## Purpose

The following procedure is provided for use in both lockout and tagout programs. This procedure may be used when there are limited numbers or types of machines or there is a single power source. For more complex systems, a more comprehensive procedure will need to be developed, documented, and utilized.

Lockout is the preferred method of isolating machines or equipment from energy sources. This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury such as minor to serious shock, burns (chemical or thermal), cuts, or abrasions.

## Administrative Duties & Scope of Practice

The Operations Manager has overall responsibility for coordinating safety and health programs in this company. He is the person having overall responsibility for the Lockout/Tagout Program. The Operations Manager will review and update the program, as necessary. Copies of the written program may be obtained in the Operations office.

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. Servicing is to be done only by trained, authorized employees. Each new or transferred affected employee and other employees whose work operations are or may be in the area shall be instructed in the purpose and use of the lockout or tagout procedures. All employees, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance, shall not attempt to start, energize, or use the machine or equipment.

Contractors are required to utilize this company's procedure except when the contractor can demonstrate that their current lockout procedure affords the same level of safety as Trinity procedure.

## Basic Rules for Using Lockout or Tagout System Procedure

All equipment shall be locked out or tagged out to protect against accidental or inadvertent operations when such operations could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy-isolating device where it is locked or tagged out.

This standard does not apply to work on cord and plug connected to electrical equipment for which exposure to the hazards of unexpected energization or start up the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

In the event a piece of equipment is to be isolated for a period of time exceeding one normal shift and the isolating means is not capable of being locked out, a reasonable effort will be made to affix a device to the isolating means to make capable of being locked out.

Lockout-Tagout protects workers from these energy sources:

- moving machinery (kinetic)
- stored energy (potential)
- electrical
- chemical
- thermal
- hydraulic
- gravitational
- pneumatic

## Definitions

*Authorized (Qualified) Employees*
The only ones certified to lock and tagout equipment or machinery. Whether an employee is considered to be qualified will depend upon various circumstances in the workplace. It is likely for an individual to be considered "qualified" with regard to certain equipment in the workplace, but "unqualified" as to other equipment. An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person, is considered to be "qualified" for the performance of those duties.

*Affected Employees*
Those employees who operate machinery or equipment upon which lockout or tagging out is required under this program. Training of these individuals will be less stringent in that it will include the purpose and use of the lockout procedures.

*Other Employees*
Identified as those that do not fall into the authorized, affected or qualified employee category. Essentially, it will include all other employees. These employees will be provided instruction in what the program is and not to touch any machine or equipment when they see that it has been locked or tagged out.

## Employee Identification

<u>Authorized</u>

- Supervisors
- Maintenance Personnel
- Janitorial Personnel

Affected

- Production Personnel
- General Laborers
- Shipping & Receiving

Others

- Office & Administrative Personnel

## Machinery and Equipment

Lockout is the preferred method of isolating machines or equipment from energy sources. Tagout is to be performed instead of lockout only when there is no way to lockout a machine.

## Routine Maintenance & Machine Adjustments

Lockout/tagout procedures are not required if equipment must be operating for proper adjustment. This rare exception may be used only by trained and authorized Employees when specific procedures have been developed to safely avoid hazards with proper training. All consideration shall be made to prevent the need for an employee to break the plane of a normally guarded area of the equipment by use of tools and other devices.

## Locks, Hasps and Tags

If an energy source can be locked out this method shall be utilized. LOCKOUT DEVICE: A device that utilizes a lock, either key or combination to hold an energy isolating device in a safe position.

All Qualified Maintenance Personnel will be assigned a lock with one key, hasp and tag. All locks will be keyed differently, except when a specific individual is issues a series of locks for complex lockout-tagout tasks. In some cases, more than one lock, hasp and tag are needed to completely de-energize equipment and machinery. Additional locks may be checked out from the Department or Maintenance Supervisor on a shift-by-shift basis. All locks and hasps shall be uniquely identifiable to a specific employee.

If an energy source cannot be locked out a tagout system shall be utilized. TAGOUT DEVICE: A warning tag (weather & chemical resistant) standardized in size, color, with wording warning of hazardous energy (Do Not Start) (Do Not Open) (Do Not Close) (Do Not Energize) (Do Not Operate).

## Preparation for Lock and Tag Out Procedures

A Lockout/Tagout survey has been conducted to locate and identify all energy sources to verify which switches or valves supply energy to machinery and equipment. Dual or redundant controls have been removed.

A Lockout Tagout Schedule has been developed for each piece of equipment and machinery. This schedule describes the energy sources, location of disconnects, type of disconnect, special hazards and special safety procedures. The schedule will be reviewed each time to ensure employees properly lock and tag out equipment and machinery. If a Tagout Schedule does not exist for a particular piece of equipment, machinery and process, one must be developed prior to conducting a Lockout - Tagout. As repairs and/or renovations of existing electrical systems are made, standardized controls will be used.

The established procedure for the application of energy control covers the following elements & must be done in sequence:

1. Preparation for shutdown.
2. Machine or equipment shutdown.
3. Machine or energy isolation.
4. Lockout and/or tagout application.
5. Relief of stored energy.
6. Verification of Isolation
7. Restoring machine or equipment to normal operation.

## Sequence of Lockout System Procedure

1. Lockout locks cannot be used for any purpose other than lockout, and must meet the following provisions:
    a. Standardized throughout the plant by color, shape or size.
    b. Durable enough to withstand heat, cold, humidity or corrosiveness.
    c. Strong enough so that it cannot be removed without heavy force or tools such as bolt cutters.
    d. Identified by the name of the employee who installs and removes it.
2. The authorized employee (one who performs maintenance or servicing) shall identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3. The authorized employee is to notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
4. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.). An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.
5. De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).
6. Lockout the energy isolating devices with a lock(s) as follows:

a. Lockout or tagout devices are to be affixed to each energy isolating device by authorized employees.
b. Lockout devices, where used, are to be affixed in a manner that will hold the energy isolating devices in a safe or off position.
c. Tagout devices, where used, are to be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the safe or off position.
d. Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment is to be fastened at the same point at which the lock would have been attached.
e. Where a tag cannot be affixed directly to the energy isolating device, the tag is to be located as close as safely as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.

7. Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy is to be relieved, disconnected, restrained & otherwise rendered safe. If there is a possibility of reaccumulation of stored energy level, verification of isolation is to be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.
8. Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s), or by testing to make certain the equipment will not operate.

   **CAUTION:** *RETURN OPERATING CONTROL(S) TO NEUTRAL OR "OFF" POSITION AFTER VERIFYING THE ISOLATION OF THE EQUIPMENT.*

9. The machine or equipment is now locked out. Maintenance or servicing may be performed.

## Sequence of Tagout System Procedure

The authorized employee shall use the tagout procedure ***ONLY WHEN THE MACHINE OR EQUIPMENT IS NOT CAPABLE OF BEING LOCKED OUT.***

1. The tagout device shall be standardized throughout the plant, and shall meet the following provisions:
   - Easy to read and understand, even if used in dirty, corrosive, or damp areas.
   - Can't be released with less than 50 pounds of pressure.
   - Can be attached by hand.
   - Is self-locking.
   - Shows the identity of the authorized employee.
   - Can't be reused.

2. The tagout device shall be attached at the same location that the lockout device would have been attached.

3. Authorized employees shall utilize additional means as necessary to provide the equivalent safety available from the use of a lockout device. Additional safety measures that reduce the likelihood of inadvertent energization may include:
   - The removal of an isolating circuit element;
   - Blocking of a controlling switch;
   - Opening of an extra disconnecting device; or
   - The removal of a valve handle.

## Restoring Machines/Equipment to Normal Production Operations & Safety Testing

When the servicing is completed and the equipment is ready to return to normal operating condition, the following steps shall be taken:

1. Check the work area to ensure that all employees are a safe distance from the equipment.
2. Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items (such as tools) have been removed, and that the machine or equipment components are operationally intact.
3. Reinstall any machine guards.
4. Verify that the controls are in neutral.
5. Remove the lockout and/or tagout devices and reenergize the machine or equipment.
6. Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.
7. Safety testing should be documented with who performs the procedure and verifies safe operation.

**NOTE:** The removal of some forms of blocking may require re-energization of the machine before safe removal. When maintenance or service is done, only the same authorized employee who installed the lock may remove it. When the authorized employee is not available to remove the lock, a "Lockout Removal" form must be completed by the employee removing the lock (see attachment Procedure for Lockout & Tagout Removal).

## Temporary Removal

Occasionally, lockout/tagout devices must be temporarily removed in order to test the equipment or machine. When this occurs the following steps should be taken.

1. Clear away any tools from the danger area.
2. Remove any employees from the danger area.
3. Remove the lockout/tagout device(s).
4. Carefully re-energize and proceed with testing.
5. De-energize and reapply lockout/tagout device(s) following the sequence of lockout/tagout procedures listed above.
6. Document the name and title of the individual(s) who performs and verifies this process.

## Procedure Involving More Than One Person

In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place his or her own personal lockout or tagout device on the energy isolating device(s).

When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet which allows the multiple locks to secure it. Each employee will then use his or her own lock to secure the box or cabinet. As a person no longer needs to maintain his or her lockout protection, that person will remove his or her lock from the box or cabinet.

If a single authorized employee is given the primary responsibility for a set number of employees working under the protection of a group lockout or tagout device then the following safety measures must be adhered to:

- Authorized employee must ascertain the exposure status of individual group members.
- Each employee shall attach a personal lockout/tagout device to the group's device while he/she is working. The device shall be removed when finished.

These procedures afford the group of employees a level of protection equal to that provided by a personal lockout or tagout device.

## Stored Energy

Following the application of the lockout or tagout devices to the energy isolating devices, all potential or residual energy will be relieved, disconnected, restrained, and otherwise rendered safe.

Where the re-accumulation of stored energy to a hazardous energy level is possible, verification of isolation will be continued until the maintenance or servicing is complete.

Release stored energy (capacitors, springs, elevated members, rotating fly wheels, and hydraulic/air/gas/steam systems) must be relieved or restrained by grounding, repositioning, blocking and/or bleeding the system.

## Extended Lockout/Tagout

Should the shift change before the machinery or equipment can be restored to service, the lock and tag out must remain. If the task is reassigned to the next shift, those Employees must lock and tag out before the previous shift may remove their lock and tag.

## Procedure for Electrical Plug-Type Equipment

This procedure covers all Electrical Plug-Type Equipment such as Battery Chargers, some Product Pumps, Office Equipment, Powered Hand Tools, Powered Bench Tools, Lathes, Fans, etc.

When working on, repairing, or adjusting the above equipment, the following procedures must be utilized to prevent accidental or sudden startup:

1. Unplug Electrical Equipment from wall socket or in-line socket.
2. Attach "Do Not Operate" Tag and Plug Box & Lock on end of power cord.
3. An exception is granted to not lock & tag the plug is the cord & plug remain in the exclusive control of the Employee working on, adjusting or inspecting the equipment.
4. Test Equipment to assure power source has been removed by depressing the "Start" or On" Switch.
5. Perform required operations.
6. Replace all guards removed.
7. Remove Lock & Plug Box and Tag.

Inspect power cord and socket before plugging equipment into power source. Any defects must be repaired before placing the equipment back in service.

**NOTE:** Occasionally used equipment may be unplugged from power source when not in use.

## Management's Removal of Lock and Tag Out

Only the Employee that locks and tags out machinery, equipment or processes may remove his/her lock and tag. However, should the Employee leave the facility before removing his/her lock and tag, the Maintenance Manager may remove the lock and tag. The Maintenance Manager must be assured that all tools have been removed, all guards have been replaced and all Employees are free from any hazard before the lock and tag are removed and the machinery, equipment or process are returned to service. Notification of the employee who placed the lock is required prior to lock removal. This process must be properly documented.

## Affected Employees for Lockout/Tagout

Because people may be moved from one work area to another, it would not be appropriate or practical to generate a list of people identified with a particular area. Therefore, the person who initiates, or terminates, a lockout or tagout procedure will notify those persons in the affected area.

## Periodic Inspection

A periodic inspection is done, looking at the energy control procedures performed to ensure that the procedure and requirements of the standard are being followed. This inspection is performed annually. A certified review of the inspection including date, equipment, employees & the inspector is documented.

## Training

Authorized Employees Training

All Maintenance Employees, Department Supervisors and Janitorial employees will be adequately trained to use the Lockout/Tagout Procedures. The training will be conducted by the Maintenance Supervisor or Safety Coordinator at time of initial hire. Retraining shall be held at least annually. The training will consist of the following:

- Recognition of hazardous energy source
- Type & magnitude of energy available
- Methods & means necessary for energy isolation & control
- Review of General Procedures
- Review of Specific Procedures for machinery, equipment and processes
- Location and use of Specific Procedures
- When tagout systems are used including the limitations of a tag (tags are warning devices & do not provide physical restraint)
- Procedures when questions arise

Affected Employee Training

- Only trained and authorized Employees will repair, replace or adjust machinery, equipment or processes.
- Affected Employees may not remove Locks, locking devices or tags from machinery, equipment or circuits.
- The tag is never to be ignored or defeated in any way
- Purpose and use of the lockout procedures.

Other Employee Training

- Only trained and authorized Employees will repair, replace or adjust machinery or Equipment.
- The tag is never to be ignored or defeated in any way
- Other Employees may not remove Locks, locking devices or tags from machinery, equipment or circuits

Retraining

Retraining is required when there is a change in job assignments, in machines, a change in the energy control procedures, or a new hazard is introduced.

Training Records

All training and/or retraining must be documented with employee's name and dates of training.

## Documentation

Procedural steps for lockout/tagout for all machines shall be documented on the Lockout/Tagout Schedule form. A copy of this form will be given to the authorized employee and will be kept in the Operations office.

Documentation of employee training shall be kept on file in each employee's training file.

An inspection shall be performed, certified and documented annually, under the direction of the Training and Compliance Manager (TCM), to assure compliance with the written program. The inspection will include a current list of machinery and/or equipment in the workplace for which written energy control procedures are required. This is kept in the TCM's office. The purpose is to ensure that the written procedures and the requirements of the standard are being followed, and that employees understand their responsibilities under the procedures.

## Additional State Requirements

Some states include required procedures for equipment that needs to have power supplied to them for repair, adjust, test, or set up activities, including the following:

- A qualified operator must control the activities,
- The operator must be in clear view and clear communication with all participants,
- Participants must be beyond the reach of machine elements, and
- Locking out equipment if machines require the operator to leave the control station.
- De-energizing machines at their power sources during adjustment or replacement of machine components.
- Outside contractors must use the host employer's LOTO procedures.

## Attachments

HSE-BF-011 LOCKOUT TAGOUT SCHEDULE
HSE-BF-012 PROCEDURE FOR LOCKOUT-TAGOUT REMOVAL
HSE-BF-013 PERIODIC-ANNUAL OBSERVATION OF LOCKOUT-TAGOUT PROGRAM
HSE-BF-014 ANNUAL LOCKOUT-TAGOUT ADMINISTRATIVE REVIEW