Facilities Operations and Development

Control of Hazardous Energy
(Lockout/Tagout)

Applies to: All FOD employees, students, contractors, and visitors
Revised: March 2013

Overview

I. To prevent death, injuries, and property loss, Facilities Operations and Development (FOD) requires that all employees, students, contractors, and visitors comply with the requirements of the Control of Hazardous Energy Standard (OSHA 29CFR 1910.147 and 1910.269), commonly referred to as Lockout/Tagout (LOTO) standards.

II. This policy establishes requirements for the lockout of energy-isolating devices. The intent is to ensure that equipment is de-energized and isolated from all potentially hazardous energy sources and locked out before employees perform service or maintenance tasks where the unexpected energizing, start-up, or release of stored energy could cause injury.

III. All FOD employees, students, contractors, and visitors are required to comply with the procedures established by this policy. Authorized employees are required to perform LOTO in accordance with the procedures established herein. All other, non-authorized employees observing equipment that is locked out shall not attempt to start up, energize, use the equipment, tamper with, or remove the LOTO device. Failure to comply with the provisions of this program may result in corrective action, up to and including termination.

Definitions

Term	Definition
Affected Employee	The employee whose job requires the operation or use of a machine or equipment on which servicing or maintenance is being performed under LOTO.
Authorized Employee	An employee who has received the proper training and has been "authorized" by their department to apply LOTO devices when necessary to LOTO hazardous energy sources to perform service or maintenance.
Capable of Being Locked Out	An energy-isolating device that is designed with a hasp or other means of attachment to which or through which a lock can be affixed or has a locking mechanism built into it. Other energy-isolating devices also will be considered to be 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.
Caution Tag	A warning device such as a tag with means of attachment used to warn employees of an existing or potential hazard. Its legend cautions personnel of the hazard(s) and identifies the employee who attached the tag.
Energy-Isolating Device	A mechanical device that physically prevents the transmission or release of energy, including but not limited to 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 no pole can be operated independently; a line valve; a block; any similar device used to block or isolate energy. The term does not include push button, selector switch, or other control type devices.

Term	Definition
Lockout	The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, to ensure that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
Lockout Box	A lockable storage box capable of securing keys to lockout devices.
Lockout Device	A device that utilizes an affirmative means such as tags, locks, hasps, chains, and other hardware to secure an energy-isolating device in a safe position and prevent the operation or energizing of hazardous energy sources.
Lockout Form	A preprinted form to fill out for group LOTO procedure to document and communicate isolation and repair status.
Lockout/Tagout	Specific practices and procedures to safeguard employees from the unexpected energizing or start-up of machinery and equipment or the release of hazardous energy during service or maintenance activities. See LOTO.
LOTO	Acronym for lockout/tagout.
LOTO, Group	Type of lockout procedure used for multiple workers, work groups, and/or work shifts.
LOTO, Individual	Type of lockout procedure used where one individual has total responsibility for the lockout and repair.
LOTO, Release	Process of removing all locks, tags, and devices for the purpose of testing.
Other Employee	An employee whose job requires them to work in an area where service or maintenance is being performed in conjunction with a hazardous energy source.
Owner/Operating Supervisor	Responsible person for the operation, shutdown, and start-up of equipment to be locked out. May have responsibility for the equipment maintenance and repair.
PPE	Personal protective equipment.
Servicing Supervisor	Responsible person for the service group working on equipment when the group performing the service work is different from the owner/operator.
Servicing/Maintenance	Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining machines or equipment. These activities include lubricating, cleaning, or un-jamming machines or equipment, and making adjustments to tools where the employee may be exposed to the unexpected energizing or release of hazardous energy.
Tagout	The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, to indicate that the energy-isolating device and equipment being controlled may not be operated until the tagout device is removed. When tagout procedures are utilized, additional safety practices will be required, such as removing fuses, etc. A tag is only a warning device.
Tagout Device	A prominent warning device such as a tag and means of attachment that 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 tagout device is removed.

Details

I. Employees or contractors who perform installation, servicing, and maintenance tasks on machinery or equipment shall utilize LOTO procedures when the following situations exist:
   a. When the machine or piece of equipment has the potential for unexpected energizing or start-up and when the release of stored energy could cause injury.
   b. When the employee is required to remove or bypass a guard or other safety device.
   c. When an employee is required to place any part of their body into an area of a machine or piece of equipment where an associated danger zone exists during a machine operating cycle.
   d. Renovation work that requires connection to energized equipment.
   e. Once new construction is connected to utility systems, such as water, gas, steam, or electrical systems, and capable of containing hazardous energy.

II. It is FOD procedure to protect employees from known hazards in the workplace. This is accomplished by complying with promulgated health and safety programs and standards and by implementing administrative and engineering controls and by utilizing PPE. Among these compliances are the procedures for LOTO.

Procedure

I. Standardized Devices
   a. LOTO devices shall be standardized, identified as such, and used only for the LOTO program within the department (i.e., Facilities Operations and Development, Student Life, Athletics, etc.). All other uses are prohibited.
   b. The lockout devices shall be uniquely identified in at least one of the following criteria: color, shape, size. In the case of tagout devices, print and format shall be standardized.

II. Durable Locks and Tags (Figure 1: Sample LOTO Devices)
   a. 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.
   b. Tagout devices shall be substantial enough to prevent inadvertent or accidental removal.
      i. Tagout devices shall be non-reusable, attached by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds.
      ii. Tagout devices also need to have the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.

Figure 1: Sample LOTO Devices

III. Application

a. All authorized employees shall follow LOTO procedures when service and maintenance tasks are performed on equipment and machinery where the unexpected start-up or energizing of the equipment or the unexpected release of stored energy could cause an injury or fatality (Appendix I, Functional Flow Diagram).

b. Lock When Feasible

i. When an energy-isolating device (valve, breaker, switch, etc.) is capable of accepting a lock, a lockout shall be applied.

ii. Whenever there is replacement, renovation, repair, or modification of a machine or equipment or when new machines or equipment are installed, energy-isolating devices for such machines or equipment shall be installed.

iii. "Danger, Do Not Operate" tags shall be used only for lockout applications and shall be installed at the lockout point. The tags shall be used for no other application (Appendix E - Standard Lockout Tag – Sample).

c. Individual LOTO Procedures

i. Review a LOTO procedure plan

1. If there are specific LOTO procedures for equipment, obtain a copy and review procedures.
2. If no equipment specific procedures exist, complete a lockout work plan for the equipment to be locked out (Appendices C and D – Sample Written Procedure, Equipment Lockout/Tagout Work Plan).

ii. Identify energy sources and isolating devices.

1. Employees performing LOTO shall identify all sources of energy (Appendix A, Energy Source Determination) and shall determine which switches, breakers, valves, or devices that isolate the equipment to be locked out as identified in the Equipment Lockout/Tagout Work Plan.

iii. Notify all affected employees.
   1. The authorized employee(s) performing LOTO shall notify all affected personnel that the equipment is being de-energized and locked out.

iv. Shut down the machine, equipment.
   1. The equipment shall be shut down per normal operating procedures (depress the stop button, open switch, close valve, etc.).

v. Position the energy-isolating devices.
   1. The equipment shall be de-energized so the machine or equipment is isolated from the energy source(s). This is accomplished by operating the appropriate switch, breaker, valve, or other device.

vi. Apply LOTO.
   1. All energy-isolating devices (valves, breakers, switches, etc.) shall be locked out and tagged. A "Danger, Do Not Operate" tag shall be securely attached with the lock and shall possess the name of the person that applied the lockout and the date that it was applied.

vii. Focus on residual or stored energy.
   1. Following isolation and lockout and before any work begins, all stored or residual energy (such as that stored in capacitors, spring elevated machine members, rotating flywheels, hydraulic systems, air, gas, steam, water pressure, thermal energies, etc.) shall be dissipated and the equipment shall be reduced to a zero energy state. This may involve but is not limited to:
      a. Discharging capacitors on electrical equipment.
      b. Venting and drawing pressurized fluids and gases.
      c. Cooling off hot equipment.
      d. Blocking of all machinery components that could move, rotate, or fall.
      e. Attaching electrical grounding devices.

viii. Verify isolation.
   1. Before verification, ensure that all personnel are clear from the area. Proceed in checking that the system or piece of equipment has been de-energized. This may be done by utilizing electrical testing instruments, visual inspection of vents and drains, or by attempting to operate the system or equipment from the normal control station.

ix. Perform the repair or servicing task.

x. Restore equipment to service.
   1. When servicing and maintenance have been completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:
      a. Inspect the work area to be sure the equipment is fully assembled and operational.
      b. Check to ensure that all remote controls are in the off or neutral position.
      c. All devices positioned to dissipate stored energy are re-positioned as necessary for normal start-up.
      d. Ensure the job site is secure and equipment is ready to be energized.
      e. Ensure all affected personnel are informed that the equipment is to be re-energized and are stationed at a safe location.
      f. Remove the lockout devices(s) and tags and energize the equipment using normal operating procedures, after ensuring the equipment can be safely energized and that all personnel are clear.

xi. Shift or personnel changes.
1. Whenever an *individual* LOTO procedure is extended beyond one work shift, the *individual* LOTO procedure needs to be switched over to a *group* LOTO procedure.

d. Group LOTO Procedures
i. Group LOTO is used whenever multiple repair workers and/or work shifts are involved.
ii. When maintenance work is performed by contractors or by work groups different than the group that operates the equipment, information exchange must occur to ensure that all parties are aware of the LOTO status of equipment/machines.
iii. Group LOTO follows all the requirements of *individual* LOTO procedures listed above in addition to:
1. A primary owner/operator will be designated. This employee will exercise primary responsibility for implementation of the LOTO procedure for the equipment and machinery to be serviced. The primary owner/operator will coordinate operations with equipment operators before and after LOTO.
2. The authorized employee is the coordinator for the project.
3. A verification system must be implemented to ensure the continued isolation and de-energizing of hazardous energy sources during maintenance and service operations. Typically this will involve the use of a Lockout/Tagout Work Plan (Appendix D) and a lock box to store the keys to locks on all energy-isolating devices. Once isolated, all keys will be placed in the lock box and the primary owner/operator will place a lock on the lock box containing the LOTO keys.
4. Each authorized employee working on the equipment shall individually verify that hazardous energy has been isolated and de-energized and place an individual lock on the lock box.
5. When more than one crew or trades craft is involved, a principal authorized employee who is responsible for the service repair group is designated. The service group supervisor will place a service supervisor lock on the group lock box and store the key in a mutually agreeable location.
6. Use LOTO release any time the lockout box needs to be opened during the servicing work, such as testing motor rotation. Clear all workers from the equipment, and worker locks off the lock box. When release is complete, restore isolation of energy sources.
7. Once servicing work is complete, all workers will remove their individual locks and tags. The servicing supervisor will inspect the work site and equipment and then remove their lock from the lock box and sign off on the LOTO form.
8. Specific written procedures must be developed and implemented for complex isolation systems or repair operations involving many workers over more than one work shift.

e. Tagout Procedures
i. Because of design characteristics of certain equipment, a lockout device is not always feasible. Whenever a tagout is independently used for the control of hazardous energy, the following steps shall be taken:
1. The tagout must be accomplished by a completed LOTO procedure work plan that states a tagout will be used.
2. Tagout must comply with basic LOTO procedures.
3. Tags shall be affixed at the same location that a lock would have been attached.
4. Affected employees will be trained and made aware of the use of tags.

5. It must be emphasized that tags are only warning devices.
6. Acceptable methods of isolating equipment being tagged out include:
    a. Removal of an isolating circuit breaker
    b. Blocking of a control switch
    c. Opening a second disconnecting device
    d. Removal of a valve handle

ii. Whenever tagout is used, additional safety precautions should be taken to isolate equipment and prevent energizing the equipment.

iii. A tagout shall be used only when the design of equipment or machinery makes it unfeasible to utilize a lockout device.

f. Removal of a lockout device in an employee absence
    i. Before any lockout is removed the employer must:
        1. Verify the employee is not on the premises.
        2. Attempt to contact the employee to verify job/equipment status.
        3. Verify that the equipment can be safely energized.
        4. Record on the lockout form that the person's lockout device was removed.
        5. Inform the employee upon return that their lockout device was removed.

g. Each department/area will be responsible for developing and implementing specific procedures for all special situations.

IV. Exemptions

a. This standard does not apply to the following:
    i. Equipment or tools that have no potential to release stored or residual energy do not need to be locked out. Consider all sources of stored energy, such as springs or capacitors, before performing work.
    ii. Energized Equipment Maintenance
        1. Hot Tapping: When a continuity of a vital service is absolutely essential, hot tap operations involving pressurized lines (steam, natural gas, etc.) may be completed without applying specific LOTO procedures. This exception may occur only when shutdown is not feasible and engineering analysis of the hot tap procedure has been completed. Only qualified personnel, provided with adequate protection, training, and equipment may perform hot tapping.
        2. Hot Work: Employees will utilize electrical hot work practices for working with energized electrical equipment, i.e., use of arc shields, hot work gloves, intrinsically safe work boots, aprons, etc. (Appendix B, Electrical Work Practices). Engineering analysis, including shock and arc flash hazard analysis, will determine the injury potential and determine the appropriate PPE. The use of such protective equipment is essential while working on energized equipment. Only qualified personnel may perform hot work.
        3. Cord and Plug Equipment
            a. LOTO procedures are not required in situations where the employee has complete control at all times of the cord and plug on electrical equipment and the accidental start-up or energizing is totally controlled by unplugging the equipment.
                i. The plug must be within reach of the employee at all times.

Responsibilities

Individual or Office	Responsibilities
Affected and Other Employees	1. Do not attempt to operate or energize any energy-isolating device that is under LOTO. 2. Do not tamper with any lockout device or tag. 3. Report violations to their immediate supervisor.
Authorized Employees	1. Properly identify and perform LOTO on all hazardous energy sources. 2. Notify affected employees that LOTO activities will be conducted. 3. Follow specific LOTO procedures for equipment and machinery. 4. Report violations to their immediate supervisor.
Contractors	1. Before any work is performed by an outside contractor, the contractor's job site supervisor shall be informed of and be provided with a copy of "Control of Hazardous Energy" by the project manager/university representative. 2. Contractors will meet with the project manager/university representative before performing LOTO on operating equipment. 3. Contractors shall be fully responsible for ensuring that their employees will comply with the OSHA individual or group LOTO procedures. Contractors failing to follow appropriate procedures will be instructed by the project manager/university representative to stop work until compliant.
Directors, District Leaders, Assistant Directors	1. Ensure periodic evaluations (Appendix H, Lockout/Tagout Periodic Evaluation and certification Form) are completed by Superintendents, Supervisors, District Leaders, etc., within their organization and appropriate corrective action is taken when necessary. 2. Ensure that an Environmental Health and Safety (EHS) representative performs an annual administrative review for their area.
Environmental Health and Safety	1. Conduct annual administrative reviews of the "Control of Hazardous Energy." 2. Provide a safety professional resource to the departments for implementing LOTO.
Managers, Supervisors, Superintendents, Zone Leaders	1. Conduct employee training on specific procedures. 2. Maintain a list of authorized employees, i.e., those who perform the Lockout (Appendix G – Employees Authorized to Perform Lockout/Tagout record). 3. Supply a sufficient quantity of locks, tags, and lockout devices. 4. Ensure all new and replacement energy-isolating devices (valves, breakers, chillers, and switches) that are purchased and installed are capable of accepting an energy-isolating device to comply with OSHA 29CFR 1910.147. 5. Develop equipment-specific LOTO procedures for each type of equipment (Appendix C – Sample Written Procedure). 6. Review LOTO procedure work plans before scheduled work (Appendix D-Equipment Lockout/Tagout Work Plan). 7. Conduct periodic evaluations of LOTO procedures (Appendix H – Lockout/Tagout Periodic Evaluation and Certification Form).

Individual or Office	Responsibilities
Project/Construction Managers	1. Ensure coordination of LOTO once new construction or renovation is to be connected to energy sources. 2. Provide copy of "Control of Hazardous Energy" to contractors. 3. Ensure all new and replacement energy-isolating devices (valves, breakers, chillers, and switches) that are purchased and installed are capable of accepting an energy-isolating device to comply with OSHA 29CFR 1910.147.

Training and Record Keeping

I. Training on the purpose, content and function of the LOTO policy is required for all employees who participate in or are affected by the LOTO of equipment. Training can be obtained through EHS and/or through department-specific training. Records must be kept showing training dates, attendance, items covered, and name of presenter (Appendix F, Lockout/Tagout Record of Employee Training).
   a. Authorized Employees
      i. Authorized employees are those who have received proper training and have been "authorized" by their department to apply LOTO devices when necessary. Training for authorized employees shall include:
         1. The recognition and identification of potential hazardous and stored energy sources in the work area or department.
         2. Explanation and proper use of LOTO procedures.
         3. Proper use, application, and removal of LOTO devices and systems.
         4. Specific area equipment LOTO procedures.
         5. How to deal with special conditions.
   b. Affected Employees
      i. Affected Employees are those whose job requires the operation or use of a machine or equipment on which servicing or maintenance is being performed under LOTO. Training for affected employees shall include:
         1. Purpose and use of the LOTO procedures.
         2. How to recognize LOTO equipment.
         3. Prohibition on tampering with LOTO equipment.

II. Retraining
   a. Retraining or additional training is required whenever:
      i. There is a new or revised energy control procedure.
      ii. An authorized employee's job duties change regarding LOTO.
      iii. The LOTO Program changes.
      iv. Additional unique LOTO hazards arise, such as new equipment, modified processes, or the use of different LOTO devices.
      v. Periodic inspections or program evaluations show employee deficiencies in LOTO techniques.
      vi. Tri-annual refresher training is due.

III. Annual Program Evaluation

a. Program evaluation shall be made periodically and as a minimum once per year. The evaluation will be made by management personnel of randomly selected authorized employees or supervisors to ensure that LOTO procedures are followed. The evaluation will include a field inspection and will be recorded on a standardized Hazardous Energy Control Program Evaluation and Certification Form (Appendix B). If deficiencies are identified, the program will be reviewed and modified as required. Once per year, an Administrative Review will be completed by an EHS representative for the area and reviewed with the appropriate director.

IV. Recordkeeping

a. All records applicable to the Hazardous Energy Control Program (LOTO) shall be maintained on file for five (5) years. Records shall include:
   i. Training session outlines.
   ii. Training attendance sheets (Appendix F).
   iii. Training exam scores.
   iv. Completed LOTO forms (Appendices A, C, and D).
   v. Program evaluation forms (Appendix H).
   vi. List of authorized employees (Appendix G).
   vii. Annual administrative reviews.
   viii. Action plans and follow-up from evaluations and reviews.

Appendix A – Energy Source Determination

To determine all energy sources for each piece of equipment, all questions must be answered. If the question does not apply, write N/A in the blank.

Date	Conducted by
Location	Work Center
Line	Equipment #
Equipment Name	Model
Procedure # Assigned	Serial #
List of Authorized Employees	

Energy Determination	Yes/No	Comments
Electric power greater than 50 volts? (Appendix B)		If YES, list Motor Control Center (MCC) or power panel and breaker number
Lockout device for electric power?		
Battery power?		If YES, list location
Engine driven?		If YES, switch or key location
Lockout device for engine?		If NO, list method of preventing operation
Spring loaded?		
Is there a method of preventing spring activation?		If NO, how can spring tension be safely released or secured?
Counter weight(s)?		
Can counter weights be prevented from moving?		
Can counter weights be locked out?		If NO, how can it be secured?
Flywheel?		
Does flywheel have a method of preventing movement?		
Can flywheel be locked?		If NO, how can it be secured?
Hydraulic power?		If YES, location of main control/shutoff
Can control or shutoff for hydraulic be locked in OFF position?		If NO, location of closest manual shutoff valve
Does manual shutoff valve have lockout device?		If NO, what is needed to lock valve closed?
Is there a bleed or drain valve to reduce pressure to zero?		If NO, what will be required to bleed off pressure?
Pneumatic energy?		If YES, location of main control/shut off valve
Can control/shutoff valve be locked in "OFF" position?		If NO, location of closest manual shutoff valve

Energy Determination	Yes/No	Comments
Does manual shutoff valve have lockout device?		If NO, what is needed to lock valve closed?
Is there a bleed or drain valve to reduce pressure to zero?		If NO, what will be required to bleed off pressure?
Chemical system?		**If YES, location of main control/shutoff valve.**
Can control/shutoff valve be locked?		If NO, location of manual shutoff.
Does manual shutoff valve have lockout device?		If NO, what is needed to lock valve closed?
Is there a bleed or drain valve to safely reduce system pressure and drain system of chemicals?		If NO, how can system be drained and neutralized? What PPE will be needed for this procedure?
Thermal energy?		**If YES, location of closest manual shutoff valve.**
Can control/shutoff valve be locked in OFF or closed position?		If NO, location of closest manual shutoff valve.
Does manual shutoff valve have lockout device?		If NO, what is needed to lock valve closed?
Is there a bleed or drain valve to safely reduce system pressure and temperature and drain system?		If NO, how can system pressure and temperature be reduced and drained? What PPE or equipment is needed?
Are there any special precautions not mentioned in this table?		If YES, list them (i.e., fire hazards, chemical reactions, required cool down periods, etc.)

You can use the information on this document to develop a specific procedure that will protect the authorized employees who will be performing LOTO at your facility. Appendix C has a sample procedure form.

Appendix B – Electrical Work Practices

The adoption of the following elements for electrical work is designed for in-plant electrical work of 600 volts or less. This adoption of the following requirements is not intended to be used for medium and high voltage work over 600 volts or exposure to overhead power lines. Users should refer to and comply with the requirements of "Control of Hazardous Energy" (OSHA 29CFR 1910 and the NFPA Standard 70E, Article 120) in addition to these elements.

Electrical LOTO
Electrical work requires a lock and a tag to be used together, but a tag can be used by itself only if the electrical disconnecting source does not have lockout capabilities.

Locks can be placed without a tag only under the following conditions:
1. Only one circuit or piece of equipment is de-energized.
2. The lockout period does not extend beyond the work shift.
3. Employees exposed to the hazards associated with reenergizing the circuit or equipment is familiar with the procedure.

A tag used without a lock shall be supplemented by one additional safety measure such as but not limited to removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

Electrical Test Verification of De-energized Circuits
A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are de-energized. Where the possibility of induced voltages or stored energy exists, ground the phase conductors or circuit parts before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, apply ground connecting devices rated for the available fault duty.

Work on Energized Circuits
Approval must be obtained from the Senior Director of Operations/Utilities or designee before work on energized circuits. The Senior Director of Operations/Utilities or designee will be responsible for specifying appropriate personnel equipment to be used, to ensure compliance with 29 CFR 1910.335. Personal protective equipment for electrical hazards shall meet, be used, and be maintained in accordance with ANSI J6.1 through J6.7. Qualified employees for electrical work shall be aware of and follow the approach distances for qualified employees for alternating current as specified in Table S-5 of 29 CFR 1910.333.

Appendix C – Sample Written Procedure

Equipment, Machinery, or Process	
Specific Procedure #	
Date Approved/Implemented	

Energy Control Measures Used in This Procedure

Lock	Tag	Block	Blind	Other (be specific)
Yes/No	Yes/No	Yes/No	Yes/No	

Specific Procedure

Note: Required for all equipment, machinery, and/or processes that fail to meet the exceptions noted in 29 CFR 1910.147(c) (4) (I).

Failure to comply with these procedures may result in disciplinary action or employee discharge.

1. The purpose of this procedure is to protect the employees of _____.
2. Type(s) and Magnitudes(s) of energy and Hazards:
3. Names(s)/Job Title(s) of Authorized Employees:
4. Name(s)/Job Title(s) of Affected Employees and How to Notify:
5. Name(s)/Job Title(s) of Other Employees (if applicable):
6. Type(s) and Location of Energy Isolating Means:
7. Type(s) of Stored Energy-Methods to Dissipate or Restrain:
8. Additional Methods(s) Selected to Ensure that Tags Provide Adequate Level of Safety (i.e., removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, the removal of a valve handle to reduce the likelihood of inadvertent energizing, blocks to support elevated members, blinds in pipes, etc.):
9. Type(s) of Equipment Checked to Ensure Disconnections:
10. Name(s)/Job Title(s) of Employees Authorized for Group Lockout/Tagout:
11. Special Precautions not Noted Above (i.e., fire hazards, chemical reactions, required cool-down periods, etc.)

Appendix D – Equipment Lockout/Tagout Work Plan

Equipment: _____ **Location:** _____

Work Scope: _____

Contact Person: _____

Energy/Flow to be controlled (cross off those that DO NOT apply)

Steam	Natural Gas	Moving Parts	Chemicals
Compressed Air	Pneumatic	Electric Power >50 volts	_____
Control Power	Water	Hydraulic	_____

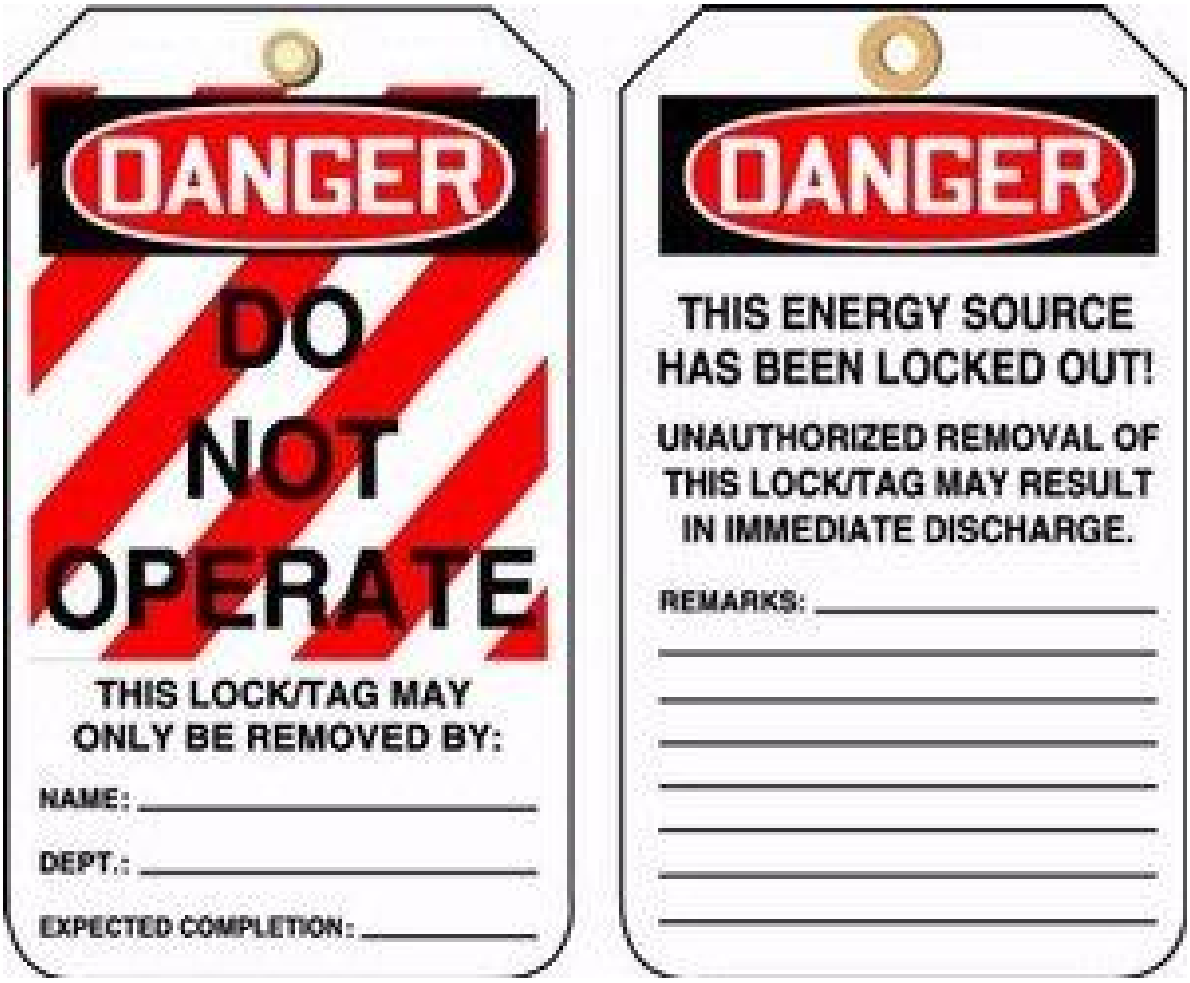
Lockout Checklist

____ Complete an Equipment Lockout Plan
____ Identify all energy sources
____ Notify affected employees
____ Shut down the equipment
____ Isolate the equipment
____ Apply lockout devices
____ Reduce equipment to a zero energy state
____ Verify equipment isolation
____ Perform task
____ Peform LOTO release if needed for testing and then restore isolation
____ Return equipment to service

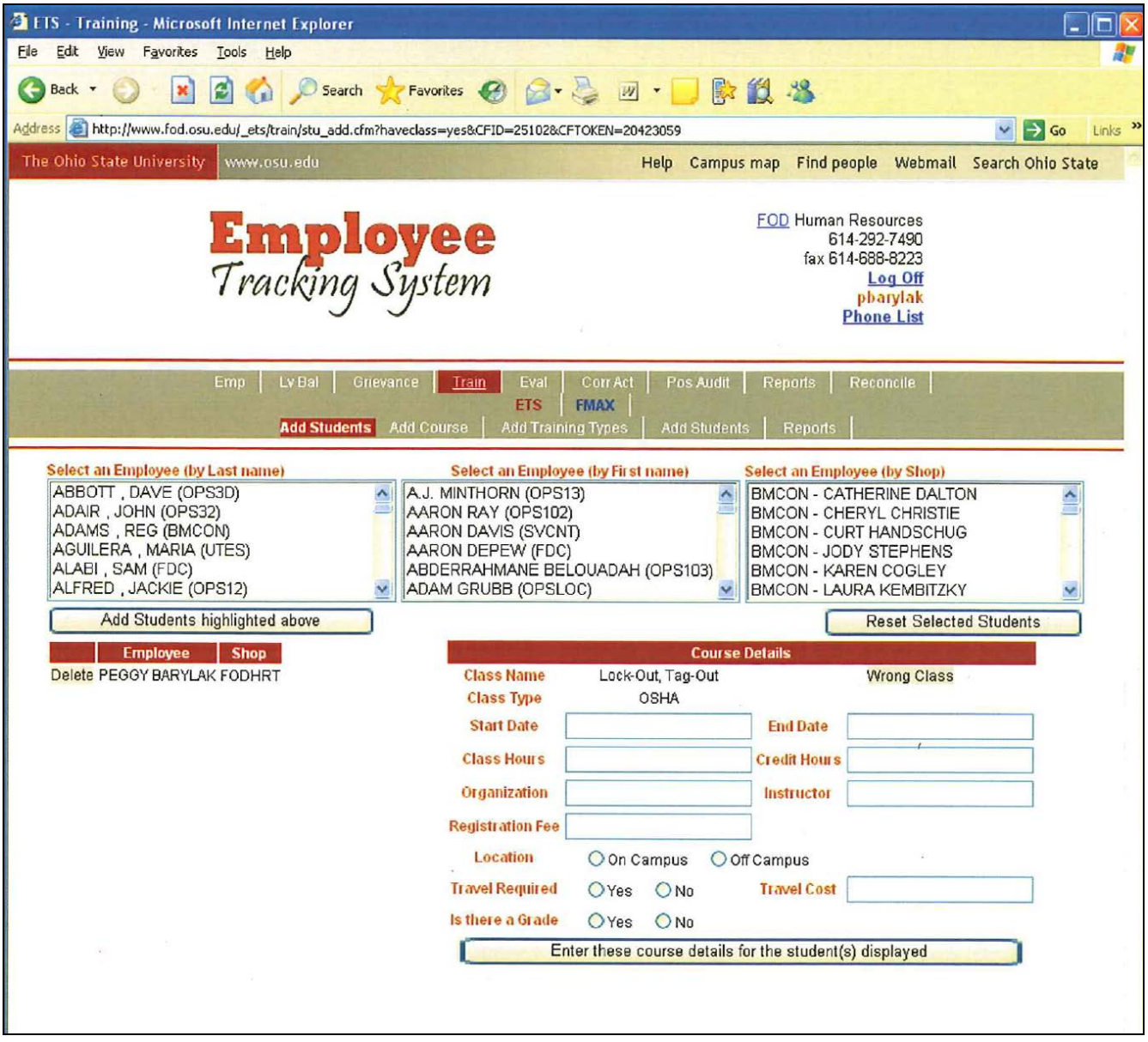
Lockout Point

Hazard	Action Required	Lock #	Name	Locks On	Locks Off

Appendix E Standard Lockout/Tagout Tag (Sample)



Appendix F – Lockout-Tagout record of Employee Training (Sample)



Appendix G – Employees Authorized to Perform Lockout/Tagout

Manager/Supervisor of authorized employees:		
Section, Division or Shop:		
Name of authorized employee	**Date restrictions (Trained?)**	**Authorized (if any apply)**

Appendix H – Lockout/Tagout Periodic Evaluation and Certification Form

Authorized Employee(s) Being Evaluated:		
Item or Equipment:		
Location:		
Hazardous Energy Being Controlled:		
Name of Evaluator:		
Date Evaluation Conducted:		
EVALUATION OF HAZARDOUS ENERGY CONTROL PROCEDURES		
Item Being Evaluated	Correct	Incorrect
1. Lockout Procedure Work Plan Properly Executed		
2. Correct Energy Isolation Point Identified		
3. Affected Personnel Notified or Lockout/Tagout		
4. Machine, Device or System Properly Shut Down and Secured		
5. Energy-isolating device Properly Secured		
6. Energy-isolating device Properly Locked/Tagged Out		
7. Machine, Device or System is Properly Reduced to a Zero Energy State		
8. Lockout is Verified		
9. Work is Being Performed in a Safe Manner		
10.Review of employee responsibilities for Lockout/Tagout, and Lockout/Tagout procedure with employee		
Comments/Corrective Actions Taken:		
Lockout/Tagout Correctly Applied and is Certified by Evaluators	YES	NO

Evaluators Signature: _____ Title: _____

Appendix I – Functional Flow Diagram

FUNTIONAL FLOW DIAGRAM
Implementation of Lockout/Tagout Requirements