

32. Control of Hazardous Energy (aka Lockout Tagout)

Lock out and or tag out is the process where authorized employees isolate and secure energy sources prior to maintenance or construction activities. The energy sources remain secured by locks and or tags during the completion of the activity and are not removed until the activity is completed. The lock is placed by the authorized employee exposed to the hazard and is removed by the same authorized employee. The key remains in the possession of the authorized employee throughout the completion of the activity requiring a system, machine or equipment to have the control of hazardous energy procedures applied. Tag out is a similar process where tags are used instead of locks. Tag out is only permitted on a system, machine or equipment without lockout capability and where it is approved by a department supervisor as a standard operating procedure.

- 32.01. Employees are required to comply with the restrictions and limitations imposed during the use of lockout and or tag out. Any employee authorized to lockout and or tag out systems, machines or equipment is required to perform the lockout in accordance with this procedure. Employees upon observing a system, machine or equipment which is locked out and or tagged out to perform servicing or maintenance shall not attempt to start; energize or operate the affected system, machine or equipment.
- 32.02. Department Supervisor
 - 32.02.01. Provide guidance, training and the direction necessary to ensure the effectiveness of this procedure is maintained.
 - 32.02.02. Ensure that only qualified, authorized and or competent persons trained in this procedure perform any control of hazardous energy activities.
 - 32.02.03. Ensure that employees who are found to have insufficient skills or understanding of lockout and or tagout requirements do not perform lockout and or tagout activities and are retrained.
 - 32.02.04. Ensure employees understand the failure to comply with this procedure constitutes corrective action and or enforcement of disciplinary regulations.
 - 32.02.05. Manage and perform inspections of employees for compliance with this control of hazardous energy procedure.
 - 32.02.06. Ensure that any deficiencies or deviations found in the department procedures are corrected through the review and revision process.
 - 32.02.07. Where required, identify and label all hazardous energy sources, systems, equipment and or machines that require lockout and or tagout.
 - 32.02.08. Developing, documenting, implementing, and enforcing specific energy control procedures for hazardous energy sources.
 - 32.02.09. Maintaining a lockout and or tagout record log when documented procedures are required that records the following: the date and time a lockout and or tagout was issued, the name of the "authorized person" performing the lockout and or tagout, the exact location of the lockout and or tagout, the name of the system, equipment and or machine being locked out and or tagged out, the reason for the lockout and or tagout, in

addition, the date and time the lockout and or tagout was removed and the time of return to normal operation.

32.02.10. Provide the resources, including tags, locks, and keys, as appropriate. Identifying and labeling all work area hazardous energy sources or equipment that require the control of hazardous energy.

32.02.11. Provide classroom training and refresher training as required.

32.03. Authorized Employee

32.03.01. Provide the affected employees in the activity area with the expected start date, start time, and duration of the activity and a description of all the systems, machines and equipment affected.

32.03.02. Implementing the energy control procedure, including positioning the energy isolation device and physically testing the equipment to ensure the equipment is isolated.

32.04. Definitions:

32.04.01. Affected employee: An employee whose job requires the operation or use of a system, machine or equipment on which servicing or maintenance is being performed under lockout and tag out, or whose job requires working in an area in which such servicing or maintenance is being performed.

32.04.02. Authorized employee: A person who locks out and or tags out systems, machines or equipment in order to perform servicing or maintenance on that system, machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this procedure.

32.04.03. Capable of being locked out: An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

32.04.04. Energized: Connected to an energy source or containing residual or stored energy.

32.04.05. Energy isolating device: A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

32.04.06. Energy sources: Any source of gravity, electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

32.04.07. Hot tap: A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure,

in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

- 32.04.08. Lockout: The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
 - 32.04.09. Lockout device: A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a system, machine or equipment.
 - 32.04.10. Normal production operations: The utilization of a system, machine or equipment to perform its intended production function.
 - 32.04.11. Servicing and or maintenance: Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.
 - 32.04.12. Setting up: Any work performed to prepare a machine or equipment to perform its normal production operation.
 - 32.04.13. Tag out: The placement of a tag out device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the system, machine or equipment being controlled may not be operated until the tag out device is removed.
 - 32.04.14. Tag out device: A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag out device is removed.
- 32.05. Control of Hazardous Energy Program
- 32.05.01. The employer shall establish a program consisting of the control of hazardous energy procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a system, machine or equipment where the unexpected energizing, start up or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source, and rendered inoperative.
- 32.06. Lockout Tag out
- 32.06.01. If an energy isolating device is not capable of being locked out, the employer's energy control program shall utilize a tag out system.
 - 32.06.02. If an energy isolating device is capable of being locked out, the employer's control of hazardous energy procedures shall utilize lockout, unless the employer can demonstrate that the utilization of a tag out system will provide full employee protection.

32.07. Full Employee Protection

- 32.07.01. When a tag out device is used on an energy isolating device which is capable of being locked out, the tag out device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tag out procedure will provide a level of safety equivalent to that obtained by using a lockout procedure.
- 32.07.02. In demonstrating that a level of safety is achieved in the tag out procedure which is equivalent to the level of safety obtained by using a lockout procedure, the employer shall demonstrate full compliance with all tag out related provisions of this procedure together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures where required.

32.08. Control of Hazardous Energy Procedure

- 32.08.01. Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this program.
- 32.08.02. Exception: The employer need not document the required procedure for a particular system, machine or equipment, when all of the following elements exist:
- 32.08.03. The system, machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;
- 32.08.04. The system, machine or equipment has a single energy source which can be readily identified and isolated;
- 32.08.05. The isolation and locking out of that energy source will completely de-energize and deactivate the system, machine or equipment;
- 32.08.06. The system, machine or equipment is isolated from that energy source and locked out during servicing or maintenance;
- 32.08.07. A single lockout device will achieve a locked-out condition;
- 32.08.08. The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;
- 32.08.09. The servicing or maintenance does not create hazards for other employees; and
- 32.08.10. The employer, in utilizing this exception, has had no incidents involving the unexpected activation or re-energization of the system, machine or equipment during servicing or maintenance.

32.09. The procedures shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance including, but not limited to, the following:

- 32.09.01. A specific statement of the intended use of the procedure;

- 32.09.02. Specific procedural steps for shutting down, isolating, blocking and securing system, machines or equipment to control hazardous energy;
- 32.09.03. Specific procedural steps for the placement, removal and transfer of lockout devices or tag out devices and the responsibility for them; and
- 32.09.04. Specific requirements for testing a system, machine or equipment to determine and verify the effectiveness of lockout devices, tag out devices, and other energy control measures.

32.10. Protective Materials and Hardware

32.10.01. Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.

32.10.02. Lockout devices and tag out devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

32.10.03. Durable

32.10.03.01. Lockout and tag out devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

32.10.03.02. Tag out devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

32.10.03.03. Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

32.10.04. Standardized

32.10.04.01. Lockout and tag out devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tag out devices, print and format shall be standardized.

32.10.05. Substantial

32.10.05.01. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

32.10.05.02. Tag out devices, including and their means of attachment, shall be substantial enough to prevent inadvertent or unintended removal. Tag out device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

32.10.06. Identifiable

- 32.10.06.01. Lockout and or tag out devices shall indicate the identity of the employee applying the device(s).
- 32.10.06.02. Tag out devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.

32.11. Periodic Inspection

- 32.11.01. The employer shall conduct a periodic inspection of the hazardous energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.
- 32.11.02. The periodic inspection shall be performed by an authorized employee other than the ones(s) utilizing the energy control procedure being inspected.
- 32.11.03. The periodic inspection shall be conducted to correct any deviations or inadequacies identified.
- 32.11.04. Where lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.
- 32.11.05. Where tag out is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected.
- 32.11.06. The employer shall certify that the periodic inspections have been performed. The certification shall identify the systems, machine or equipment on which the hazardous energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

32.12. Training and Communication

- 32.12.01. The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. The training shall include the following:
 - 32.12.01.01. Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
 - 32.12.01.02. Each affected employee shall be instructed in the purpose and use of the hazardous energy control procedure.
 - 32.12.01.03. All other employees whose work operations are or may be in an area where the hazardous energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out and or tagged out.

- 32.12.01.04. When tag out systems are used, employees shall also be trained in the following:
 - 32.12.01.04.01. Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.
 - 32.12.01.04.02. When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.
 - 32.12.01.04.03. Tags shall be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
 - 32.12.01.04.04. Tags and their means of attachment shall be made of materials which will withstand the environmental conditions encountered in the workplace.
 - 32.12.01.04.05. Tags shall hold the same magnitude of significance as a lock. The meaning of equal authority to a lock shall to be understood as part of this overall control of hazardous energy program.
 - 32.12.01.04.06. Tags shall be securely attached to energy isolating devices so that they cannot be inadvertently or unintended detached during use.

32.12.02. Employee Retraining

- 32.12.02.01. Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.
- 32.12.02.02. Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of these control of hazardous energy procedures.
- 32.12.02.03. The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.
- 32.12.02.04. The employer shall document that employee training has been accomplished and is being kept up to date. The verification shall contain each employee's name and dates of training.

32.13. Energy Isolation

- 32.13.01. Lockout or tag out shall be performed only by the authorized employees who are performing the servicing or maintenance.

32.14. Notification of employees

32.14.01. Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout devices or tag out devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment.

32.15. Application of Control of Hazardous Energy Procedures

32.15.01. The established procedures for the application of the control of hazardous energy procedures shall cover the following elements; actions and shall be done in the following sequence:

32.15.02. Preparation for shutdown

32.15.02.01. Before an authorized or affected employee turns off a system, machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.

32.15.03. Sequential Shutdown

32.15.03.01. The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown shall be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.

32.15.04. System, machine or equipment isolation

32.15.04.01. All energy isolating devices that are needed to control the energy to the system, machine or equipment shall be physically located and operated in such a manner as to isolate the system, machine or equipment from the energy source(s).

32.15.04.01.01. Lockout and or tag out device application

32.15.04.01.02. Lockout and or tag out devices shall be affixed to all affected energy isolating device by an authorized employees.

32.15.04.01.03. Lockout devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position.

32.15.04.01.04. Tag out devices, where used, shall 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 is prohibited.

32.15.04.01.05. Where a tag out devices is used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached.

32.15.04.01.06. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

32.15.05. Stored Energy

32.15.05.01. Following the application of lockout and or tag out devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

32.15.05.02. If there is a possibility of accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

32.15.06. Verification of isolation

32.15.06.01. Prior to starting work on a system, machines or equipment that have been locked out and or tagged out; the authorized employee shall verify that isolation and de-energization of the machine or equipment have been accomplished.

32.15.07. Release from lockout and or tagout

32.15.07.01. Before lockout or tags out devices are removed and energy is restored to the system, machine or equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:

32.15.07.01.01. The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

32.15.08. Employees

32.15.08.01. The work area shall be checked to ensure that all employees have been safely positioned or removed.

32.15.08.02. After lockout or tags out devices have been removed and before a system, machine or equipment is started, affected employees shall be notified that the lockout or tags out device(s) have been removed.

32.15.09. Lockout and or tagout device removal

32.15.09.01. Each lockout and or tagout device shall be removed from all energy isolating devices by the employee who applied the devices.

32.15.10. Reenergize and Test

32.15.10.01. Reenergize and test the system, machine or equipment to verify operability and readiness to return to normal operation.

32.15.11. Return system, machine or equipment to normal operation.

Exception: In the event an authorized employee who applied the lockout or tag out device is not available to remove it, that device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented and incorporated into the employer's hazardous energy control program. The employer shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it.

32.15.12. The specific procedure shall include at least the following elements:

- 32.15.12.01. Verification by the employer that the authorized employee who applied the device is not at the facility;
- 32.15.12.02. Making every and all reasonable efforts to contact the authorized employee to inform that the lockout and or tagout device assigned to that employee has been removed; and
- 32.15.12.03. Ensuring that the authorized employee has this knowledge of these actions before resuming any activities on that system, machine or equipment.

32.16. Verification of Readiness to Return to Normal Operation

32.16.01. Testing or positioning of system, machines or equipment. Situations which lockout and or tag out devices shall be temporarily removed from the energy isolating device and the system, machine or equipment energized to test or position the system, machine, equipment, the following sequence of actions shall be followed:

- 32.16.01.01. Clear the system, machine or equipment of tools and materials in accordance with this procedure;
- 32.16.01.02. Remove employees from the system, machine or equipment area in accordance with this procedure;
- 32.16.01.03. Remove the lockout and or tag out devices as specified in in this procedure;
- 32.16.01.04. Energize and proceed with testing or positioning;
- 32.16.01.05. De-energize all system, machine or equipment and reapply energy control measures in accordance with this procedure to continue the servicing and or maintenance or
- 32.16.01.06. Return System, machine or equipment to Normal Operation

32.17. Outside personnel

32.17.01. Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tag out procedures.

32.17.02. The on-site employer shall ensure that affected employees understand and comply with the restrictions and prohibitions of the outside employer's control of hazardous energy program.

32.18. Group lockout and or tagout

- 32.18.01. When servicing and or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tag out device.
- 32.18.02. Group lockout or tag out devices shall be used in accordance with the procedures required by this policy including, but not necessarily limited to, the following specific requirements:
 - 32.18.02.01. Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tag out device (such as an operations lock);
 - 32.18.02.02. Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tag out of the machine or equipment; and
 - 32.18.02.03. When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tag out control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and
 - 32.18.02.04. Each authorized employee shall affix a personal lockout and or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.