LOCKOUT AND TAGOUT PROCEDURE

1. Purpose

This procedure establishes the minimum requirements for the lockout and tagout of energy isolating devices. It shall be used to ensure that the machines and equipment are isolated from all potentially hazardous energy, and locked out or tagged out before employees perform any servicing or maintenance activities. The concern is that the unexpected energization, startup or release of stored energy could cause injury. The following is a list of the types and magnitudes of energy and their associated hazards:

Type	Magnitude	Hazards
Electrical	120 and 240 volts	shock and electrical burns
Pneumatic	90 lbs. pressure	skin rip

2. Training Responsibilities

The following authorized* employees shall be instructed in the safety significance and the procedures of the lockout and tagout program:

- Electricians
- Foremen
- Electric Machine Repair Mechanics
- Maintenance Mechanics
- The following affected** employees and other employees whose work operations are or may be in the area shall be instructed in the purpose and use of the lockout and tagout procedure:
- Custodian Engineers

Supervisors of the departments with the above listed affected and authorized employees shall provide the necessary training to their employees.

* Authorized employee: Person who performs the lockout/tagout on the equipment.
** Affected employee: Person who normally uses the machine or who is in the area of the machine.

3. Preparation for Lockout or Tagout

Make a survey to locate and identify all isolating devices to be certain which switches, valves or other energy isolating devices apply to the equipment to be locked or tagged out. More than one energy source (electrical, mechanical, or others) may be involved. The following is a list of the types and locations of energy isolating means (see Inventory list) (see Section 5, page 4):

Machine	Type
e.g., Assembly machines	Electrical disconnect

4. Sequence of Lockout or Tagout System Procedure

a. Notify all affected employees that a lockout or tagout system is going to be utilized and the reason for it. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards present.

b. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.)

c. Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s). Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc. Types of stored energy and the methods to dissipate or restrain (see inventory list).

d. Lockout and/or tagout the energy isolating devices with assigned individual locks and tags. Methods selected include locks and tags.

e. After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.

Caution: Return operating control(s) to "neutral" or "off" position after the test.

f. The equipment is now locked out or tagged out.

5. Restoring Machines or Equipment to Normal Production Operations

a. After the service and/or maintenance is complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.

b. After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout or tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.

6. Procedure Involving More Than One Person

In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place his/her own personal lockout device or tagout device on the energy isolating device(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. Job title of employees authorized for group lockout or tagout: Maintenance personnel.

The above procedure will be used for shift changes as well.

7. Basic Rules for Using Lockout or Tagout System Procedure

All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device where it is locked or tagged out.

8. Outside Personnel (Contractors, etc.)

Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, Monroe #1 BOCES and the outside employer shall inform each other of their respective lockout/tagout procedures.

Monroe #1 BOCES shall ensure all its employees understand and comply with the restrictions and prohibitions of the outside employer's energy control procedures.

9. Emergency Lockout/Tagout Removal

When lockout and/or tagout devices must be removed by an individual other than the one who applied the device (e.g., maintenance employee forgot to remove his lock before leaving the school), call the Director of Educational Facilities.

10. Annual Evaluation of this Procedure

On an annual basis, this program will be evaluated.

Appendix

1. Employee Training Handout

MACHINE AND EQUIPMENT INVENTORY

Number	Equipment Name	Energy Type
1	Air Compressor	Electricity/Compressed Air
2	Air Conditioners	Electricity
3	Boilers	Electricity/Heat
4	Cabinet Heaters	Electricity/Heat
5	Cooling Towers	Electricity
6	Exhaust Fans	Electricity
7	Generators	Electricity
8	Hermatic Compressor (refrigeration type)	Electricity
9	Dishwasher	Electricity
10	Conveyor	Electricity
11	Disposals	Electricity
12	Freezer	Electricity
13	Fryer	Electricity
14	Grills/Steamers	Electricity
15	Mixer	Electricity
16	Pumps	Electricity
17	Return Fans	Electricity
18	Supply Fans	Electricity
19	Unit Heaters (i.e., ceiling space heater)	Electricity
20	Unit Ventilator	Electricity
21	Lathes	Electricity
22	Drill Presses	Electricity
23	Band Saw	Electricity
24	Hydraulic Ironworker	Electricity
25	Metal Press Brake	Electricity
26	Metal Shear	Electricity
27	Table Saw	Electricity
28	Shaper	Electricity
29	Planer	Electricity
30	Jointer	Electricity
31	Sander	Electricity

APPENDIX

APPENDIX 1

EMPLOYEE TRAINING HANDOUT

EMPLOYEE TRAINING GENERAL OUTLINE

1. Employer shall provide training to ensure:

    a. the purpose and function of the energy control program is understood by employees, and

    b. employees have the knowledge and skills required for safe application, usage, and removal of energy controls.

2. Authorized Employee Training:

    a. Recognition of hazardous energy sources

    b. The type and magnitude of the energy available in the workplace

    c. The methods, means, and sequence necessary for energy isolation and control

    d. When tagouts are used in lieu of lockouts

3. Affected Employee Training:

    a. The purpose and use of energy control devices

    b. The procedure and about the prohibition to attempt to restart or reenergize locked out or tagged out machines

    c. When tagouts are used in lieu of lockouts

4. Training Recordkeeping:

    Training records shall:

    - certify training has been accomplished,
    - be kept up-to-date, and
    - contain the employees' names and dates of training.

Note: Retraining shall be provided either when there is a change in job assignment, machines, equipment or process which present a new hazard, or the energy control procedures, or when a periodic inspection reveals deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

AUTHORIZED EMPLOYEE* OSHA LOCKOUT/TAGOUT STANDARD SUMMARY

Each year many workers are killed or injured while working on machinery or equipment that has not been deenergized or disconnected prior to being repaired or undergoing maintenance. Because of this, OSHA requires employers to establish a program and utilize procedures for affixing appropriate lockout or tagout devices to energy isolating devices, and to otherwise disable machines or equipment to prevent unexpected energization, start-up or release of stored energy.

1. General Requirements

a. Energy Control Program: Employer shall establish a program consisting of an energy control procedure and employee training to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start-up or release of stored energy could occur and cause injury, the machine or equipment shall be isolated and rendered inoperative.

b. Lockout/Tagout: If an energy isolating device is not capable of being locked out, the employer's energy control program shall utilize a tagout system.

c. Full Employee Protection: When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program.

d. Energy Control Procedure

(1) Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in activities covered by this standard.

Exception: Employer need not document the required procedure for a particular machine or equipment when <u>all</u> of the following elements exist:

- machine or equipment has no potential for stored or residual energy or reaccumulation of stored energy after shutdown which could endanger the employee;
- machine or equipment has a single energy source which can be readily identified and isolated;

* Authorized employee: A person who performs the lockout/tagout procedure on equipment.

- isolation and locking out of the energy source will completely de-energize and deactivate the machine or equipment;
- machine or equipment is isolated from energy source and locked out during servicing or maintenance;
- single lockout device will achieve a lockout condition;
- lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;
- servicing or maintenance does not create hazard for other employees; and
- employer, in utilizing this exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.

(2) Procedures shall clearly and specifically outline the scope, purpose, authorization, rules and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance, but not limited to the following:

- specific statement of intended use of the procedures
- specific procedural steps for shutting down, isolating, blocking, and securing machines or equipment to control hazardous energy
- specific procedural steps for the placement, removal, and transfer of lockout or tagout devices and the responsibility for them
- specific requirements for testing a machine or equipment to determine and verify the effectiveness of the lockout/tagout devices and other energy control measures.

e. Protective Materials and Hardware

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

(2) Lockout and tagout devices shall be singularly identified, shall be the only devices used for controlling energy, shall not be used for other purposes, and shall meet the following requirements:

- Durable

  - Lockout/tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

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

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

- Standardized

  - Lockout/tagout devices shall be standardized within the facility in at least one of the following criteria: color, shape, or size.

- Substantial

  - Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques.

  - Tagout devices and their means of attachment shall be substantial enough to prevent inadvertent or accidental removal.

- Identifiable

  - Devices shall indicate the identity of the employee applying the device.

(3) Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as: **DO NOT OPEN**, **DO NOT CLOSE**, **DO NOT ENERGIZE**, or **DO NOT OPERATE**.

f. Employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure the procedures and requirements of this standard are followed.

(1) Periodic inspection shall be performed by an authorized employee other than those utilizing the energy control program.

(2) Periodic inspection shall be designed to correct any deviations or inadequacies observed.

(3) Where lockout/tagout is used, the periodic inspection shall include a review of that employee's responsibilities.

Employer shall certify that periodic inspections have been performed and shall identify the machine or equipment, date of inspection, employees involved, and person performing the inspection.

g. Training and Communication

(1) Employer shall provide training to ensure that the purpose and function of the energy control program and that knowledge and skills required for safe application, usage, and removal of energy controls are understood by employees. Training shall include the following:

- Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

- Each affected employee shall be instructed in the purpose and use of the energy control procedure.

- All other employees whose work operations are or may be in an area where energy control procedures may be utilized shall be instructed about the procedure and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

(2) When tagout systems are used, employees shall be trained in the following limitation of tags:

- Tags are warning devices affixed to energy isolating devices and do not provide the physical restraint of a lock.

- When a tag is attached to an energy isolating means it is not to be removed without authorization, and it is never to be bypassed, ignored, or otherwise defeated.

- Tags must be legible and understandable by employees in order to be effective.

- Tags and their means of attachment must be made of materials which will withstand the environmental conditions exposed to.

- Tags may evoke a false sense of security and their meanings need to be understood.

- Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

(3) Employee Training

- Retraining shall be provided whenever there is a change in job assignment, change in machines, equipment, or process which present a new hazard, or when there is a change in the energy control procedures.

- Retraining shall be conducted when a periodic inspection reveals deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

- Retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures.

(4) Employer shall certify that employee training has been accomplished and is kept up-to-date. Certification shall contain employee's name and dates of training.

h. Energy Isolation

Implementation of lockout/tagout systems shall be performed only by authorized employees.

i. Notification of Employees

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

2. Application of Energy Control

The established procedure for the application of energy control shall cover the following elements and actions in the following sequence:

a. Preparation for Shutdown: Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the methods or means to control the energy.

b. Machine or Equipment Shutdown: Machine or equipment shall be turned off or shut down using procedures required by this standard.

c. Machine or Equipment Isolation: All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located or operated in such a manner as to isolate the machine or equipment from the energy source.

d. Lockout or Tagout Device Application

(1) Lockout/tagout devices shall be affixed to each energy isolating device by authorized employees.

(2) Lockout devices shall be affixed in a manner that will hold the energy isolating device in a "safe" or "off" position.

(3) Tagout devices shall be affixed in a manner to clearly indicate the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

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

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

e. Stored Energy

(1) Following the application of lockout/tagout devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

(2) If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed.

f. Verification of Isolation

Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify the isolation and deenergization of the machine or equipment have been accomplished.

3. Release from Lockout or Tagout

Before lockout/tagout devices are removed and energy is restored, the following procedures and actions shall be taken by the authorized employee:

a. The Machine or Equipment: The work area shall be inspected to ensure that nonessential items have been removed and to ensure that the machine or equipment components are operationally intact.

b. Employees

(1) Work area shall be checked to ensure that all employees have been safely positioned or removed.

(2) Affected employees shall be notified prior to the removal of lockout/tagout devices and the reenergization of equipment or machinery.

c. Lockout/Tagout Devices Removal

Each lockout/tagout device shall be removed by the employee who applied it.

Exception: When the authorized employee who applied the device is not available to remove it, that device may be removed under the direction of the employer provided that specific procedures and training for such removal have been developed, documented, and incorporated into the employer's energy control program. The specific procedure shall include at least the following elements:

- verification by the employer that the authorized employee who applied the device is not at the facility
- make all reasonable efforts to contact the authorized employee to inform him/her that his/her device has been removed
- ensure the authorized employee has this knowledge before he/she resumes work at the facility

4. Additional Requirements

a. Testing or Positioning of Machines, Equipment, or Components

In situations in which lockout/tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine or equipment, the following sequence of actions shall be forwarded:

- clear the machine or equipment of tools or materials
- remove employees from the area
- remove lockout/tagout devices
- energize and proceed with testing or positioning
- deenergize all systems and reapply control measures to continue servicing and/or maintenance

b. Outside Personnel

(1) Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and outside employer shall inform each other of their respective lockout/tagout procedures.

(2) The on-site employer shall ensure that his/her personnel understand and comply with restrictions and prohibitions of the outside employer's energy control procedures.

c. Group Lockout/Tagout

(1) When servicing and/or maintenance is performed by a crew, they shall utilize a procedure which provides an adequate level of protection.

(2) Group lockout/tagout devices shall be used.

d. Shift or Personnel Changes: Specific procedures shall be utilized during shift or personnel changes to ensure continuity of lockout/tagout protection.

Note: Prior to beginning a lockout/tagout procedure on a piece of equipment, review the machine's specific Lockout/Tagout Inspection form.

5. Sample Sequence of Lockout or Tagout System Procedure

a. Notify all affected employees that a lockout or tagout system is going to be utilized and the reason for it. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards present.

b. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.).

c. Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s). Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc.

Types of stored energy and the methods to dissipate or restrain:

<u>Machine Stored Energy Dissipating/Restraining Method</u>

Press elevated ram block
Compressed air pressure bleeding valve

d. Lockout and/or tagout the energy isolating devices with assigned individual locks and tags. Methods selected include locks and tags.

e. After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls and the disconnect to make certain the equipment will not operate.

Types of equipment checked to ensure disconnections:

Start buttons
Disconnect

Caution: Return operating control(s) to "neutral" or "off" position after the test.

f. The equipment is now locked out or tagged out.

6. Restoring Machines or Equipment to Normal Production Operations

a. After the service and/or maintenance is complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.

b. After all tools have been removed from the machine or equipment, guards have been reinstalled, and employees are in the clear, remove all lockout or tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.