FARMINGDALE STATE COLLEGE

Control of Hazardous Energy

Lockout/Tagout Written Program

29 CFR 1910.147

Provided by,

Environmental Health and Safety

Farmingdale State College
STATE UNIVERSITY OF NEW YORK

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Control of Hazardous Energy

Lockout/Tagout Written Program

29 CFR 1910.147

This written program is a guide to help Farmingdale State College employees comply with the requirements of the Occupational Safety and Health Administration's (OSHA) Control of Hazardous Energy (Lockout/Tagout) Standard, 29 Code of Federal Regulations (CFR) 1910.147. It contains helpful information and the basic elements for a written plan; however, it is not meant to supersede OSHA requirements. Farmingdale State College's Environmental Health & Safety (EH&S) Department will review the OSHA standard as it applies to the worksites on campus, and customize this program accordingly. Since OSHA regulations set minimum requirements, EH&S may add additional information to this site-specific program.

For clarification or assistance, contact:

Lori Michalowski, Industrial Hygiene Officer at michallt@farmingdale.edu, or call 934-420-5817; or,
Jeff Carter, Environmental Health & Safety Officer at carterj@farmingdale.edu, or call 934-420-2105.

Table of Contents

Control of Hazardous Energy (Lockout/Tagout) Workplace Program

Lockout/Tagout Written Program

Date Created: May 29, 2024
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Farmingdale State College Policy

Farmingdale State College is committed to providing a safe and healthful work environment for all of our employees. The objective of this Lockout/Tagout Program is to prevent injuries caused by the accidental starting or activation of machinery or systems while undergoing repair, service, or set up. The program is designed to:

- make sure equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before employees perform any maintenance or repair on machinery;
- prevent any unexpected start-up or release of stored energy in the equipment;
- stop unauthorized personnel or remote-control systems from starting equipment while it is being serviced (if a remote-control system, main and/or control power must also be isolated or otherwise shut down to prevent accidental startup);
- provide a secondary control system (tagout) when it is impossible to positively lockout the equipment;
- assign responsibility for the oversight of lockout/tagout procedures; and,
- ensure that only approved locks, tags, and fasteners provided by Farmingdale State College are used in lockout/tagout procedures.

The above steps are MANDATORY and MUST be followed AT ALL TIMES; failure to do so could result in loss of life or limb. Report instances of non-compliance to your supervisor or to Environmental Health and Safety (EH&S); appropriate disciplinary action will be considered.

Responsibility

All employees must comply with the requirements of the Lockout/Tagout Program. Employees should understand that attempting to start, energize, or use a locked-out machine or equipment can cause loss of life or limb to another employee. Questions regarding the lockout/tagout procedures should be directed to management. Management enforces the lockout/tagout procedures including the use of corrective disciplinary action when necessary.

The following designated individuals are responsible for key aspects of the Lockout/Tagout Program:

Program Administrator

The Industrial Hygiene Officer will maintain, review, and update the Lockout/Tagout Program at least annually, and whenever new equipment or major replacement, repair, renovation, or modification of machines or equipment is performed or installed. The program administrator will:

- establish a Lockout/Tagout Program;
- develop and document the lockout/tagout procedures;
- provide employees with appropriate lockout/tagout training;
- give, at no cost to employees, equipment needed for the Lockout/Tagout Program; and
- ensure continued competency through training.

Authorized Employees

An authorized employee(s), identified in Appendix A, must be listed on the Energy Control Procedure Form (see Appendix B) and shall be knowledgeable about:

- the Lockout/Tagout Program and energy control procedures for each piece of equipment;
- the type and magnitude of the energy that each piece of equipment utilizes; and
- the hazards of the energy.

Affected Employees

Affected employees and any other employees whose work operations are or may be in the area, must be knowledgeable about:

- the purpose and the use of lockout/tagout procedures and,
- are responsible for ensuring they do no attempt to restart or re-energize machines or equipment during a lockout.

An affected employee may become an authorized employee when that employee's duties include performing servicing or maintenance covered under the Lockout/Tagout Program.

Qualified Employees

A qualified employee is knowledgeable in the operations of the equipment, along with the associated hazards. A qualified employee may work in conjunction with the authorized employee to perform lockout/tagout procedures.

Other Employees

Employees who do not work in areas where lockout may be used will be provided a brief overview of the lockout/tagout procedure, as necessary.

Lockout/Tagout Procedures

The following procedures are required to ensure employee safety and compliance with OSHA's Control of Hazardous Energy (Lockout/Tagout) Standard. To assist in this endeavor, a Lockout/Tagout Checklist is provided as Appendix C.

Prepare for Shutdown

The authorized employee must complete the following:

- Investigate and identify all forms of hazardous energy and know how to control it.
- Print out or otherwise obtain a copy of the Energy Control Procedure Form (provided as Appendix B) located in Rooms 121 and/or 122A of the Facilities Services Building, or from FSC's Industrial Hygiene page on the EH&S website, for review and use during a lockout of machine or equipment.
- Notify all affected employees that a lockout or tagout system is going to be used and communicate to all affected persons the following:
    - What is going to be locked/tagged out?
    - Why is it going to be locked/tagged out?
    - How long will the system be unavailable?
    - Who is responsible for the lockout/tagout procedure?
    - Who should employees contact for more information?

Note: For a "major repair," or a repair/shutdown that impacts an entire or large part of a building(s), a global communication should go out informing all building occupants of the type and nature of the repair, as well as any anticipated or expected periods of operational downtime. For purposes of this program, a "major repair" would be anything that is not considered routine maintenance.

Equipment Shutdown

If the machine or equipment is operating, shut it down using the manufacturer's or employer's normal stopping procedures. Equipment shutdown involves making sure controls are in the OFF position, and verifying that all moving parts such as flywheels, gears, and spindles come to a complete stop. Inform all affected employees that the machine or equipment is going to be shut down, even if they are not involved in the service or maintenance.

Energy Isolation

Isolate the equipment from any energy source. Isolation may mean many things, such as turning off the power at a breaker or shutting a valve. The written instructions for energy isolation will be specific to the system being locked out/tagged out. In general, these procedures are used:

- **Electrical Energy**
  Switch electrical disconnects to the OFF position. Visually verify that the breaker connections are in the OFF position. Lock the disconnects in the OFF position.
- **Hydraulic (energy stored within a pressurized liquid) and Pneumatic (energy stored within pressurized air or gasses under pressure) Potential Energy**
  Set the Valves in the CLOSED position and lock them into place. Bleed off the energy by opening the pressure relief valves or closing the airlines.
- **Mechanical Potential Energy**
  Carefully release energy from springs that may still be compressed. If this is not feasible, block the parts that may move if there is a possibility that the spring can transfer energy to it.
- **Gravitational Potential Energy**
  Use a safety block or pin to prevent the part of the system that may fall or move.
- **Chemical Energy**
  Locate chemical supply lines to the system and close and lockout the valves. Where possible, bleed lines or cap ends to remove chemicals from the system.

Apply Lockout/Tagout Devices

Apply the assigned lockout device, such as a padlock, black flanges, or bolted slip blinds to keep the equipment in a safe (energy-isolating) position. Then, if tags are used, place a tag on the device in the same manners as the lock. Fill tags out completely and correctly using the authorized employee's name who is performing the lockout. Pulling a fuse or flipping a circuit breaker is no substitute for locking out! These guidelines can help ensure that the lock will not be removed during lockout/tagout procedures:

- Each lock should only have one key. No master keys are allowed.
- There should be as many locks on the system as people who are working on the equipment or machinery. For example, if a maintenance job requires three workers, then three locks should be present. Each of the individuals should place their own lock on the system. Locks can only be removed by those who installed them, and should only be removed using a specific process outlined in "Removal of an Authorized Employee's Lockout/Tagout Device" on page 8 of this written program.

Check for Stored Energy

Even after the energy source has been disconnected and the machine had been locked out, hazardous energy may remain in the machine. Make sure all parts have stopped moving. Dissipate (use up energy), restrain, or make non-hazardous in some way all stored energy before maintenance or service begins. Ways to release stored energy can include, but are not limited to, the following:

- **Electrical Energy**
  To find a specific method to discharge a capacitor for a system, contact the manufacturer for guidance. Many systems with electrical components, motors, or switch gears contain capacitors. Capacitors store electrical energy. In some cases, capacitors hold a charge and may release energy rapidly. In other cases, capacitors are used to remove spikes and surges to protect other electrical components. Capacitors must be discharged in the lockout process to protect workers from electrical shock.
- **Hydraulic and Pneumatic Potential Energy**
  Setting the valves in the closed position and locking them into place only isolates the lines from more energy entering the system. In most cases, there will still be residual energy left in the lines as pressurized fluid. This residual energy can be removed by bleeding the lines through pressure relief valves. Contact the manufacturer for more specific details.
- **Mechanical Potential Energy**
  Carefully release energy from springs that may still be compressed. If this is not possible, use blocks to hold the parts that may move if the energy is released.
- **Gravitational Potential Energy**
  If feasible, lower the part to a height where falling is impossible. If this is not possible, contact the manufacturer for guidance.
- **Chemical Energy**
  If available, bleed lines to remove chemicals from the system.

Verify Isolation of Equipment

Clear all personnel from dangerous areas and check again to make sure the equipment is isolated correctly. De-energize equipment before repair or maintenance begins by:

- verifying that the main disconnect switch or circuit breaker cannot be moved to the ON position;
- pressing all operating controls to ensure there is no power;
- returning all power switches to the OFF or NEUTRAL position; and
- informing employees in the area that the work is about to begin.

Restoring Equipment to Service

When the servicing or maintenance is complete and machine or equipment is ready to return to normal operation condition, complete the following steps (use the Lockout/Tagout Checklist provided as Appendix C):

- **Inspection**
  Make certain the work is completed and inventory the tools and equipment that were used.
- **Clean-Up**
  Return all towels, rags, work-aids, parts, spare parts, accessories and damaged components to the appropriate locations or inventories.
- **Replace Guards**

Replace all guards possible. Sometimes a particular guard may have to be left off until adjustments can occur during the start sequence, but all other guards should be put back into place.

- **Check Controls**
  All controls should be in NEUTRAL or their safest position.
- **Check for Personnel**
  Check the work area to ensure that all employees have been safely positioned or removed and notified that the lockout/tagout devices are being removed.
- **Remove Locks and Tags (only under the authorization of a supervisor or designated authorized employee)**
  Remove only your lock or tag.
- **Re-energize Equipment**
  Re-energize equipment per the manufacturer's operating or start-up procedures established by the company.

Group Lockout Procedures

Group lockout procedures give the same level of protection when multiple authorized employees need to work together to perform maintenance or service on a piece of equipment. A key part of the process is to designate a single responsible employee who is in charge of lockout/tagout and is accountable for the overall procedure. Each authorized employee must apply their lock to the points of isolation on the machine to ensure the equipment cannot be re-energized until every employee has completed the work and is in a safe location. Follow these group lockout procedures:

- One authorized employee selected by the Industrial Hygiene Officer will coordinate the lockout procedure for all group lockouts.
- These rules will be reviewed with all authorized and affected employees by a designated group coordinator before the lockout.
- Each employee will affix their lock to the equipment being serviced.
- No employee will be allowed to remove another employee's lock. Each employee will remove their lock when their part of the operation is complete.
- When servicing or maintenance involves more than one shift, the off-going shift will remove their locks as the oncoming shift applies their locks.
- When equipment has only enough room for one lock, the group coordinator will place the lock on the equipment and then place the key to that lock in a cabinet or box. Each authorized employee will then affix their lock to the cabinet or box.

Shift or Personnel Changes

During shift changes or when the authorized employee currently performing their repair must leave before their replacement arrives, the new authorized employee shall place their lock on the equipment and then the current authorized employee will remove their lock. The current (prior shift) authorized employee will remove their lock after the replacement authorized employee has placed their lock on the equipment.

If the replacement employee is present during the time that the current authorized employee is preparing to leave, the replacement employee will place their lock on the equipment and then the current employee will remove their lock.

Contractors and Outside Personnel

Whenever outside service personnel, contractor, or vendors are engaged in activities covered by OSHA's Control of Hazardous Energy (Lockout/Tagout) Standard, they must adhere to FSC's Lockout/Tagout Program and receive appropriate training. FSC's Trades/Facilities personnel and the contractor must perform a multiple-person lockout/tagout in all systems, equipment, and machines that the contractor is servicing. In some instances, the contractor may be required to sign a waiver, relieving the Farmingdale State College of any liabilities while on site.

Removal of an Authorized Employee's Lockout/Tagout

Each location must develop written emergency procedures that comply with CFR 1910.147(e) (3) for emergency procedures to remove a lock or tag. The removal process should include:

- Supervisor/Manager verifies that the authorized employee who applied the device is not in the facility.
- Reasonable efforts are made to advise the employee that his or her device has been removed.
- Ensure that the authorized employee has this knowledge before he or she returns and resumes work at the facility.

Testing or Positioning Equipment During Lockout/Tagout

In situations when lockout devices must be temporarily removed from the energy-isolating device for testing or positioning, the authorized employee shall consult the Lockout/Tagout Procedure Form and follow the sequence of actions listed for Restoring Equipment to Service/Lockout Release Steps. Once the testing or positioning is complete and before servicing or maintenance is continued, de-energize the system and continue with the steps on the Lockout/Tagout Procedure Form.

Training

Employees will be provided training to ensure they know the purpose and function of the Lockout/Tagout Program.

Authorized employees will be trained on the following:

- recognizing hazardous energy sources;
- the type and magnitude of the energy available in the workplace; and
- the method and means needed for the energy isolation and control.

Affected employees will be trained on the following:

- the purpose and use of the lockout/tagout procedure.

Qualified employees who are permitted to work on or near exposed energized parts, shall at a minimum, be trained in and aware of:

- the electrical lockout/tagout procedures;
- the skills needed to identify exposed live parts from electrical components;
- the skills and techniques necessary to determine the nominal voltage of exposed live parts;
- the appropriate clearance distances specified in CFR 1910.333 (c) and the corresponding voltages to which the qualified person will be exposed;
- the appropriate personal protective equipment (PPE) provided by Farmingdale State College to safely perform the work.

Other employees whose work operations are in an area where lockout/tagout procedures may be used, will be instructed on the following:

- the lockout/tagout procedure; and
- the understanding that attempting to start-up any locked-out equipment may cause injury or death.

Authorized, affected, and qualified employees will be given training prior to performing any lockout procedures. Retraining will be given whenever there is a change in:

- job assignment;
- a change in machine, equipment, or processes that would create a new hazard; or
- whenever a change would occur in Farmingdale State College's lockout/tagout procedures.

A list of trained employees with the dates and types of training they received will be maintained by Farmingdale State College's Environmental Health and Safety Office.

Program Review and Update

The Lockout/Tagout Program will be reviewed or updated at least annually, or whenever there are new equipment or personnel changes that might affect the program. Annually, authorized employees who are not involved with the procedures being inspected shall conduct a review of the Lockout/Tagout Procedure for all machine and equipment.

The annual inspection will include:

- a review of employees' responsibilities under the lockout/tagout procedure; and,
- a physical inspection of the authorized employee while performing lockout/tagout procedures to correct any problem areas identified.

These inspections shall be performed by the Industrial Hygiene Officer, or authorized designee. If the Industrial Hygiene Officer is also using the lockout/tagout procedure being inspected, then the inspection shall be performed by another party.

Compliance with the Program

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout per the lockout/tagout procedures. All employees, upon observing a locked-out machine or piece of equipment shall not attempt to start, energize, or use that machine or equipment. Employees who fail to adhere to this policy will automatically be subject to Farmingdale State College's disciplinary policy.

APPENDIX A

List of Authorized Personnel for Lockout/Tagout Procedures

List of Authorized Personnel for Lockout/Tagout Procedures

First Name	Last Name	Date Trained/Authorized
William	Carpentiere, Jr.	March 11th, 2024
Rocco	Ceparano	March 11th, 2024
Jose	Cruz	March 11th, 2024
Brian	Gravius	March 11th, 2024
John	Harford	March 11th, 2024
Christopher	Ingenito	March 11th, 2024
Wine	Lyanz	March 11th, 2024
James	McEvoy	March 11th, 2024
Anthony	Pinilla	March 11th, 2024
John	Rera	March 11th, 2024
Christopher	Ryan	March 11th, 2024
Dylan	Silva	March 11th, 2024
Semih	Sonmez	March 11th, 2024
David	Waag	March 11th, 2024

APPENDIX B

Energy Control Procedure Form

ENERGY CONTROL PROCEDURE FORM

1) **<u>WORK EXECUTION:</u>** I have verified that the equipment is at a zero state for ALL energy sources, confirmed that the appropriate LOTO device(s) is being used, correct placement of locks and tags have occurred and will monitor the project. I have also spoken to the outside contractor (if applicable).

PRINT
NAME_____

SIGNATURE_____

DATE_____TIME_____

2) **<u>WORK COMPLETION:</u>** All repairs have been made, tools removed, guards put back in place and all personnel are clear. I have verified that the equipment is ready to be returned to service and affected personnel have been notified.

PRINT
NAME_____

SIGNATURE_____

DATE_____TIME_____

APPENDIX C

Lockout/Tagout Checklist

Lockout/Tagout Checklist

Name: _____ **Building:** _____ **Date:** _____

Equipment: _____ **Comments:** _____

Step 1 – Prepare	Yes	No	N/A
Have the type and amount of energy source on the equipment been identified?			
Have the possible dangers related to the energy source being controlled been identified?			
Are the steps necessary to control the energy source understood?			
Step 2 - Notify	**Yes**	**No**	**N/A**
Have all affected employees been notified of when the equipment will be shut off for service?			
Step 3 – Shutdown Equipment	**Yes**	**No**	**N/A**
Have Farmingdale State College's safety procedures been followed?			
Step 4 – Isolate Equipment	**Yes**	**No**	**N/A**
Has the main breaker or control switch been shut off?			
Have valves been closed?			
Have process lines been disconnected?			
Step 5 – Attach Lock and Tag	**Yes**	**No**	**N/A**
Have the lock and tag been attached?			
Step 6 – Release Stored Energy	**Yes**	**No**	**N/A**
Has all potentially hazardous stored or residual energy been released, disconnected, restrained, and otherwise rendered safe by grounding, blocking, bleeding, etc.?			
Have switches or levers that could be moved into the "start" position been blocked, clamped or chained?			
Step 7 – Verify That All Energy Has Been Released/Controlled	**Yes**	**No**	**N/A**
Have the start switches on the equipment been tested?			
Have pressure gauges been checked to ensure that lines are depressurized?			
Are blocks or cribs secured?			
Have electrical circuits been checked to verify that voltage is at zero energy?			
Are blanks used to block feed chemicals secure and not leaking?			
If you have answered "Yes" to all above questions, begin working. If not, go back to each "No" question and resolve the problem.			

When service or maintenance is complete, follow restart procedures.			
Step 8 – Machine/Equipment Check	**Yes**	**No**	**N/A**
Are all machine components operational?			
Are all safety guards in place?			
Have all tools been removed from the machine?			
Have all braces, pins, blocks and chains been removed?			
Are all pressure tubing, pipes and hoses connected with valves closed?			
Step 9 - Verification	**Yes**	**No**	**N/A**
Are the operating controls in the “off” or “safe” position?			
Is the work area clear for mechanical operation?			
Step 10 – Remove Lockout and Tagout Devices	**Yes**	**No**	**N/A**
Step 11 – Remove Isolation	**Yes**	**No**	**N/A**
Has the machine or equipment been reconnected to its energy source?			
Step 12 – Notification	**Yes**	**No**	**N/A**
Have all affected employees been notified that the lockout/tagout devices have been removed and work is completed?			
If you answered “Yes” to all the above questions, start up the equipment. Otherwise, go back to each “No” question and resolve the problem.			
Attach this completed “Lockout Checklist and Safe Startup Checklist” to your Work Order (if one has been created) and return it to your supervisor; if there is no associated Work Order, your supervisor should maintain this form for a period of no less than 30-days after project completion.			