

APPLICATION

NYU Langone Health

PURPOSE

- To protect employees and contractor personnel from exposure to the unexpected energizing or startup of equipment, or release of hazardous energy, during installation, commissioning, servicing, maintenance or decommissioning
- To establish practices and procedures to ensure safety during installation, commissioning, servicing, maintenance or decommissioning of equipment, systems or processes where the unexpected energization, start up or release of stored energy could cause injury
- To protect equipment and systems against damage which impact infrastructure and operations
- To comply with the Occupational Safety and Health Administration (OSHA) Control of Hazardous Energy (lockout/tagout) Standard, 29 CFR 1910.147, OSHA 1910 subpart S - Electrical, OSHA 1926 subpart K – Electrical and National Fire Protection Association standard 70e – Standard for Electrical Safety in the Workplace

POLICY AND GENERAL INFORMATION

1.0 Application

NYU Langone Health (NYULH) refers to the NYU Langone Health System, NYU Langone Hospitals, NYU Grossman School of Medicine, NYU Long Island School of Medicine, the Family Health Centers at NYU Langone, and all entities controlled by any of them. This policy applies to:

- All indoor and outdoor areas of all NYULH owned and leased facilities
- All employees, contractors, vendors and consultants of NYULH

2.0 Scope

This policy covers all equipment, machines and systems where uncontrolled hazardous energy has the potential to cause injury. Energy sources include electrical, mechanical (hydraulic, pneumatic), chemical, thermal (steam), gravity, electromagnetic fields, as well as other sources of energy. All NYULH personnel and contractors are required to comply with this policy.

3.0 Definitions

Affected worker - An employee or contractor whose responsibilities require him/her to operate or use a machine, equipment or system on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized worker - A person who has received training and has been given the authority and responsibility to lock out and tag out machines or equipment in order to perform servicing or maintenance. An affected worker becomes an authorized worker when that person's duties include performing maintenance or service on a machine or equipment that must be locked or tagged out.

Capable of being locked out - An energy-isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices will be considered capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild or replace the energy-isolating device or permanently alter its energy control capability.

Controlling contractor (Contractor) – A prime contractor, general contractor, construction manager or any other legal entity which has the overall responsibility for construction of the project (e.g. planning, quality and completion).

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: a manually operated switch by which conductors of a circuit can be disconnected from all ungrounded supply connectors where no pole can be operated independently. Other examples include a slide gate, a slip blind, a line valve, a block, or any similar device used to block or isolate energy. This term does not include a push button, selector switch and other control circuit type devices.

Energy source - Any source of electrical, mechanical, pneumatic, hydraulic, chemical, nuclear, thermal, or other energy.

Group Lock Box: A method of maintaining a lockout/tagout procedure when more than one person is involved. The lock box is used to store any keys used in the lockout/tagout procedure until the job is complete.

Lockout - The placement of a lockout device on an energy-isolating device, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device - A device that utilizes a positive means, such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment.

Primary Authorized Worker- An authorized worker who has overall responsibility for meeting the requirements of the lockout/tagout procedures when working in a group. The Primary Authorized Worker will attach a lock and tag when the equipment is de-energized before work begins and will be the last person to remove their lock and tag when the job is completed.

Servicing and/or maintenance - Workplace activities such as setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities may include, but not limited to the removal of fixed guards, equipment or parts lubrication, cleaning or un-jamming of machines or equipment and making adjustments or tool changes, where the worker may be exposed to the unexpected energization or start-up of the equipment or hazardous release of energy.

Tagout - The placement of a tagout device on an energy isolating mechanism to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device - A prominent warning device, such as a tag, which can be securely fastened to an energy-isolating device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed. The tagout device will include the worker's name and date applied.

4.0 Responsibilities

- 4.1 **EH&S** provides oversight of the control of hazardous energy program and will:
 - a. Provide consultation and assistance to departments to comply with the requirements of this program and planning of work which has the potential to release hazardous energy
 - b. Assist with the coordination of required training.
 - c. Assist in the investigation of accidents or near miss events involving the release of hazardous energy.
 - d. Conduct periodic audits of the program to assess overall effectiveness
- 4.2 The **Facilities/Engineering and Real Estate** departments, responsible for oversight of the installation, commissioning, servicing, maintenance or decommissioning of equipment, systems and processes with the potential for unexpected release of hazardous energy must establish procedures to:

- a. Where required (see section 5.2), ensure that specific visual and written lockout/tagout procedures for the servicing and maintenance of machines, equipment, systems or processes have been developed and periodically inspected and to ensure their immediate availability to authorized workers.
- b. Maintain a current inventory of all machines, equipment and processes that require implementation of lockout/tagout procedures.
- c. Ensure that machines, equipment or processes that are newly installed or have undergone major repair, renovation or modifications are designed to accept a lockout device.
- d. Ensure the immediate availability of required equipment such as locks, tags, chains, lockout devices, personal protective equipment (PPE) when lockout/tag-out procedures are required.
- e. Ensure that all authorized workers who will be required to implement lockout/tagout procedures are provided training as required by this policy.
- f. Ensure that their contractors/vendors are informed of the lockout/tagout procedures applicable to their project(s) scope.
- g. Maintain records including equipment and system manufacturer documents, appropriate documentation of periodic inspections, specific lockout/tagout procedures and training.
- h. Monitor ongoing compliance with this policy.

4.3 **The RED+F Design and Construction department, including Project Management (PMs)**, responsible for oversight of the installation, commissioning, servicing, maintenance or decommissioning of equipment and systems with the potential for unexpected release of hazardous emergency shall:

- a. Ensure that newly installed or modified equipment or systems can accept a lockout device and where required (see section 5.2), have a visual and written lockout/tagout procedure developed and posted
- b. Ensure that their contractors and vendors are aware of the requirements of this policy and the NYULH Utility Shutdown policy.
- c. Ensure that their contractor, subcontractors or vendors have a lockout/tagout program, procedure, training and devices.
- d. Provide manufacturer's documentation for new systems and equipment to Facilities/Engineering, Real Estate or building management.
- e. Plan work on equipment and systems with the potential for unexpected release of hazardous energy with Facilities/Engineering, Real Estate or building management, and EH&S.

4.4 **Safety Officers, Facilities/Engineering Managers and Real Estate Tenant Coordinators** are responsible for:

- a. Attending and actively participating in training as required by this program.
- b. Understanding when equipment and systems need to be locked and tagged out for service and maintenance.

- c. Collaborating with authorized workers and facilitating energy control procedures, including the notification of affected personnel.
 - d. Participate in the planning of work on equipment and systems with the potential for unexpected release of hazardous energy.
- 4.5 **Managers/Supervisors** of personnel who work on energized machines, equipment, systems or processes must:
- a. Identify and maintain a list of authorized workers under their supervision.
 - b. Where required (see section 5.2), conduct and document periodic inspections to ensure that lockout/tagout procedures are properly developed, implemented and maintained.
 - c. Ensure that required lockout/tagout equipment is available, properly maintained and used.
 - d. Qualify as an authorized worker and approve authorized workers under their direction.
 - e. Plan work on equipment and systems with the potential for unexpected release of hazardous energy with Facilities/Engineering, Real Estate or building management, and EH&S.
 - f. Participate in the investigation of accidents and near miss events.
 - g. Continually evaluate the need for employee re-education and training and document training in accordance with this policy.
- 4.6 **Contractors/Vendors** are responsible for:
- a. Providing NYULH with information regarding their energy control program and the procedures and evidence of training for authorized workers
 - b. Providing the PM or Manager with manufacturer documents for newly installed systems and equipment.
 - c. Providing their own energy isolation equipment including locks, tags, and hasps for equipment they bring on site.
 - d. Adhering to the requirements of this program, the NYULH Utilities Shutdown policy and other applicable and related NYULH policies.
 - e. Preparing a step by step Method of Procedure (MoP) including backout plan, and planning all work on equipment and systems with the potential for unexpected release of hazardous energy with RED+F Design and Construction, Facilities/Engineering, Real Estate or building management, and EH&S.
- 4.7 **All persons** who work on or around energized machines, equipment, systems or processes must:
- a. Attend and actively participate in training sessions.
 - b. Demonstrate comprehension and understanding of the lockout/tagout program as it applies to their work and specific roles.
 - c. Read and understand the lockout/tagout procedure for the equipment or system prior to performing work.

- d. Follow lockout/tagout procedures during the servicing and maintenance of energized machines, equipment or processes.
- e. Immediately report injuries, near miss events or any other unsafe condition to their supervisor.

5.0 Procedures

5.1 Requirements for Written Lockout/Tagout Procedures

Except where indicated in section 5.2 below, specific procedures shall be developed, documented (i.e., written) and utilized for the control of potentially hazardous energy when workers are engaged in the installation, commissioning, servicing, maintenance or decommissioning of equipment as defined in this policy. Such procedures shall clearly and specifically outline the scope, purpose, authorizations, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance. Lockout/tagout procedures shall include, but not limited to:

- a. A specific statement of the intended use of the procedure.
- b. Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy.
- c. Specific procedural steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them.
- d. Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.
 - One energy control procedure may be developed and used for similar machines, equipment or processes if the procedure adequately addresses the unexpected energization hazards related to each machine, equipment or process.

5.2 Limited Exemption for Procedures

Lockout/Tagout procedures need not be documented/written for a particular machine or equipment, when **ALL** of the following elements exist:

- a. The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger workers.
- b. The machine or equipment has a single energy source which can be readily identified and isolated.
- c. The isolation and locking out of that single energy source shall completely de-energize and deactivate the machine or equipment.
- d. The machine or equipment is always isolated from that single energy source and locked out during servicing or maintenance.

- e. A single lockout device shall achieve a lockout condition.
- f. The lockout device is under the exclusive control of the authorized worker performing the servicing or maintenance.
- g. The servicing or maintenance does not create hazards for other workers.
- h. The department responsible for the machine or equipment, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machines, equipment or processes during servicing or maintenance work.

5.3 Periodic Inspections of Procedures

Where a written energy control procedure is required for a machine or equipment (see exception in section 5.2), a periodic inspection of that written procedure shall be conducted and documented at least annually by the Manager/Supervisor or designee. The purpose of the periodic inspections shall be to ensure the procedures are accurate and performed correctly by the authorized workers. The following requirements shall be complied with when performing the review.

- a. The inspection must include a representative sample for each energy source. Machines, equipment, systems or processes that utilize the same lockout/tagout procedures do not have to be inspected individually.
- b. The inspection shall include a review, between the inspector and EACH AUTHORIZED WORKER, of that worker's responsibilities under the energy control procedure being inspected.
- c. The inspection must be documented, at least annually, using the "Lockout Periodic Inspection Form" (Appendix A). Any deviations or inadequacies shall be noted and corrected.
- d. The Manager/Supervisor shall correct and inform the authorized worker(s) of any deviations or inadequacies that were observed.
- e. The Manager/Supervisor shall retain the inspection forms on site and make them available for review upon request.

5.4 Application and Removal of Lockout/Tagout Controls – General

The following general procedures shall be followed for all installation, commissioning, servicing, maintenance or decommissioning of machines, equipment, systems or processes in which the unexpected energization, start up or release of stored energy could cause injury:

- a. Prior to beginning any work, the supervisor and authorized worker(s) shall have specific knowledge and information on the type and magnitude of energy, the hazards of the energy to be controlled, and the method or means to control the energy and how to safely release all stored energy, including powering off the machine, equipment, system

or process.

NOTE: Back up energy sources, such as emergency generators, must be treated as energy sources.

- b. The supervisor shall assign an authorized worker(s) with the appropriate training, authority and responsibility to perform specific lockout/tagout task(s).
- c. The authorized worker(s) shall review and understand all lockout/tagout procedures prior to performing any work. Specific procedures must be established and readily available for all individual or same types of machines, equipment, systems or processes (see section 5.2 for limited exemptions).
- d. The authorized worker shall instruct all affected workers and any other worker(s) or department administrator impacted by the lockout/tagout procedures about the purpose and impact of the lockout/tagout. They shall also provide the affected workers and the appropriate department representative(s) with a contact for questions or concerns related to the lockout/tagout procedure(s).
- e. The machine, equipment, system or process shall be turned off by the authorized worker using the procedures established for the machine, equipment or system.

NOTE: Affected workers shall be notified before the controls are applied, and after they are removed from the machine or equipment.

- f. The machine, equipment system or process shall be isolated from the energy source(s) using appropriate isolating devices, such as by closing valves, turning off circuits, etc. Back up energy sources must also be isolated if they do not share the same valve, circuit, etc.
- g. An appropriate lockout device (in accordance with the established written visual lockout/tagout procedure for that piece of equipment) shall be affixed to the energy source such that the isolating device will be held in a safe or neutral position. If a lockout device(s) cannot be directly affixed to the energy isolating device, alternate methods shall be established and implemented so that a lockout device(s) can be effectively applied.
- h. Each worker or group working on the machine, equipment, system or process shall apply his/her individual lockout device. If the machine,

equipment, system or process cannot be locked out, please refer to Section 7.5: "Procedures when equipment cannot be locked out".

- i. The authorized worker(s) shall ensure that the energy isolating device is marked or labeled to identify the machine, equipment, system or process supplied and the type and magnitude of the energy being controlled, unless they are so positioned or arranged that those elements are evident.
- j. A tagout device shall be affixed to the locking device, energy source, or as close as possible to the device if it cannot be affixed directly. The tagout device must be affixed in such a manner that it will clearly indicate that the operation or movement of the energy isolating device from the "SAFE", "OFF" or "CLOSED" position is prohibited.
- k. After the lockout/tagout devices have been applied, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe by bleeding, draining, discharging, disconnecting, etc. The authorized worker(s) shall ensure that all workers are clear of the area surrounding the machine, equipment, system or process prior to releasing the stored energy.

NOTE: The authorized worker(s) and supervisor shall be familiar with what to expect when the stored or residual energy is released and the effect(s) of releasing the stored energy will have on the machine, equipment, system or process prior to releasing the stored energy. The machine or equipment and personnel shall be properly positioned prior to releasing the stored energy.

- l. The authorized worker(s) shall verify that the machine or equipment is isolated by attempting to operate the machine or equipment by checking switches, valves, etc. The authorized worker(s) shall ensure the area surrounding the machine, equipment, system or process is clear of all unauthorized workers prior to verification.
- m. If there is a possibility of re-accumulation of stored energy, verification of isolation by checking the on/off switch or other equivalent means shall continue until the activity is completed, or until the possibility of such accumulation no longer exists.

NOTE: The authorized worker(s) shall ensure that all workers are safely clear of the work area and not at risk prior to verification.

- n. Servicing and maintenance work on the machine or equipment may then be

performed.

- o. Where service or maintenance of a machine or equipment requires more than one authorized worker, a group lockout/tagout procedure (see section 7.2) is employed and, the primary authorized worker must leave the work area, another authorized worker shall be given the primary authority and responsibility for the work assignment. The procedures for personnel changes shall be followed (see Section 7.3). If another authorized worker is unavailable to assume the primary role, all work shall cease and all affected or impacted worker(s) and department(s) shall be notified. The lockout/tagout procedure shall be repeated in its entirety upon returning to the work area.
- p. When the work is completed, the authorized worker(s) shall ensure the following procedures are followed:
 - 1. Ensure that all components are operationally intact.
 - 2. Clear the machine or equipment of all non-essential tools and materials.
 - 3. Ensure that all workers are safely positioned or removed.
 - 4. Verify that machine controls are in neutral to prevent movement upon re-energization.
 - 5. Replace machine or equipment guards, if appropriate.
 - 6. Before starting the machine/equipment, inform all affected workers and appropriate area managers that work has been completed and the estimated time at which lockout/tagout devices will be removed.
 - 7. Remove the lockout and tagout device(s). Note: Each individual or group shall remove his/her own lockout and tagout device.
 - 8. Energize the machine, equipment, system or process and notify appropriate managers/affected departments that the equipment and area has been returned to operational condition.
- q. Any time the authorized worker(s) leaves the work area or the servicing or maintenance work will require more than 1 shift to complete, the authorized worker(s) must repeat the lockout/tagout procedures. The authorized worker(s) must repeat the procedures each time they return/arrive on site to perform additional work.
- r. Managers/Supervisors may require additional procedures to perform a specific lockout/tagout assignment. Each manager/supervisor shall be responsible for appropriately communicating the additional procedures/requirements to their authorized workers.

6.0 Lockout/Tagout Devices

6.1 General Requirements for Devices

Each lockout and tagout device shall be uniquely identified; shall be the only device(s) used for controlling hazardous energy; shall not be used for other purposes; and shall meet the following requirements:

- a. Lockout and tagout devices, including their means of attachment, shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
- b. Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: color, shape, size, or specific markings; additionally, in the case of tagout devices, print and format shall be standardized.

NOTE: Proposed lockout/tagout devices to be used by contractor/vendor personnel in active facility machine rooms shall be reviewed with Facilities/Engineering, Real Estate or building management.

- c. Lockout and tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal without the use of excessive force or destructive techniques.
- d. Lockout and tagout devices shall indicate the identity of the authorized worker applying the device.
- e. Tagout devices shall be constructed and printed so that exposure to weather conditions, wet and damp locations or corrosive environments will not cause the tag to deteriorate or the message on the tag to become illegible.
- f. Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as one of the following: "Do Not Start," or "Do Not Operate."

6.2 Personal Locks and Tags

A personal lock is a key lock that is assigned to a specific authorized worker. The only worker allowed to use the lock is the authorized worker that it's assigned to. A set of 3 personal locks shall be issued to each authorized worker after successful completion of authorized training. Only one key will be issued per lock. Any other key shall be destroyed.

Facilities/Real Estate shall develop a process to maintain an accounting of the locks issued to each authorized worker. An authorized worker shall notify their Department Supervisor if they lose the key to their lock. The old lock must be recovered and discarded and a new lock and key issued to the authorized worker.

6.3 Shift Change Locks and Tags

A Shift Change lock is a key lock used on equipment, systems or processes when they are not actively being serviced. Key control or access must be limited to a small, closely controlled group of authorized workers. This lock must not be used as a personal lock and may never be used when actively servicing the equipment. The shift change procedure is outlined in Section 7.3 of this program. The type of Shift Change locks and tags are listed below:

- Color Coded by Department and individually keyed
- Out of Service Tag or Do Not Operate Tag

6.4 General Locks and Tags

A general lock is a key lock that is not assigned to an individual worker as a personal lock. This lock has only one key and master keys are not made available. This lock may be used to lock out individual energy-isolating devices as part of the group lockout process. The group lockout process is outlined in Section 7.4 of this program. The type of General locks and tags are listed below:

- Single Key – Color Coded by Department
- Single Use Card Stock Lockout Tag

6.5 Protective Material and Hardware

Each Department, contractor and vendor falling within the scope of this policy shall provide the tools and hardware necessary to isolate and secure the hazardous energy of the machines or equipment to be serviced. These tools may include breaker devices, gate valve devices, ball valve devices, adapter pins, self-locking fasteners, lockable plugs, preventers, etc. Each Department covered by this policy shall be responsible for identifying and informing authorized workers of the location and process to obtain devices.

7.0 Special Procedures

7.1 Removal of a Lockout Device by Another Person

Unauthorized removal of locks and tags is prohibited. When an authorized worker is not available to remove his/her own personal lock, the steps included below **must be performed by the supervisor of the authorized worker or the supervisor's designee.** (Note: The supervisor's designee must be qualified as an authorized worker)

- a. Verify that the authorized worker is not on site and not available to remove his/her own lock.
- b. Verify that workers are not exposed to hazards and are at safe locations.
- c. Verify that the equipment is safe to operate, tools have been removed, and guards have been replaced.
- d. Remove lock/tag and energize equipment or designate another authorized worker to complete the job.

- e. If equipment will be re-energized, supervisor or designee shall remain with equipment while equipment is being restarted.
- f. Notify affected workers
- g. Document the removal using the “Lock Removal Notice” (Appendix B). Completed forms shall be retained by the authorized worker’s department. The frequency of lock removals shall be periodically evaluated to determine if corrective action is needed.

7.2 Group Lockout

Machines, equipment, systems, process and circuits may require servicing and/or maintenance by more than one authorized worker. Each authorized worker performing service and/or maintenance must apply his/her personal lock. Every authorized worker who applies a personal lock shall verify that the machine, equipment, system, process or circuit has attained a zero energy state or observe the verification process.

- a. Multiple lock application may be accomplished using:
 - Multiple lock devices (hasps) that accommodate several personal locks;
 - The use of general locks and a lock box. For example, if a machine with multiple energy sources is going to be serviced by multiple personnel, it may be useful to use general locks at the energy sources. Keys for the general locks are held in lock boxes to which employees attach their personal locks.
- b. Group Lock Box Process
 - If a group lockbox is used for the maintenance or servicing task, a “Primary Authorized Worker” shall be designated by the Manager/Supervisor performing the lockout and responsible for the workers under the protection of the group lockout.
 - When more than one trade, contractor, vendor or department is involved, the responsibility of the overall lockout/tagout control shall be assigned to an authorized worker designated by the department supervisor or PM with the overall responsibility for the job.
 - The Primary Authorized Worker(s) shall follow the notification, shutdown and lockout steps and then place all keys to the group locks into a group lockbox. They shall then affix his/her personal lock on the group lockbox.
 - All of the authorized workers conducting maintenance or servicing on the equipment must verify/be shown by the Primary Authorized Worker that the machine was locked out and hazardous energy controlled appropriately and then affix their individual locks to the group lockbox until their portion of work is completed.

- The Primary Authorized Worker(s) shall be the last person(s) to remove their lock from the group lockbox. They shall then remove the group locks in accordance with the steps for restoring energy.

7.3 **Shift or Personnel Changes**

Where servicing or maintenance is performed by more than one authorized worker, specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout protection. This includes provisions for the orderly transfer of lockout devices between off going and on coming authorized workers. There are two distinct methods of shift or personnel change lockout transition that may be implemented. These methods should never be mixed or combined.

- a. Method 1: The immediate hand-off of LOTO in progress. **This is the preferred method of transfer.** Authorized worker(s) of the outgoing shift removes personal lock and tag as the authorized worker(s) of the next shift simultaneously applies and secures a personal lock and tag on the same energy-isolating device. The oncoming shift worker(s) must re-verify that a zero energy state exists in the system.

- b. Method 2: Application of Shift Change Locks. Authorized workers use this method when servicing and/or maintenance continues over multiple shifts, but there is no immediate hand-off of lockout in progress. The steps are listed below:
 - The authorized worker that was performing servicing and/or maintenance signs out a shift change lock/tag from the lockout cabinet by completing the “Shift Change Lock Checkout Form” (Appendix C).
 - The authorized worker that was performing servicing and/or maintenance places a shift change lock/tag on the energy isolation points.
 - The authorized worker that was performing servicing and/or maintenance removes his/her personal lock/tag.
 - The key to the shift change lock shall go back in to the lockout cabinet and be placed where the lock was.
 - The shift change lock(s)/tag(s) shall remain in place until the next authorized worker arrives to continue the work.
 - The next authorized worker to work on the equipment (second authorized worker) obtains the key from the lockout cabinet, places their locks/tags on the energy isolation points and then removes the shift change locks/tags and returns to the cabinet and signs them back in on the “Shift Change Lock Check out Form”.
 - The authorized worker shall then verify “zero” energy state by testing and trying to restart the equipment.

7.4 Procedures when equipment cannot be locked out

Note: Live electrical work shall only be performed by qualified and NFPA 70e trained electrical personnel utilizing required personal protective equipment and protective measures. Live electrical work in excess of 480v shall be planned as indicated below.

The following procedures must be used when equipment, machines, systems or process(es) with hazardous energy cannot be locked out:

- a. The Manager/Supervisor or PM shall plan this work with the authorized facilities trade staff or contractor/vendor personnel, Facilities/ Engineering, Real Estate or building management, and EH&S. Every feasible option for locking out the equipment shall be considered before moving forward with other non-lockout options.
- b. Additional safety procedures shall be implemented to reduce the likelihood of inadvertent energization, i.e. removal of an isolating circuit element, blocking of a control switch, removal of a valve handle.
- c. The tagout of the energy isolating device(s) must provide equivalent protection as a lockout device would provide.
- d. The energy isolating device should be within view of the authorized worker(s) or the “buddy” system or another additional safety procedure must be used.

7.5 Testing and Positioning

When power must be temporarily restored to a machine or system to test or position the machine, equipment or components, the following sequence of actions shall be followed. This procedure is for **ONLY** for adjustments and observations that can be made without placing workers at risk or coming into contact with energy sources. **This shall be verified and documented as part of that machine/equipment’s specific lockout/tagout procedure and must be verified at least annually.**

- a. Clear the machine or equipment of tools and materials.
- b. Notify all affected workers that the lockout/tagout device(s) are being removed and ensure that they are safely positioned or cleared from the area.
- c. Remove the lockout device as specified in the lockout removal section of this procedure.
- d. Energize and proceed with testing or positioning.
- e. When testing or positioning is completed, de-energize all systems, verify and reapply the energy control measures.

8.0 Training

8.1 Authorized Workers

Authorized Workers must have the knowledge and skills necessary for the safe application, use, and removal of energy isolating devices. Each authorized worker must be able to safely perform the work required by any energy control procedure that they may be called upon to use, however rarely. All workers (including supervisors) authorized to perform lockout/tagout procedures shall be trained in the following:

- a. Recognition of hazardous energy sources.
- b. Type and magnitude of energy sources associated with machinery or equipment on which they will work.
- c. Energy control procedures including means and methods of isolating and/or controlling energy.
- d. Means of verification of effective energy control.
- e. Where to obtain written lockout/tagout procedures and copies of this policy.

8.2 Affected Workers

Affected Workers are workers (e.g., machine operators and material handling specialists) who do not implement energy control procedures but are assigned to operate or interact with machines that are serviced and maintained pursuant to energy control procedures. It also includes those employees who are assigned to work in areas where energy control procedures are utilized to service or maintain machinery. Affected employee training must include the following:

- a. General awareness of this policy's scope and purpose
- b. How to recognize lockout/tagout devices
- c. How to recognize when energy control procedures are being used
- d. Importance of not tampering with lockout/tagout devices
- e. Importance of not starting or using equipment that has been locked out or tagged out

NOTE: The Manager or PM shall obtain evidence of control of hazardous energy and lockout/tagout training from the contractor or vendor to perform work.

8.3 Other worker training (i.e. lockout/tagout awareness training)

All other workers who may be in areas where energy control procedures may be utilized must receive training on this policy's scope and purpose, general information on energy control procedures and their importance, and the prohibition against removing a lockout/tagout device and attempting to re-start, re-energize, or operate machinery involved in a lockout/tagout procedure.

8.4 Training Frequency

- a. Training of authorized and affected workers must be provided initially and prior to performing any work that requires use or understanding of lockout/tagout procedures.
- b. Refresher Training: Retraining is required if a periodic inspection reveals, or a supervisor/manager has reason to believe, that there have been deviations from the application of the energy control procedure or inadequacies in a worker’s knowledge of or use the energy control procedure. Additionally, retraining must be provided for authorized and affected workers whenever there is a:
 - Change in job assignment
 - Change in machine, equipment, or process that present a new hazard
 - Change in the lockout/tagout procedures

9.0 Out of Service Equipment

Equipment that must be locked out because it is out-of-service and is not being serviced or maintained **is not** part of the lockout program. All locks and tags used for out-of-service equipment shall be different and easily distinguished from the locks and tags identified in the lockout/tagout program. Out-of-Service equipment monitoring and management shall be the responsibility of the Department Manager/Head to which the equipment is assigned.

10.0 Contractors/Vendors

Whenever contract/vendor personnel are to be engaged in activities covered by the scope and purpose of this program, the Manager or PM contracting and overseeing the vendor (e.g., Facilities, Real Estate, RED+F Design and Construction) shall ensure that they are informed of and comply with the requirements of this program and plan their work including providing an MoP, their written lockout/tagout program and evidence of training for their personnel and any subcontractor personnel.

Related NYULH Safety Policies

- 120: Construction Safety Requirements
- 138: Confined Space Entry
- 157: Electrical Safety
- 169: Enterprise Utility and Essential Equipment Shutdown

Appendix A	Lockout Periodic Inspection Form
Appendix B	Lock Removal Notice
Appendix C	Shift Change Lock Check out Form
Appendix D	Lockout Isolation Procedures Checklist

Issue date	07/2022
Replaces	New
Reviewed by	D. Bensimon, Facilities Operations J. Burke, NYULH-LI, Facility & Plant Management M. Ciferri, NYULH-B, Facilities Operations R. Cohen, Facilities Operations W. Dempsey, NYULH-LI Safety Officer N. Ejaz, NYULH-B, Safety Officer B. Farrell, NYULH RED+F Real Estate M. Figueroa, Environmental Health & Safety D. Lilly, Facilities Operations B. Lorino, Facilities Operations D. Resnick, RED+F Design and Construction D. Rubbo, NYULOH, Engineering NYU Langone Health Construction Safety Committee NYU Langone Hospital EOC Committee NYU Langone Orthopedic Hospital EOC Committee NYU Langone Hospital – Brooklyn EOC Committee NYU Langone Hospital – Long Island EOC Committee Family Health Centers at NYU Langone EOC Committee

Summary of Revisions

Revision date	Section	Changes

LOCKOUT PERIODIC INSPECTION FORM

Instructions:

This periodic inspection/certification shall be conducted to ensure the procedures are accurate and performed correctly by the authorized workers. The machine specific procedure must be followed when performing the inspection to ensure it is accurate. This inspection must be performed by an authorized worker other than the one(s) utilizing the energy control procedure being inspected.

**Equipment
Name/ID #** _____

Date: _____

Authorized Workers Being Inspected	
Name	Signature
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
	PASS Y/N
Steps for Machine Shutdown	
Notify affected workers that the machine is about to be shut down and locked out.	
Shut down the machine using normal stopping procedure (i.e. activate the stop button, etc.).	
Isolate all energy sources by closing, blanking and blinding, or otherwise turning switches/disconnects to the "OFF" or "CLOSED" position.	
Apply locks, tags, and/or devices to the energy disconnects for each energy source present.	
Check that all moving parts have stopped. Relieve or disconnect any residual hazardous energy that could be present.	
Verify zero energy state. Attempt to restart at all activating controls, start buttons, etc. and return them to the "off" position.	
Steps for Restoring Energy	
Check for others. Check the area surrounding the shut off unit to assure that no one will be exposed to danger when that machine is started up.	
Notify all affected workers that locks/tags are going to be removed and the machine is ready for operation.	
Remove LOTO equipment.	
Test the machine. Perform any necessary testing of the restored machine to ensure it is in operable condition.	
Notify management that work is completed and the area has been returned to operational condition.	

LOCKOUT PERIODIC INSPECTION FORM

Is the equipment specific procedure accurate? Yes No

If no, list
deficiencies:

Other Comments:

Inspector Name:

**Inspector
Signature:**

LOCK REMOVAL NOTICE

To be completed by the Supervisor/Manager requesting lock removal.

Worker Name: _____ Date: _____

Badge Number: _____ Shift: _____

Lock Location/Asset: _____ Lock Number: _____

This process must be followed when the authorized worker who applied the lockout device is NOT available to remove it.

	Yes/No	Describe
I have verified that the authorized worker is not on site and available to remove his or her own lock.		
I have checked that workers are not exposed to hazards.		
I have verified that the equipment is safe to operate, tools have been removed, and guards have been replaced.		
I have notified all affected workers that the lock will be removed.		
I have removed the lock/tag.		
I will remain with the equipment until it is determined to be in a safe working condition.		
I will ensure that the authorized worker knows that his or her lockout device(s) has been removed before he or she resumes work.		

Supervisor/Manager Signature: _____ Date: _____

SHIFT CHANGE LOCK CHECK OUT FORM

Lock Number	Checked Out By	Date Checked Out	Equipment	Equipment Status	Date Returned	Returned By

LOCKOUT ISOLATION PROCEDURE CHECKLIST

Equipment Name:		Equipment Identification:	
Location		Creation Date:	

Energy Source		Isolation Method	Location	Isolation Technique LOTO Device	Verification Method
<input type="checkbox"/> Electrical	<input type="checkbox"/> Steam	<input type="checkbox"/> Disconnect	/	/	/
<input type="checkbox"/> Pneumatic	<input type="checkbox"/> Gravity	<input type="checkbox"/> Breaker			
<input type="checkbox"/> Hydraulic	<input type="checkbox"/> Chemical	<input type="checkbox"/> Valve: _____			
		<input type="checkbox"/> Other: _____			
<input type="checkbox"/> Electrical	<input type="checkbox"/> Steam	<input type="checkbox"/> Disconnect	/	/	/
<input type="checkbox"/> Pneumatic	<input type="checkbox"/> Gravity	<input type="checkbox"/> Breaker			
<input type="checkbox"/> Hydraulic	<input type="checkbox"/> Chemical	<input type="checkbox"/> Valve: _____			
		<input type="checkbox"/> Other: _____			
<input type="checkbox"/> Electrical	<input type="checkbox"/> Steam	<input type="checkbox"/> Disconnect	/	/	/
<input type="checkbox"/> Pneumatic	<input type="checkbox"/> Gravity	<input type="checkbox"/> Breaker			
<input type="checkbox"/> Hydraulic	<input type="checkbox"/> Chemical	<input type="checkbox"/> Valve: _____			
		<input type="checkbox"/> Other: _____			
<input type="checkbox"/> Electrical	<input type="checkbox"/> Steam	<input type="checkbox"/> Disconnect	/	/	/
<input type="checkbox"/> Pneumatic	<input type="checkbox"/> Gravity	<input type="checkbox"/> Breaker			
<input type="checkbox"/> Hydraulic	<input type="checkbox"/> Chemical	<input type="checkbox"/> Valve: _____			
		<input type="checkbox"/> Other: _____			

Special Considerations:

Source	Control Method

Evaluator Name: _____

Evaluator Signature: _____

Authorized Worker Signatures (Must review procedure and verify isolation)		
X	X	X
X	X	X

LOCKOUT ISOLATION PROCEDURE CHECKLIST

LOCKOUT/TAGOUT PROCEDURE

Purpose	To ensure that a machine or piece of equipment is isolated from all potentially hazardous energy before workers perform servicing or maintenance activities where the unexpected energization, start-up, or release of stored energy could cause injury.
Scope	Workplace activities such as setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities may include, but not limited to the removal of fixed guards, equipment or parts lubrication, cleaning or un-jamming of machines or equipment and making adjustments or tool changes, where the worker may be exposed to the unexpected energization or start-up of the equipment or hazardous release of energy.
Enforcement	Failure to properly follow lockout/tagout procedures may result in corrective action.

SHUTDOWN, LOCK, TAG & TEST PROCEDURE STEPS

1	Notify Workers	Notify all affected workers that servicing or maintenance is required on a machine or equipment, and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
2	Review Lockout Procedure	The authorized worker shall review the procedure to identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3	Perform Machine Stop	If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.). Reference machine operating procedure for normal shutdown.
4	Isolate Energy	Follow the lockout/tagout procedure located on the first page of this procedure.
5	Lockout Energy	Lockout/tagout as required the energy isolating device(s) with assigned individual lock(s) and tag(s). If the lock(s) need to be transferred to another workers, follow the policy procedure for authorized workers transfer.
6	Dissipate Energy	Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, as well as air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
7	Attempt Restart	Ensure that the equipment is disconnected from the energy sources by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating controls or by testing to make certain the equipment will not operate. Caution: Return operating controls to neutral or "off" position after verifying the isolation of the equipment.

LOCKOUT ISOLATION PROCEDURE CHECKLIST

RETORE TO SERVICE STEPS		
1	Check Machine	Check the machine or equipment and the immediate area around the machine to ensure that non-essential items have been removed and that the machine or equipment components are operationally intact.
2	Check Area	Check the work area to ensure that all workers have been safely positioned or removed from the area.
3	Verify Machine	Verify that the controls are in neutral, i.e., not in an active or production state where energization will permit the machine to function as intended.
4	Remove Lockout	Remove the locks, tags and lockout devices and reenergize the machine or equipment. In reverse order, follow all of the steps from the procedure found on the previous page.
5	Notify Workers	Notify affected workers that the servicing or maintenance is completed and the machine or equipment is ready for use.