Binders are an easy solution for procedure storage. They can be kept in designated stations on the shop floor for easy employee access. However, binders may be cumbersome, requiring workers to search through the entire binder to find a specific procedure. Documentation may also be taken out of the binder and misplaced or not returned.

■ **Posting at or on Machine:** Posting procedures at or on the machine ensures that procedures are always available. This facilitates consistent compliance by workers. However, developing a system to ensure that outdated procedures are replaced with current information is critical.

■ **Online Posting:** Posting procedures online allows you to update them as often as necessary, and ensures that workers always have access to the most recent version. However, this requires computer and printer access, and the extra steps needed to log on and print procedures may restrict how often workers access them.

■ **Attaching to Work Orders:** Attaching lockout procedures to work orders can be done manually or with any Computer Maintenance Management System (CMMS) that will allow you to attach digital files. When the work order is printed, the procedure prints along

with it. This gives workers access to the most up-to-date procedures without the hassle of logging onto a computer and searching the archive. However, since work orders may not be issued for all maintenance tasks, other means for accessing the procedures should also be provided.

Lockout PRO offers a wide variety of options that help make sure employees have easy, ready access to procedures. Lockout PRO procedures can be printed on plain paper (and laminated, if desired), or they can be printed on adhesive or magnetic panels for posting on or near machines using Brady's GlobalMark™ printer. With Lockout PRO, you can also create PDF files of procedures for online viewing or attaching to work orders generated on a computer maintenance management system.

Lockout PRO procedure, label and tag created using GlobalMark printer.

Procedure Training and Auditing

OSHA requires lockout training for three types of employees: authorized, affected, and "other." Authorized employees are those who perform maintenance and service work, and who undertake the actual lockout activities. They must be able to:

■ Recognize hazardous energy sources.

■ Understand the types and magnitudes of energy.

■ Know methods for isolating and controlling hazardous energy.

■ Know methods for the safe application, use and removal of lockout devices.

Authorized employees do not need to be trained on every procedure, but they need to be familiar with all the necessary techniques and skills. Authorized employees should also undergo a review each year to make sure that they understand their responsibilities under the lockout program. Affected and "other" employees do not need to be trained on specific procedures, but they do need to be familiar with the company's energy control policies, be able to recognize when lockout is in progress, and understand the importance of not tampering with the lockout or tagout devices.

The server-based version of Lockout PRO includes an online training tool that takes employees through lockout training from their own computers. This version also features an online quiz at the end of the training. When workers pass the quiz, their names are registered as having completed and passed lockout training.

Procedures need to be audited at least once per year, and inspections need to be done by an authorized person who does not normally use that procedure. The goal of the auditing process is to make sure that each procedure still provides effective employee protection. Procedures that are implemented less than once a year need to be reviewed only when used. Audits of procedures should be documented, including who, when and what equipment was reviewed.

Effective Procedures Save Time, Money And Lives

Workers and machinery are the two essential components in manufacturing, and keeping them accident-free should be a goal of any plant concerned about both safety and the company's bottom line. Having well-written, readily available lockout procedures is a critical tool for preventing lockout accidents. Good procedures are necessary for compliance, but they also prevent worker injury, avoid costly machine breakdown, and increase productivity through quicker completion of maintenance tasks.

Brady's Lockout PRO software speeds the process of creating and editing procedures. Lockout PRO procedures allow users to incorporate photos and other visual aids that help prevent mistakes and speed the lockout activity. For more information on Lockout PRO, including a guided online demo, go to **www.bradyid.com/lockoutpro.** For more information on Brady's procedure writing service, go to **www.bradyid.com/idservices.** Or call us at **1-888-272-3946** to arrange for a Brady sales person to visit your site.