

**CALIFORNIA STATE UNIVERSITY,
LOS ANGELES**

LOCKOUT / TAGOUT PROGRAM

April 2016

PROGRAM APPROVAL AND AUTHORIZATION

William A. Covino, President

Date

TABLE OF CONTENTS

TITLE	Section
PURPOSE	1.0
ORGANIZATIONS AFFECTED	2.0
REFERENCES	3.0
POLICY.....	4.0
DEFINITIONS	5.0
PROCEDURE	6.0
PREPARATION FOR LOCKOUT / TAGOUT (LOTO) PROCEDURES	6.1
LOCKS, HASPS AND TAGS	6.2
GENERAL LOTO PROCEDURES	6.3
MACHINE OR EQUIPMENT ISOLATION	6.4
VERIFICATION OF ISOLATION	6.5
RELEASE FROM LOTO	6.7
ROUTINE MAINTENANCE & MACHINE ADJUSTMENTS	6.8
LOTO FOR ELECTRICAL PLUG-TYPE EQUIPMENT.....	6.9
LOTO INVOLVING MORE THAN ONE EMPLOYEE	6.10
MANAGEMENT REMOVAL OF LOTO DEVICES	6.11
ADMINISTRATIVE REVIEW	7.0
CONTRACTORS	8.0
TRAINING	9.0
APPENDICES	10.0
APPENDIX A: LOTO TRAINING OUTLINE	
APPENDIX B: AUDIT FORM	
APPENDIX C: CONTRACTOR AUTHORIZED EMPLOYEE LOTO TRAINING	

1.0. PURPOSE:

- 1.1. The purpose of the Lockout/Tagout (LOTO) Program is control of hazardous energy in machines and equipment in a state of repair, adjustment or removal. This program establishes the requirements for isolation of both kinetic and potential energy sources. These electrical, chemical, thermal, hydraulic, pneumatic and/or gravitational energy sources must be eliminated or controlled prior to equipment repair, adjustment or removal.

2.0. ORGANIZATION AFFECTED:

- 2.1. This program governs the following organizational units of the University and outside Contractors.

2.1.1. Facilities Services.

1. Electricians
2. Plumbers
3. Grounds
4. Auto Technicians
5. Building Services Engineers

2.1.2. Maintenance Technicians in academic areas.

2.1.3. Facilities Planning and Services Contractors.

2.1.4. Personnel that enter areas where Lockout/Tagout procedures are installed.

3.0. REFERENCE:

- 3.1. CCR, Title 8, Section 3314, Cleaning, Repairing and Adjusting.
- 3.2. CCR, Title 8, Section 2320.4 De-Energized Equipment or Systems
- 3.3. CCR, Title 8, Section 2940, High-Voltage Electrical Safety Orders.
- 3.4. CCR, Title 8, Section 2320.2 Energized Equipment.
- 3.5. CCR, Title 8, Section 2320.9 Electrical Requirements for Construction Work.

4.0. POLICY:

- 4.1. This program covers all personnel that are involved in the servicing and maintenance of machinery or equipment in which the unexpected energization/startup of the unit or the release of stored energy could cause injury to those individuals. This program establishes the procedural requirements for the control of such hazardous energy.

5.0. DEFINITIONS:

- 5.1. **Authorized Employee** is an employee that performs lockout and tagout of equipment or machinery. The employee is considered authorized due to the individual's knowledge of the machine and training under the lockout-tagout program. An authorized employee will not be authorized to perform lockout-tagout on machines on which there is no previous knowledge. An employee undergoing on-the-job training under the direct supervision of an authorized person is considered to be authorized for performance of that LOTO procedure.
- 5.2. **Affected Employees** are the equipment operators and those working in the area near the machinery/equipment that can be locked out or tagged out under this program.
- 5.3. **Engineering Controls** are devices placed on machinery or equipment to physically isolate sources of energy by blocking or denying access. These controls (locks, adaptors, covers,

blocks, etc.) are the preferred method of isolating energy sources to protect the employee during servicing or maintenance of machines and equipment.

6.0. PROCEDURE:

6.1. Preparation for LOTO

6.1.1. An authorized employee will conduct a LOTO survey to locate and identify all energy sources to verify which switches or service lines supply energy to machinery/equipment.

6.1.2. As repairs and/or renovations of existing electrical systems are made, standardized controls will be used.

6.2. Locks, Hasps and Tags

6.2.1. LOTO authorized personnel will be issued one or more uniquely keyed locks such that each employee can only unlock his own locks. Each lock's keys are kept by only two (2) individuals; the employee that was issued the lock and his supervisor.

6.2.2. Locks will be identified and traceable to the employee. A color code may be employed as identification. Where there is no other unique identification, a tag must also be attached to the lock that has the employee's name, date applied and reason for the lockout.

6.2.3. Additionally, hasps and tags must be readily available in shop supplies.

6.2.4. To completely de-energize a machine or piece of equipment more than one location may require lockout. Each additional location will require application of locks and tags. Additional lockout devices may be obtained from the department or maintenance supervisor on a shift-by-shift basis.

6.2.5. If there is no means to apply a lock either directly or utilizing a suitable locking fixture to mechanically prevent de-energization a "Do Not Operate" tag bearing the employee's name, date of application and reason for application must be used. This method is to be avoided if at all possible due to the ease of overlooking and bypassing the tag.

6.3. General LOTO Procedures

6.3.1. Before working on, repairing, adjusting or replacing machinery and equipment, the following procedures will be utilized to place the machinery and equipment in a neutral or zero mechanical state.

6.3.2. Preparation for Shutdown.

6.3.2.1. Survey: Prior to beginning work, repair or adjustment on machinery or equipment, the authorized employee will conduct a LOTO survey to locate and identify all energy sources and methods of energy control (e.g., switches, valves, mechanical blocking) to put the machine or equipment in a safe condition.

6.3.2.2. Notifications: Notify all affected employees that the machinery, equipment, process or system will be out of service.

6.3.3. Machine or Equipment Shutdown.

6.3.3.1. Normal Shutdown: The machine or equipment will be turned off or shut down using the normal procedure for that machine or equipment. An orderly shutdown will be utilized to avoid any additional or increased hazards to employees as a result of equipment de-energization.

6.3.3.2. Move panel switch/disconnect arms to “Off” or “Open” position and close all valves or other energy isolating devices so that the energy source(s) is disconnected or isolated from the machinery or equipment.

6.4. Machine or Equipment Isolation

- 6.4.1. LOTO device application: Only authorized employees will affix LOTO devices to energy isolating devices. Lockout devices will be affixed in a manner that will hold the energy-isolating device in the “Safe” or “Off” position.
- 6.4.2. Where tagout devices are used, they will be affixed in such a manner that clearly warns that operation of the energy isolating device is prohibited.
- 6.4.3. The tagout device will be attached as close to the point of actuation of the energy isolating device as possible. If the tag cannot be affixed to that point, the tag will be located as close as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.
- 6.4.4. Lockout and tagout all energy devices by use of hasps, chains, and valve covers with assigned individual locks and tags.
- 6.4.5. Following the installation of the lock and/or tag to the energy isolating devices, all potential or residual energy will be relieved, disconnected, or restrained to ensure that the unit is safe from stored energy. Typical energy containing devices are capacitors, batteries, springs, elevated members and rotating fly wheels. Typical energy containing systems have accumulated hydraulic, air, gas, heat or steam.
- 6.4.6. Caution: Stored energy can re-accumulate after it has been drained. This might be the result of a leaking valve or seal. These possibilities need continued monitoring of the energy level until the maintenance or servicing is complete.

6.5. Verification of isolation

- 6.5.1. Prior to starting work on machines or equipment that have been locked or tagged out, the authorized employees will verify that isolation and de-energization of the machine or equipment has been accomplished. An authorized employee may verify isolation by trying to start the equipment by pushing the “Start” switch.

Caution: After verifying isolation, always place controls back in the “Neutral” or “Off” position.

6.6. Extended LOTO

- 6.6.1. Should the shift change before the machinery or equipment can be restored to service, the lock and tagout must remain in place until the oncoming shift has received a briefing regarding the status of the job.
- 6.6.2. The oncoming shift will install their lock and tag when the previous shift has removed their lock and tag.

6.7. Release From LOTO

- 6.7.1. Before LOTO devices are removed and the energy restored to the machine or equipment, the following action will be taken:
- 6.7.2. The work area will be thoroughly inspected to ensure that nonessential items have been removed and that machine or equipment components are replaced and ready for operation.
- 6.7.3. Notify the affected employees that the LOTO devices are being removed and the work area is checked to ensure that all employees are in a safe position during startup.

- 6.7.4. The employee who applied the LOTO devices will remove them from each energy-isolating source.
- 6.8. Routine Maintenance and Machine Adjustments
 - 6.8.1. LOTO procedures are not required if equipment must be operating to provide proper adjustment. This procedure is a rare exception to LOTO engineering and administrative controls. Only trained and authorized employees may employ this method, and only when specific procedures have been developed and implemented to safely avoid hazards.
- 6.9. LOTO Procedures for Electrical Plug-type Equipment
 - 6.9.1. This procedure covers all electrical plug-type equipment such as battery chargers, small pumps, office equipment, powered hand tools, powered bench tools, small lathes, fans, etc.
 - 6.9.2. When repair, or adjustments are being made to this type of equipment, the following procedures must be utilized to prevent accidental or sudden startup:
 - 6.9.2.1. Shut down the electrical equipment and unplug it from wall socket or in-line socket.
 - 6.9.2.2. Attach "DO Not Operate" Tag and or a plug box & lock on end of power cord.
 - 6.9.2.3. An exception to these procedures is granted when the cord & plug remain in the exclusive control of the employee working on, adjusting or inspecting the equipment.
 - 6.9.3. Test equipment to assure power source has been removed or isolated by depressing the "Start" or "On" Switch.
 - 6.9.4. Perform required repair operations
 - 6.9.5. Replace all access panels, guards, etc. that have been removed.
 - 6.9.6. Inspect power cord and socket before plugging equipment into power source.
 - 6.9.7. Any defects must be repaired before placing the equipment back in service.
- 6.10. LOTO Involving More Than One Employee
 - 6.10.1. If more than one employee is assigned to a task requiring a lock and tag, each individual employee must place his/her own lock and tag on the energy isolating devices on which he/she depends for safely performing work.
 - 6.10.2. Exception: The supervisor or lead over a job that is located in a single room may choose to apply a single lock and tag electrically isolating the circuits. In doing so, the supervisor/lead takes on the additional responsibility for ensuring completion of the job and determining that each of the workers are at an electrically safe distance from the job and notified that the LOTO status is about to be removed.
- 6.11. Management Removal of LOTO Devices
 - 6.11.1. Only the employee that locks and tags out machinery, equipment or systems may remove his/her lock and tag. If the employee leaves the facility before removing his/her lock and tag, the employee should be recalled for removal. If this is not possible the supervisor or manager may personally remove the lock and tag devices as follows:

- 6.11.1.1. It is required that the supervisor / manager attempt to contact the employee who installed the lock/tag prior to LOTO being removed.
- 6.11.1.2. The supervisor / manager must ensure that all tools have been removed, that all access plates, guards, etc. have been replaced and all employees are free from any hazard before the lock and tag are removed and the machinery, equipment or system is returned to service.

7.0. ADMINISTRATIVE REVIEW:

- 7.1. A periodic review conducted at least annually shall be performed to observe personnel utilizing this LOTO procedure.
 - 7.1.1. This review is performed only by fully trained LOTO authorized employees (may be a manager, supervisor, lead or other employee with these qualifications). No employee is allowed to review his own performance of LOTO.
 - 7.1.2. Each LOTO authorized employee that has performed LOTO during the year shall be reviewed at least once during the year.
 - 7.1.3. Provide review using the Audit Form (Appendix B).

8.0. CONTRACTORS:

- 8.1. Contractors, working on University property must follow a compliant LOTO procedure while servicing or maintaining equipment, machinery, processes or systems. When working in areas jointly occupied by university and vendor, adherence to the Cal State LA procedures is required.
- 8.2. Each contractor will meet with the maintenance supervisor or safety coordinator to go over the requirements of this program and complete the Contractor Authorized Employee LOTO Training form (Appendix B).

9.0. TRAINING:

- 9.1. All maintenance employees and supervisors (within the first thirty (30) days of hire and before being allowed to work on machines or equipment) will be trained to use LOTO procedures.
- 9.2. The maintenance supervisor shall conduct the training at the time of initial hire (See LOTO Training Outline – Appendix A).
 - 9.2.1. Retraining shall be held at least annually (See Appendix A Form Authorized Employee Lockout/Tagout Annual Certification). The training will consist of the following:
 - 1. Review of the General Procedures.
 - 2. Review of Specific Procedures for machinery, equipment and processes.
 - 3. Location and use of Specific Procedures.
 - 4. Procedures when questions arise.
- 9.3. Authorized Employees:
 - 9.3.1. Only trained and authorized employees will repair, replace or adjust machinery, equipment or processes.
 - 9.3.2. Employees may not remove locks, locking devices or tags from machinery, equipment or circuits.
 - 9.3.3. Purpose and use of the lockout procedures.

9.3.4. Other employees may not remove locks, locking devices or tags from machinery, equipment or circuits.

9.4. Affected Employees:

9.4.1. Affected employees do not fall into the authorized employee category but have a potential to be affected by the inadvertent operation or movement of unguarded equipment or machinery undergoing LOTO. These employees are provided instruction regarding the dangers involved with machinery or equipment that have been locked and/or tagged out.

10.0. APPENDICES:

Appendix A: Training Outline.

Appendix B: Audit Form.

Appendix C: Contractor Authorized Employee LOTO Training.