

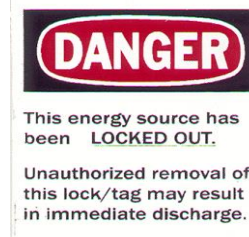
# The University of Missouri - Columbia



## The Control of Hazardous Energy

### LOCKOUT / TAGOUT PROGRAM

---



---

Prepared by the Campus Facilities Safety Department



## **Forward**

The compound terms 'tagout' and 'lockout' (as specialized within this context), which would normally appear as two words each, are spelled in this document as they appear in the O.S.H.A. Standards. Similarly, the outline numbering scheme is taken directly from the O.S.H.A. example.

# Introduction

"Lockout/Tagout (LOTO)" refers to specific practices and procedures to safeguard employees from the unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities.

## Table of Contents

---

Definitions .....	4
I. Program Administration .....	6
<i>a. Scope</i> .....	6
<i>b. Responsibilities</i> .....	6
<i>c. Training</i> .....	7
<i>d. Re-training</i> .....	7
<i>e. Compliance</i> .....	7
II. Lockout / Tagout Implementation .....	8
<i>a. Conditions for Implementing LOTO Procedures</i> .....	8
<i>b. What this program does not cover</i> .....	8
III. Lockout / Tagout Policy .....	9
<i>a. Locking</i> .....	9
<i>b. Tagging</i> .....	9
<i>c. Equipment Classification</i> .....	10
<i>d. Cord and Plug</i> .....	10
<i>e. Multiple Energy Sources</i> .....	11
<i>f. Equipment Having No LOTO Procedure</i> .....	11
<i>g. Requirements for LOTO Devices</i> .....	13
<i>h. Periodic Inspections</i> .....	13
<i>i. Use of Tagout Along</i> .....	14
<i>j. Additional Safety Measures to be followed</i> .....	15
IV. Sequence of Lockout .....	15
<i>a. Prepare for Shutdown</i> .....	15
<i>b. Shutdown</i> .....	15
<i>c. Isolate Equipment</i> .....	15

d. Applying lockout/tagout devices .....	16
e. Releasing stored energy .....	16
f. Verification(ensuring zero energy state) .....	16
g. Restoring Equipment to Service .....	17
V. Non-Routine Procedures .....	18
a. Testing or Positioning of Equipment.....	18
b. Group Lockout or Tagout.....	18
c. Shift or Personnel Changes .....	18
d. Absent Employee .....	19
e. Outside Contractor .....	19
VI. Training Program .....	20
a. Overview.....	20
b. Additional Training.....	20
c. Application of LOTO .....	20
d. Release .....	21
APPENDIX A Example Tags .....	22
APPENDIX B Forms .....	23
APPENDIX C Training Plan .....	28
..... Example Training Certificate	31
Training Certificate (Spanish Language) .....	32

## DEFINITIONS

---

**Authorized Employee:** An employee whose job requires that machines or equipment be locked or tagged in order to perform service or maintenance.

**Affected Employee:** An employee required to use machines or equipment on which servicing is performed under the Lockout/Tagout standard or who performs other job responsibilities in an area where such servicing is required.

**Other Employee:** An employee who is or may be in an area where energy control procedures may be utilized.

**Capable of being locked out:** An energy-isolating device considered capable of being locked out if:

- Designed with a hasp or mechanism to which a lock can be affixed
- Has a locking mechanism built into it
- Locked without dismantling, rebuilding, or replacing the energy-isolating device or permanently altering its energy-control capability.

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

**Energy isolating device:** A mechanical device that physically prevents the transmission or release of energy including, but not limited to the following:

- Manually operated electrical circuit breaker
- Disconnect switch.
- Manually operated switches by which the conductors of a circuit can be disconnected from all un-grounded 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.

***NOTE:** Push Buttons, Selector Switches and other Control Circuit type devices are NOT energy isolating devices.*

**Energy Source:** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

**Lockout:** The placement of a lockout device on an energy-isolating device -- in accordance with the established procedures -- that ensures the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

**Lockout Device:** Any device using positive means -- such as a lock, blank flanges and bolted slip blinds -- to hold an energy-isolating device in a safe position and thereby prevent machinery or equipment from being energized..

**Normal production operations:** Utilization of a machine or equipment to perform its intended production function.

**Servicing and/or maintenance:** Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining and/or servicing machine or equipment. This includes lubrication, cleaning or un-jamming of machines or equipment, and making adjustments or tool changes. This applies to any place where employees could be exposed to the unexpected energization or startup of the equipment, or release of hazardous energy.

**Tag-out:** 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 the equipment being controlled may not be operated until the tagout device is removed.

**Tagout Device:** Any prominent warning, such as a tag and a means of attachment, which can be securely fastened to an energy-isolating device to indicate that the machine or equipment to which it is attached may not be operated until the tagout device is removed.

## I. PROGRAM ADMINISTRATION

---

### (a) Scope of the Lockout/Tagout (LOTO) Program

This program outlines the procedures and rules to be followed by Campus Facilities employees for safely servicing and maintaining machines and equipment where exposure to the unexpected release of hazardous energy may occur. Procedures herein apply to all mechanical, hydraulic, pneumatic, chemical, thermal, or other energy systems and equipment that use or can store energy.

#### (1) Purpose

The LOTO program intends to, at a minimum, meet all applicable provisions mandated by the Occupational Safety and Health (OSHA) standard, 29CFR 1910.147, which requires that machinery and/or equipment is shutdown, isolated from all potentially hazardous energy sources, and tagged and locked out before employees perform any servicing or maintenance where the *unexpected* energization or start-up could cause injury.

### (b) Responsibilities

#### (1) The C.F. Safety Coordinator and LOTO Administrators

- (i) Develop, maintain, and evaluate the procedures herein
- (ii) Uphold each department utilizing the Campus Facilities LOTO program to establish documented site-specific procedures for energy isolation. (See Appendix B)

#### (2) Managers/Supervisors

- (i) Ensure that employees understand and comply with LOTO procedures
- (ii) Conduct employee training with the departmental LOTO administrator
- (iii) Maintain supplies of locks, tags and lockout devices

#### (3) LOTO-authorized Employees

- (i) Comply with LOTO procedures

#### (4) Other Affected Employees

- (i) Understand and follow LOTO procedures
- (ii) Notify supervision of hazards not identified or controlled by LOTO procedures.

#### (5) Outside Contractors

- (i) Comply with Campus Facilities' LOTO program when work involves CF employees
- (ii) Inform Campus Facilities employees of contractor LOTO program
- (iii) Ensure that contractor personnel understand CF LOTO procedures.
- (iv) Ensure that C.F. employees understand and comply with the contractor's LOTO program.

### (c) Training

- (1) Employees affected by LOTO procedures will be formally trained and tested on the contents herein. Copies of written tests will be kept on file in the certifying department.
  - (i) Authorized Employees: Shall receive training on the recognition of applicable hazardous energy sources; the type and magnitude of energy available in the workplace; and the methods and means of energy isolation and control.
  - (ii) Affected Employees: Shall receive training on the purpose and use of energy control procedures.
  - (iii) Other Employees (workers in areas where energy-control procedures may be implemented): Shall be trained about the procedure and about prohibitions relating to restarting or re-energizing locked out or tagged out machines or equipment.

### (d) Re-training

- (1) Purpose:
  - (i) Introducing new or revised control methods and procedures
  - (ii) Re-establishing employee proficiency
- (2) Requirements for re-training:
  - (i) Change in job assignments.
  - (ii) Change in machines, equipment, or processes that present new hazards
  - (iii) Change in energy-control procedures
  - (iv) Deviations by employees from energy-control procedures
  - (v) Noted inadequacies in LOTO knowledge and/or practices

### (e) Compliance

- (1) Campus Facilities employees shall comply with LOTO program procedures. Compliance will be enforced according to Campus Facilities discipline practices, with evaluations kept on file for five years.
- (2) Campus Facilities employees are responsible for taking all necessary LOTO precautions to protect personnel and equipment. In the event any system is felt to be unsafe, this concern shall be voiced to others in the work site, the supervisor, department LOTO representative or the C.F. Safety Coordinator. Work shall NOT begin until all parties are assured the system is safely l.



## II. LOCKOUT/TAGOUT IMPLEMENTATION

---

### (a) Conditions for implementing LOTO procedures

- (1) When machine guards or other safety devices must be removed or bypassed, resulting in exposure to hazards –or to the points of operation
- (2) When any part of the employee’s body must come in contact with the point of operation of the machine or equipment.
- (3) When any part of the employee’s body must enter a danger zone associated with a machine operating cycle.

### (b) What this program does not cover

- (1) Servicing and maintenance of equipment if the safeguarding provisions of Subpart O<sup>i</sup>(Machine Guarding) and other applicable general industry standards are effective in preventing employee exposure to hazards:
  - (i) Unexpected energization
  - (ii) Startup of machines or equipment
  - (iii)Release of energy
- (2) Minor tool changes and adjustments, and other minor servicing activities if they take place during normal production operations that are routine, repetitive, and integral to the use of that production equipment, as long as employees are effectively protected by alternative measures, which provide effective machine safeguarding protection.
- (3) Hot tap operations that involve transmission and distribution systems for gas, steam, water, or petroleum products on pressurized pipelines if continuity of service is essential, shutdown of the system is impractical, documented procedures are followed, and employees are effectively protected by special equipment.
- (4) Work on cord- and plug-connected electrical equipment, if the equipment is unplugged from the energy source and the authorized employee has exclusive control of the plug. Exclusive control means that: The cord and plug must be in the possession of the person working on the equipment; OR The electrical cord and plug shall be within arms reach and in sight of the authorized employee; OR The authorized employee shall affix a lockout boot to the plug.

### III. LOCKOUT / TAGOUT POLICY

---

#### (a) Locking

Equipment needing repair or maintenance shall be evaluated to identify all potential energy sources and to determine if all energy sources are effectively isolated by the LOTO procedure. If an energy-isolating device is capable of being locked out, the authorized employee shall utilize lockout.

- (1) Locks and Keys Padlocks used for lockout procedures shall be of the key type. There shall be only two keys for each “lockout” padlock. One key shall be in the possession of the authorized employee. The second key – to be used only in an emergency -- shall be secured and controlled by the planned administrator. The planned administrator shall be responsible for ensuring that Form 2, Emergency Lockout/Tagout Removal in Appendix B, has been completed before the second key is released for use.

#### (b) Tagging

Tagout alone DOES NOT provide the degree of protection afforded by lockout procedures.

- (1) Tagging equipment without the use of a lockout device is permissible ONLY in instances where it is physically impossible to use a lockout device. If the equipment can be locked out , it shall be locked out.
- (2) TAGOUT WITHOUT LOCKOUT requires two forms of approval. If the department LOTO administrator can demonstrate to the Safety Coordinator that, in a particular situation, the utilization of a tagout system ensures full employee protection, then a tagout will be permitted.
- (3) Documentation of Tagout Alone will be required. One copy shall be placed in the “Site Specific” section of the departmental LOTO Manual (or otherwise directed by the department administrator), and a second copy in the Safety Coordinator’s C.F. LOTO Manual.
- (4) When a tagout device is used on an energy-isolating device that is not capable of being locked out, the tagout device will be attached at the same location that the lockout device would have been attached. In these cases a “Danger, Do Not Operate” tag shall be used.

### (c) Equipment Classification

Machinery and equipment shall be assessed and classified into one of three categories for determining LOTO procedures to be followed. Category procedures must be followed.

Categories of Procedures:

- i. Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy
- ii. Specific procedural steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them
- iii. Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures

EXCEPTION: Site specific procedures need not be in place if all of the following criteria are met:

- (1) Machinery or equipment has no other potential for stored or residual energy or re-accumulation of stored energy that after being shut down, could endanger employees.
- (2) Isolating and locking out of the energy source completely de-energizes and de-activates the machine or equipment.
- (3) Machinery or equipment requires only one lockout device to achieve a locked-out condition.
- (4) Machinery or equipment is isolated from its energy source and locked out during servicing or maintenance.
- (5) Servicing or maintenance will not create a hazard for other employees.
- (6) Accidents involving the machinery or equipment's unexpected activation have not occurred in past servicing.

***NOTE:** If all of the above criteria are met, a lockout device shall be applied to the energy-isolation device in accordance with LOTO Procedure Part IV by the authorized person doing the maintenance.*

#### A. Cord and Plug

Equipment powered by an electrical cord and plug may be serviced as long as the equipment is unplugged and under the control of the employee during the work activity. "Control of the Plug" means in possession: in the hand or pocket, within reach, or in line of sight or having a "plug boot" device on the plug.

## B. Single Energy Source

An equipment specific lockout/tagout procedure is not required for the equipment if ALL of the following criteria are met:

- 1) It has a single energy source that will completely de-energize and deactivate it
- 2) It has no other potential for stored energy
- 3) It requires only one lock to achieve lockout/tagout
- 4) It will not create a hazard for other employees
- 5) No accidents involving its unexpected activation have occurred in past servicing

If all of the above criteria are met, a lockout device shall be applied to the energy isolation device by the authorized person doing the maintenance activity.

## C. Multiple Energy Sources

Specific procedures for equipment with multiple energy sources are found in **LOTO Procedure Part V, "Equipment Specific Procedures."** If no procedure exists, a procedure must be established and documented prior to the commencement of maintenance activity.

- (a) Establish procedure (Form 1, Appendix C may be used for this task)
- (b) Document and retain a copy in the Departmental LOTO Procedures.
- (c) Forward a copy to the C.F. Safety Coordinator.

#### (d) Requirements for LOTO Devices

Devices -- locks, tags, chains, wedges, key blocks, adapter pins, and self locking fasteners -- shall be:

- (1) Durable, capable of withstanding the environment to which they are exposed for the maximum period of time.
- (2) Singularly identified as LOTO devices
- (3) The only devices used for controlling energy.
- (4) Shall be standardized within Campus Facilities Departments in the following criteria:
  - i. Color, shape, and size
  - ii. Print and print Format
- (5) Shall be identifiable, that is, indicating the identity of the employee applying the device
- (6) Shall be substantial enough to prevent removal without the use of excessive force or unusual techniques - (bolt cutters etc.)
- (7) Shall be constructed and printed to withstand weathering
- (8) Shall be able to withstand corrosive environments
- (9) Shall have an attachment means of a non-reusable type, attachable by hand, self-locking and non-releasable with a minimum unlocking strength of no less than 50 lbs.

#### (e) Periodic Inspections

- (1) Periodic inspections, conducted to identify and correct deficiencies or deviations, are performed by an authorized employee not involved in the energy-control procedure being inspected.
- (2) Where lockout is used, the inspecting employee must review the responsibilities of each “authorized” employee’s (group review meetings are acceptable).
- (3) Where tagout is used, the inspecting employee must review the responsibilities of “affected” and “authorized” employees’ responsibilities with those employees for which the energy-control procedure being inspected, and ensure each employee understands the requirements and limitations of a tagout procedure (as identified in paragraph i.)

Additional Training Responsibilities:

- i. 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.

- (4) Department LOTO Administrators shall ensure that an evaluation of energy-control procedures is conducted at least once a year in their departments. A copy of the evaluation will be sent to the C.F. Safety Coordinator and a copy will remain in the department's LOTO Procedures Manual. The certification of evaluation shall contain:
  - (i) The machine on which the procedure was used
  - (ii) Date of Inspection
  - (iii) Employees included in the inspection
  - (iv) Person/Persons conducting the inspection

**(f) Use of Tagout alone**

When equipment is physically incapable of accepting a lock, tagout shall be used. A "Danger-- Do Not Operate" tag shall be used (See Appendix B). The tags:

- (1) Do not provide the same protection as a lock – they are only warning devices. They must not be bypassed or ignored.
- (2) Shall be placed at the same location that would hold the lockout device.
- (3) Are attached to devices which, if operated or changed, might result in danger to employees or damage to equipment.
- (4) Shall be of a standardized design to aid in recognition.
- (5) Shall contain, at a minimum:
  - (i) Name of authorized employee
  - (ii) Department Name or Supervisor Name
  - (iii) Department Phone Number or Supervisor Phone Number
  - (iv) Date attached
  - (v) 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.
  - (vi) Tags must 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.
  - (vii) Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.
  - (viii) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
  - (ix) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.
- (6) Can only be removed by the authorized employee who placed it or through the emergency lockout/tagout removal procedure, Form 2 – Appendix B; and on CF Safety website.
- (7) Shall always be used in conjunction with lockout/tagout procedures

(8) Additional safety measures to be followed:

(i) Remove and isolate a circuit element.

(ii) Block a control switch.

(iii) Open extra disconnects.

(iv) Remove a valve handle.

(v) "DANGER" and "DO NOT OPERATE" tags with employee's name may not be reused beyond the scope of work or date of the tags.

## IV. SEQUENCE OF LOCKOUT

---

To ensure that the lockout/tagout procedures protect employees, as designed, follow the six steps below (a – e) **in order**. Specific Procedures for equipment may be found in “Lockout/Tagout Equipment Specific Procedures” .(Appendix B)

### (a) Prepare for Shutdown

Before the authorized or affected employee turns off the machine, the **authorized employee** shall:

- (1) Identify the type and magnitude of the energy that the machine or equipment utilizes.
- (2) Understand the hazards of the energy.
- (3) Know the methods available to control the energy.
- (4) Verbally 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. (For example, notify building coordinator, work order desk, etc.)

### (b) Shutdown

If the machine or equipment is operating, shut it down by the normal stopping procedure.

- (1) Depress the stop button etc. NOTE: Shutting down the machine must not create any additional hazards from equipment stoppage.

### (c) Isolate Equipment

- (1) Ensure that no personnel are exposed.
- (2) De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).
- (3) Ensure that the equipment is disconnected from the energy source(s).
- (4) Switches, circuit breakers, valves etc. must be physically located and disconnected by the authorized employee.



#### (d) Applying lockout/tagout devices

The authorized employee shall:

- (1) Apply LOTO Devices to each energy-isolating device. LOTO Devices must hold the switches, valves, etc., in the “safe” or “off” position.
- (2) Use assigned lock.
- (3) Fill out “Danger”, “Do Not Operate” LOTO tag with appropriate information. (See Appendix A)
- (4) Attach tags to each energy-isolating device.
- (5) The tag must clearly show that moving the energy-isolating device from the “safe” or “off” position is not allowed.

**NOTE:** *Many machines have more than one power source, make sure all of them are deactivated and secured.*

#### (e) Releasing stored energy

Residual energy can be extremely harmful. Stored or residual energy such as (capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained from the machine or equipment. Potentially hazardous stored or residual energy, from all sources and components, must be released, relieved, disconnected, or restrained.

- (1) The Authorized employee shall:
  - (i) Ground
  - (ii) Reposition
  - (iii) Bleed off pressure.
  - (iv) Block elevated parts in place
  - (v) Drain lines.
  - (vi) Let equipment cool.
  - (vii) Discharge capacitors
  - (viii) Use other methods available.

#### (f) Verification (Ensuring Zero Energy State)

To ensure that the Lockout/Tagout procedure has successfully isolated the machine/equipment, the authorized employee shall:

- (1) Operate the machine’s control to verify that the equipment is isolated by operating the push button or other normal operating control. Read pressure gauges or other similar devices.
- (2) Verify isolation - Test with other means such, as volt/amp/meter etc. to make certain the equipment is inoperative.

- (3) Return operating control to “neutral” or “off” position after verifying isolation of equipment.

The machine or equipment is now locked out.

#### (g) Restoring Equipment to Service

- (1) When servicing / maintenance has been completed and the machine or equipment is ready to return to normal operating condition, take the following steps:
    - (2) Check the Machine
      - (i) Verify that tools and equipment used during maintenance have been removed.
      - (ii) Guards or other protective devices are replaced.
      - (iii) Machine components are operationally intact and ready to start.
    - (3) Check for Employees:
      - (i) Check to ensure that employees are safely positioned or removed.
      - (ii) Verify that operating controls are in the “neutral” or “off” position.
      - (iii) Remove the lockout devices. This is to be done **only** by the authorized employee who put them on.
      - (iv) If appropriate, re-energize the equipment and test it for proper operation.
      - (v) Notify affected employees that the servicing or maintenance is complete and that the machine is again in service.
-

## V. NON-ROUTINE PROCEDURES

---

### (a) Testing or Positioning of Equipment

- (1) In situations where Lockout/tagout devices must be temporarily removed from the energy-isolating device and the machine or equipment energized to test or position the machine, the following sequence of actions shall be followed:
  - (i) Clear the machine or equipment of tools and materials.
  - (ii) Inform affected employees.
  - (iii) Remove the lockout or tagout device.
  - (iv) Energize and proceed with testing or positioning.
  - (v) When testing or positioning is completed, de-energize all systems and re-apply energy control measures.

### (b) Group Lockout or Tag-out

When servicing and/or maintenance is performed by a crew, craft, department or other group, the following procedure shall be followed:

- (1) An authorized employee places all keys in the group lock box.
- (2) The program administrator, designated supervisor, or authorized employee shall determine the exposure status of the group members with regard to the lockout or tagout of the machine or equipment.
- (3) Each authorized employee shall affix his or her personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when the work begins.
- (4) The authorized employees shall remove those devices when they stop working on the machine or equipment being serviced or maintained.

### (c) Shift or Personnel Changes

To ensure continuity of lockout tagout protection during shift or personnel changes, the following procedure shall be used:

- (1) Affected personnel on the new shift shall be notified that equipment is being repaired utilizing lockout/tagout procedures.
- (2) If anticipated that the equipment being worked on will be returned to service after a shift change, the following shall take place:
  - (i) The authorized employee coming on, who is replacing the present authorized employee, shall affix his/her lock before the present authorized employee removes his/her lock.

- (3) Special situations exist within Campus Facilities Maintenance Department for which specific rules obtain governing shift-change procedures. This information can be obtained from the Departmental Administrator or the C.F. Safety Department.

#### (d) Absent Employee

- (1) Should an employee neglect to remove his/her lock from a lockout/tagout system and all servicing/maintenance work is complete, two lockout/tagout administrative persons, after completing Form 2, *Emergency Lockout/Tagout Removal*, have the authority to remove the absent employee's lock. The procedure for such a removal is as follows (See also Appendix C):
  - i. The authorized employee shall notify his/her supervisor.
  - ii. The supervisor shall attempt to contact the absent employee, his or her supervisor, and the unit LOTO Administrator.
  - iii. The supervisor shall verify that the authorized employee is not available.
  - iv. The supervisor, LOTO Administrator (or designee) shall, with the authorized employee, remove the lock.
  - v. The employee whose lock was removed shall be notified as soon as feasible.
  - vi. The removal of a lock requires the signature of two authorized employees.
  - vii. Upon the return to work by the absent employee, the signature of the absent employee is required. The absent employee's locking device may then be returned to the employee.
- (2) Copies of the incident will be forwarded to the LOTO Administrator, Absent Worker and the CF Safety Coordinator for review. Copies of the forms will be retained for not less than 2 years.

#### (e) Outside Contractor

- (1) Whenever outside personnel are to be engaged in servicing activities covered by the scope and application of this standard, employees of Campus Facilities shall perform and/or supervise all lockout/tagout functions prior to work by the outside contractor.
- (2) While ultimate control of lockout functions remains with Campus Facilities, the contractor shall be encouraged to place his own lock/tag on the isolating device to effectively include them in the lockout cycle.
- (3) In such cases, the contractor shall be properly trained in Campus Facilities LOTO procedures. Training shall be conducted on an as needed basis by the LOTO Administrator of the area where the work will occur, or by the C.F. Safety Coordinator.
- (4) Outside Contractors Responsibilities
  - (i) Comply with Campus Facilities' LOTO program when work involves CF employees
  - (ii) Inform Campus Facilities personnel of contractor LOTO program
  - (iii) Ensure that contractor personnel understand CF LOTO procedures.
- (5) Ensure that C.F. employees understand and comply with the contractor's LOTO program.

## **VI. TRAINING PROGRAM**

---

### **(a) Overview**

- (1) All employees shall be instructed in the safety significance of the LOTO procedure by a Competent Person as defined by OSHA. Training shall be performed before the employee is permitted to use or be affected by any LOTO procedure.
- (2) Each “authorized” employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy, and the methods and means necessary for energy isolation and control.
- (3) All “affected” employees shall be instructed in the purpose and use of the energy control procedures and in recognition and purpose of LOTO devices.
- (4) All “other” employees whose work operations are in areas where energy control procedures may be utilized, shall understand the intent of this program, use of locks and tags and associated dangers and hazards.

### **(b) Additional Training shall be given when:**

- (1) LOTO procedures are modified.
- (2) Equipment or machinery is added or modified.
- (3) Change of job assignment
- (4) Periodic inspections show a deficiency in the understanding of the procedures.
- (5) The Safety Department, Departmental LOTO Administrator, Supervisor, or employees of any Campus Facilities unit deem it necessary to ensure continued effectiveness of the program.

### **(c) Application of LOTO**

Upon completion of training, employees “authorized” to perform LOTO shall be able to demonstrate the following:

- (1) Preparation for Shutdown -Identify Energy Sources
- (2) Equipment Shutdown
- (3) Equipment Isolation - Release of stored energy
- (4) Apply the correct and proper LOTO device
- (5) Verify isolation
- (6) Test circuits
- (7) Try to re-start machine
- (8) Open valve

**(d) Release from Lockout or Tagout and Restore Equipment to Service**

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

- (1) 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.
- (2) The work area shall be checked to ensure that all employees have been safely positioned or removed.
- (3) After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout device(s) have been removed.
- (4) Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device.

To be used WITH Pad Locks and Locking Devices

FRONT



BACK



## Appendix B - Forms

---

- **1A - Equipment Specific Procedure (Landscape) . . . . 24**
- **1B - Equipment Specific Procedure (Portrait) . . . . . 25**
- **2 - Emergency Lockout/Tagout Removal . . . . . 26**
- **3 - Annual Evaluation Report . . . . . 27**



Form 1A

### Equipment Specific Procedure

Equipment: \_\_\_\_\_

Location: \_\_\_\_\_ CF EQUIP. LOTO CODE \_\_\_\_\_

Work Scope: \_\_\_\_\_

Contact Person: \_\_\_\_\_

**Energy/Flow to Be Controlled (circle all that apply)**

Steam   Natural Gas   Moving Parts   Chemicals   Electric Power   Water   Compressed Air   Control Power   Pneumatic   Hydraulic

Lockout Points

Hazard	Action Required	Lock #	Name of Person Applying Device	Department	Supervisor	Phone #	Date Lock On	Date Lock Off

Form 1B

### Equipment Specific Procedure

Equipment: \_\_\_\_\_ Location: \_\_\_\_\_

Work Scope: \_\_\_\_\_

Contact Person: \_\_\_\_\_

---

#### Energy flow to be controlled

Steam      Natural Gas      Moving Parts      Chemicals      Electric Power  
Water      Compressed Air      Control Power      Pneumatic      Hydraulic

---

#### Lockout Points

Hazard	Action Required	Lock #	Name of Person Applying Device	Date Lock On	Date Lock Off

**Form 2**

**EMERGENCY LOCKOUT / TAGOUT REMOVAL**

---

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Equipment to Be Unlocked: \_\_\_\_\_

Person Requesting Lock Removal: \_\_\_\_\_ Unit: \_\_\_\_\_

**Reason for Removing Lock:**

**The following actions have been taken:**

1. Verified that Authorized Employee is not available.
2. Verified that the equipment is safe before removing the lockout/tagout device.
3. Made all reasonable attempts to inform the Authorized Employee that the Lockout has been removed.

**Required Signatures:**

\_\_\_\_\_ Time: \_\_\_\_\_ Date: \_\_\_\_\_

\*Authorized Employee who removed lock.

\_\_\_\_\_ Time: \_\_\_\_\_ Date: \_\_\_\_\_

\*Authorized Departmental Administrator or designee

\_\_\_\_\_ Time: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ Time: \_\_\_\_\_ Date: \_\_\_\_\_

Authorized Employee whose lock was removed

\_\_\_\_\_ Time: \_\_\_\_\_ Date: \_\_\_\_\_

Campus Facilities Program Administrator

Note: Emergency removal of lockout/tagout devices requires two signatures.

\*Signatures required before removal of LOTO device.

# ANNUAL EVALUATION REPORT

Form 3

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Identification of the machine to which an inspection is being done.

\_\_\_\_\_

Authorized and Affected Employees interviewed. \_\_\_\_\_

Name (print) \_\_\_\_\_

Signature \_\_\_\_\_ SNN \_\_\_\_\_

Primary and Stored Energy Sources	Magnitude:	Deficiencies noted:

Other Comments:

Upon completion of this form, it shall be forwarded to the safety manager for filing.

*Completed forms shall be maintained for a minimum of 5 years.*

**Only Competent persons, as defined by OSHA, shall conduct the training. A Train-the-Trainer class shall be offered to those departments requiring an on-site competent person.**

## **Lockout - Tagout Training Outline**

### *I. Objectives*

To understand the need for lockout/tagout procedures and to demonstrate and teach the procedures to prevent accidents and injuries.

### *II. Training Materials*

- A. Locks
- B. Tags
- C. Electrical Locking Devices
- D. Valve Locking Devices
- E. Training Handouts
- F. Equipment Safety Video
- G. Test

### *III. Introduction*

- A. Keeping you safe is the purpose of LOTO
- B. Several types of energy that can harm you
- C. LOTO is used to isolate you from an energy source

### *IV. LOTO Prevents*

- A. exposure to energy
- B. accidental starting of equipment
- C. using damaged equipment

### *V. Injury can result when LOTO not used in the following examples*

- A. Maintenance & Repair
- B. Cleaning equipment
- C. Machine Guards removed
- D. Adjustments to machinery

#### VI. Types of Energy and Hazards

- A. Electricity - Electrical Shock
- B. Chemical - Chemical Exposure & Burns
- C. Moving Machinery - Amputation, crushing from moving machinery
- D. High Temperature - Burns
- E. Hydraulic Pressure - Exposure to hot or dangerous fluids
- F. Stored Energy - can be chemical, thermal, hydraulic or gravitational

#### VII. Lockout Steps

- A. Before you lock & tag know the equipment and types of energy associated with it and the maintenance you will be doing.
- B. Shutdown the Equipment. Use the normal shutdown procedures to prepare the machinery for Locking and Tagging. All controls should be in the OFF or Neutral position.
- C. Isolate the energy to the machine. Turn off main power switches. Shut all fluid isolation valves.
- D. Lock & Tag the Energy Sources. Put a Lock and Tag on all energy isolation devices. Unless specifically designed for Lockout purposes on-off switches cannot be used to isolate electricity - use the main breaker for that piece of equipment.
- E. Release all Stored Energy. Block, vent and drain all fluid lines. Discharge all capacitors. Block all pieces that would be a hazard if they moved. Disconnect pneumatic lines.
- F. Test to ensure LOTO is effective. Check voltage on all circuits. Check pressure gages on fluid lines.
- G. Attempt to start the equipment in the normal manner.
- H. Return all control devices to the OFF or NEUTRAL position.

#### VIII. Types of Lockout Devices

- A. Show and discuss purpose of proper use of each device. Include discussion on the limitations of each device
  - a. Locks
  - b. Hasps
  - c. Tags
  - d. Breaker clips
  - e. Chains
  - f. Pancake or blind flanges
  - g. Valve hand-wheel covers

#### IX. Discussion Questions

- A. When is LOTO required?
- B. Who must place the Lock and Tag?

- C. Where must the Lock and Tag be placed?
- D. What is the purpose of LOTO?
- E. What are the LOTO steps?
- F. What are the different Types of Energy?
- G. How to properly release equipment following LOTO?

Authorized Employee

## LOCKOUT - TAGOUT (LOTO)

### Training Certificate

Name \_\_\_\_\_

Department \_\_\_\_\_

I understand the training I have received on the Mandatory Lockout - Tagout Program. The training consisted of:

1. Location of Equipment, Control Operation & Energy Isolation Points
2. How to safely turn on and off equipment
3. Types & Hazards of energy sources
4. Type and Magnitude of the energy
5. Methods & Means necessary for energy isolation

**I understand** the hazards of electricity, hydraulic force and machines in motion. I understand that I have been trained to protect myself by not reaching into (breaking the plane) on any machinery until I have personally Locked and Tagged all sources of energy and ensured that the machinery controls have been disabled.

**I understand** that if I chose to Isolate a machine energy source by unplugging the power cord I must be in control of the plug at all time and that I may not leave the area until the machine is in a condition that would allow the machine to be safely plugged into a receptacle.

**I understand** that diagnostic evaluation of certain equipment requires some equipment to be energized, or running before or during LOTO procedures. In such cases, I understand that my supervisor and I will assess hazards and agree to proceed in a safe manner.

**I acknowledge** receipt of necessary locks, hasps, tags, etc., required for effective isolation of electrical power to a single piece of equipment and that I have available (from Supervisors) material needed for isolating hydraulic fluid flow to hydraulic motors. I understand that if I need additional LOTO material, I am accountable for requesting it from a supervisor in my department.

**I understand that VIOLATING THE LOCKOUT-TAGOUT PROCEDURE may result in disciplinary action up to and including termination of employment.**

Employee \_\_\_\_\_

Trainer Signature \_\_\_\_\_ Date \_\_\_\_\_



## Spanish Translation of LOTO Training Certificate

### La Traducción Español

**Yo comprendo el entrenar Yo he recibido sobre el cierre patronal mandatario y Tagout de programa.**

**La Capacitación consistió de:**

1. La ubicación de equipo, controla puntos de aislamiento de energía y operación.
2. Como sin riesgo encender y fuera quipment.
3. Escribe y peligros de de fuentes de energía.
4. El tipo y la magnitud de la energía usada por el equipo
5. El método y significa necesario para el aislamiento de energía.

**para el equipo (o equipo el grupo) enumeró sobre la frente de esta forma**

**Yo Comprendo** los peligros de electricidad, máquinas y fuerza hidráulica en el movimiento. Yo comprendo que Yo se he entrenado para proteger me por no alcanzando en (quebrando el avión) sobre ninguna maquinaria hasta que Yo tener Cerré personalmente y Etiqueté todas las fuentes de energía y aseguré que los controles de maquinaria han estado incapacitado .

**Yo Comprendo** que si Yo elegí para Aislar una fuente de energía de máquina por desenchufar el cable eléctrico Yo debo estar en el control del enchufe a todo el tiempo y que Yo no puedo salir el área hasta que la máquina esté en una condición que permitiría la máquina ser sin riesgo enchufó en un receptáculo.

**Yo acuso recibo** de cerraduras necesarias, broches, etiqueta, el etc. requirió que el aislamiento efectivo de poder eléctrico al pedazo único de equipo y que Yo haber disponible (desde Supervisores) material necesitado de la corriente aislante de fluido hidráulico motores hidráulicos. Yo comprendo que si Yo necesito QUE LOTO adicional material, Yo ser responsable de pedido lo desde un Supervisor en mi Departamento.

**Yo Comprendo que VIOLANDO EL CIERRE PATRONAL y TAGOUT DE PROCEDIMIENTO resultará en acción disciplinaria hasta e incluyendo LA TERMINACION DEL EMPLEO.**

**LOTO Administration Program Administrator:**

C.F. Associate Director \_\_\_\_\_  
of Personnel and Training

C.F. Safety Coordinator \_\_\_\_\_

---

<sup>i</sup> O.S.H.A. 1910