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I. Purpose
This Policy establishes requirements for the lockout of energy isolating devices whenever servicing or maintenance is performed on machines or equipment. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start up of the machine or equipment or the release of residual energy could cause injury. Potential energy sources covered by this procedure include, but are not limited to, electrical, hydraulic, pneumatic, thermal, steam, springs, water pressure, compressed gas and gravity (i.e., unsupported parts or objects.)

II. Scope
This Policy is applicable to all Villanova University employees whose work activities may expose them to injury caused by the unexpected start-up of energized machines or equipment. Failure of university employees to comply with this policy may result in disciplinary action up to and including termination.

All outside contractors working at or on the premises of Villanova University will be required to follow procedures consistent with those set forth in this Lockout/Tagout Policy. These procedures of Villanova apply to all contractors, their subcontractors, and employees working on Villanova premises. The general contractor is responsible for ensuring that its subcontractors, agents and any other entities it hires to work on the premises are in compliance with this Policy.

III. Definitions
**Affected Employee:** An employee whose job requires him/her to operate or use a machine or equipment on which service and/or maintenance work may be performed under lockout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

**Authorized Employee:** An employee who implements this lockout procedure on machines or equipment to perform the servicing or maintenance required on the machine or equipment. An Authorized Employee may also be an Affected Employee when he/she is working in an area in which service or maintenance tasks on a machine or equipment which must be locked is being performed.

**Authorized Supervisor:** A Villanova University supervisor who, in addition to receiving annual training on the University’s lockout policy, is knowledgeable with respect to energy sources available at the University, the hazards of these energy sources, and the appropriate means of disconnect or isolation.
**Energized:** A machine or equipment that is connected to an energy source, or contains 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 circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded conductors and, in addition, no pole can be operated independently; a slide gate; a slip blind; a line valve; a block or any similar device used to block or isolate energy.

**Note:** This term does not include a selector switch or any other control circuit type device.

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

**Lockout:** The placement of a lock or lockout device on an energy isolating device in accordance with this policy. The lock or lockout device shall ensure that neither the energy isolating device or the machine or equipment being controlled can be operated until the lock or lockout device is removed.

**Lockout Capable:** An energy isolating device will be considered to be lockout capable if it is designed with a power disconnect or an integral part to which, or through which, a lock can be affixed, or if it has a locking mechanism built in.

**Note:** Other energy isolating devices will also be considered to be lockout capable if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

**Lockout Device:** A device that utilized a positive means, such as a lock, hasp, or chain, to hold an energy isolating device in the safe position and prevent the energizing of the machine or equipment.

**Locks:** Locks supplied by the University for this Policy shall be non-mastered, individually keyed padlocks. Combination locks may not be used. To assure that the padlock will fit all electrical disconnects, the shackle diameter cannot exceed 5/16” (8mm). The length of the shackle measured from the body of closed Lock to the inside curve of the shackle cannot exceed 2” (51mm). When issued, the locks shall be recorded with the Authorized Employee’s name and the lock number.
**Authorized Employee Lock:** Meets the description above, and has a body that is red in color. These locks shall only be used to protect Authorized Employees engaged in activities requiring lockout.

**Facility Lock:** Meets the description above and has a body that is black in color. These locks shall only be available to Authorized Supervisors. The Facility Lock shall be used to control energy sources that must remain isolated; e.g. a Facility Lock on an energy source that must remain isolated due to shift change, the job not being completed, or to assure that Authorized Employees are protected during contractor lockout activities.

**Residual or Stored Energy:** The energy which is retained in a machine or equipment when the power supply disconnect is placed in the “OFF” position. Power capacitors, electric or magnetic fields, hydraulic pressure, springs, unsupported weights and steam lines are examples that may contain residual energy if not properly dissipated.

**Servicing and/or Maintenance:** Workplace activities such as constructing, installing, adjusting, inspecting, setting up, modifying and maintaining and/or servicing machines or equipment.

**Tags:** A prominent warning device which can be securely fastened to an energy isolating device to warn that the energy isolating device and the equipment being controlled may not be operated until the tag is removed. The tag may be removed only by the person who de-energized the equipment and applied the tag. Tags alone are not an acceptable disconnect technique and must be used in conjunction with a lock.

**Zero Mechanical State:** The mechanical state of a machine in which every power source that can produce a machine member movement has been locked out in the OFF position, and all sources of residual energy including kinetic and potential energy, has been dissipated and/or blocked.

### IV. Policy Statement
The primary goal of this Policy is to prevent injury to employees who maintain or service dangerous machines or equipment. The secondary goal of this Policy is to comply with the relevant section of the Occupational Safety and Health Act, 1970.
V. Procedures
A. Responsibilities
1. Environmental Health & Safety
   a. Train and authorize employees to perform lockout. Annually, re-instruct all Authorized Employees regarding the provisions and requirements of this policy.
   b. Provide the necessary guidelines to supervisors to train all other employees who are affected by this policy in the discharge of their duties.
   c. Assure the necessary equipment (locks, tags, hasps, etc.) is available for use by Authorized Employees.
   d. Schedule and arrange periodic inspection of Authorized Employee lockout practices.

2. Supervisors
   a. Train all Affected Employees in their responsibilities under this policy.
   b. Assess all machines or equipment requiring lockout. Identify all disconnect locations with a tag reading, “Lock Out Here.”
   c. Enforce compliance to this lockout policy, including the use of the University’s disciplinary action process, as required, to ensure this policy is followed.
   d. The authority to approve the removal of an abandoned lock.
   e. The responsibility to be the first person to apply, and the last person to remove, a Facility Lock to equipment under a contractor’s jurisdiction.
   f. The responsibility to be aware of, and responsive to, contractor lockout activities.
   g. The responsibility to conduct periodic audits to assure that the work practices of Authorized Employees are in conformance with this policy.

3. Employees
   a. Authorized and Affected Employees shall comply with the applicable elements of this policy.
   b. As necessary, Authorized Employees will consult with the Authorized Supervisor, or other appropriate individuals, whenever a non-routine task must be performed. Questions on how to lockout shall be resolved before attempting to perform the task. If lockout cannot be accomplished due to disconnect damage or other reasons, the Authorized Employee shall consult with the Authorized Supervisor on how to isolate the energy source and make the machine/equipment safe for servicing or maintenance.
   c. Each Authorized Employee shall understand the type and magnitude of the energy source of the machine or equipment on which they will work prior to starting work on the equipment. Whenever required, the machine shall be placed at zero mechanical state.
d. Authorized Employee shall obtain locks, tags and other devices required to carry out the elements of this Policy. Authorized Employees shall use only locks issued under this policy for lockout.

e. Employees, upon observing a machine or piece of equipment which is locked and tagged out shall not attempt to start, energize or otherwise use that machine or equipment.

f. The Authorized Employee shall perform a Job Safety Analysis before starting the project.

B. Lockout Application

1. The Authorized Employee shall notify all Affected Employees of the particular machine/equipment that servicing or maintenance is required and that the equipment will be shut down and locked out to perform the necessary work.

2. Additionally, the Authorized Employee shall contact his/her supervisor and advise of the equipment being removed from service.

3. The Authorized Employee shall evaluate the potential hazards, determine the energy sources which must be isolated, locate such energy sources on the equipment and determine the method to isolate and lockout such energy.

4. Plug and cord connected electrical equipment shall have the equipment unplugged and the plug end protected by use of a lockable cover device. A cover device is not required if the plug is under the exclusive control of the Authorized Employee (in the employee’s possession or in arm’s reach and in line of sight of the employee.)

5. Only after the equipment has been shut down (depress stop button, open switch, close valve, etc.) the energy isolating device shall be locked and tagged in the OFF position. Authorized Employees will apply their own lock(s) and tag(s) which have been provided for this program. “Danger - Do Not Operate” tags shall be attached to the energy isolating device which has been locked out. The Authorized Employee shall write his/her name, the date and the reason for lockout on the tag. Tags shall only be used in conjunction with locks.

6. Once lock(s) have been applied, residual or stored energy (such as in capacitors, springs elevated machine members, hydraulic systems, and air, gas, steam, or water pressure, etc.) shall be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
7. **With no personnel in a hazard area**, all energy sources will be tested (i.e. push motor start buttons, press activating buttons, visual check of valves, etc.) to **verify that the power is off and neutralized**. When service or maintenance is performed on electrical systems, a qualified employee shall use test equipment to test the circuit elements and electrical parts to verify that they are de-energized. If the circuit to be tested is over 600 volts nominal, the test equipment shall be checked for proper operation immediately before and immediately after this test.

8. All controls shall be returned to the neutral or OFF position after each verification test.

9. When two or more Authorized Employees work on the same equipment, each is responsible to attach his/her own lock(s) on the energy disconnect points. Multi-lock hasps have been supplied for this purpose. An employee shall not work under someone else’s lock.

10. An Authorized Employee who is assigned to a job where a lock is already applied shall notify the employee working on the equipment of his/her arrival, and that he/she will also conduct a verification check to ensure the energy source(s) have been isolated.

11. The Authorized Employee making the check shall assure that no other employees are in a danger zone during such checks.

C. **Lockout Devices**

Lockout devices supplied by the University for the purpose of isolating, securing and locking equipment or machinery from energy sources shall be the only devices used for controlling energy and shall not be used by employees for any other purposes. The University has made available locks that are singularly identified for this purpose. If any lockout device appears to be damaged or defective, it should not be used. The Authorized Employee to whom the device was assigned should immediately return the device to the Store Room to obtain a replacement device.

D. **Removal of Locks and Restoring Power**

1. During servicing or maintenance, power may be turned on only when it is required to perform test or adjustments and when no employee is exposed to a hazard. When temporarily removing lockout devices to test equipment or machinery during service and maintenance, the Authorized Employee shall follow the sequence of steps, (V)(D) (3a through 3g), below. Following the test/adjustments, the equipment shall again be locked
out per the Authorized Employee’s application guidelines if it is necessary to continue work or the equipment.

2. If the Authorized Employee must leave the job before its completion, such as a shift change or job reassignment, the Authorized Employee shall contact the Authorized Supervisor and he/she shall make arrangement to place a Facility Lock on the equipment before the removal of the last Authorized Employee lock. For circumstances where access to the equipment may be required when the Authorized Supervisor is unavailable, the key for the Facility Lock can be obtained from the key box. The Facility Lock shall be applied as soon as practical and the key returned to the key box. An Authorized Employee will work under his/her own lock and **no Authorized Employee will work solely under a Facility Lock.**

3. When servicing or maintenance is completed and the equipment is ready to return to operating condition, Authorized Employees shall remove their own lock(s) and tag(s). The following steps shall be taken by the last Authorized Employee who removes his/her lock(s) from the equipment.

   a) Check the machine and the immediate area around the machine to ensure that nonessential items (parts, tools, etc.) have been removed and that the equipment is operationally intact.
   b) Inspect the work area to ensure that all employees have been safely positioned or are out of the area.
   c) Assure all guards have been replaced.
   d) Verify that the controls are in the neutral (OFF) position.
   e) Remove the lockout devices and tags, and re-energize the equipment.
   f) Test the equipment to assure it is operational.
   g) Notify Affected Employees that the job is complete, that lockout devices have been removed, the equipment is ready for use and update the Facilities Services log.

E. Abandoned Lock Removal

1. If a lock has been left in place by an employee, the Authorized Supervisor shall determine where the employee has gone. If the employee has left the premises, the Authorized Supervisor shall determine if it is necessary to gain access to the machine/equipment. If so, the Authorized Supervisor may grant authorization to cut the lock from the disconnect. Before such removal, the Authorized Supervisor shall carry out the procedural steps for lock removal listed in Section (V) (D) of this Policy.
2. A reasonable effort shall be made by the Authorized Supervisor to contact the employee at home and inform him/her of the lock removal. Where the contact is unsuccessful, the Authorized Supervisor shall be responsible to notify the employee at the beginning of the next shift in which the employee returns to work that his/her lockout device has been removed.

3. A Facility Lock shall be placed on the equipment if the work is not completed.

4. For abandoned Lock removals the Authorized Supervisor will complete a report of the removal and forward copies of the report to the employee’s Department Head and the Office of Environmental Health & Safety. See Appendix C.

F. Troubleshooting

When conducting troubleshooting activity where energy sources must remain on to perform the task, extreme care shall be exercised to avoid placing any part of the body near an energized electrical circuit or in a hazardous zone. Blocking, pinning, line blanking or physical disconnecting may be required to secure the equipment in order to complete troubleshooting safely.

G. Contractors

1. Contract employees working under the direct supervision of University personnel shall be treated as University employees under the requirements of this policy.

2. Contractors who are, or may become, engaged in activities which are within the scope of this Policy shall inform the applicable University Project Engineer or Authorized Supervisor of their lockout policy. Contractors shall provide to the Project Engineer a copy of their lockout policy. The contractor’s policy must be as effective as the University’s Policy.

3. Contractors shall not alter the state of a University disconnect, isolation device, machine or equipment without first reviewing their plan for lockout with the applicable Project Engineer or Authorized Supervisor. Acknowledgment will be in the form of the installation of a Facility Lock on the affected device(s). This lock will be the first on and the last removed from the contractor’s hasp. Only the Project Engineer or Authorized Supervisor may install and remove a Facility Lock for work under a contractor’s jurisdiction.
4. The applicable Project Engineer shall be responsible for coordinating contractor and University Authorized Employee work when both are engaged in activities requiring the lockout of machines or equipment. The applicable University Authorized Supervisor shall ensure that University Authorized Employees who may be exposed to lockout activities performed by contractors understand and conform to the contractor’s lockout policy.

5. The Authorized Supervisor shall acknowledge and communicate to other Villanova personnel, with a need to know, contractor lockout activity.

H. Training
Different levels of training shall be provided to employees depending on their involvement or exposure to machines or equipment within the scope of this Policy. Documentation shall be maintained of all training activities. Documentation shall contain the name of each employee, the presenter’s name, the information presented and the date of such training. Efforts will be made to obtain employee signatures.

1. Authorized Employees
Employees and supervisors who will or could use this Policy shall be provided training to assure they are capable of recognizing hazardous energy sources, types and the magnitude of each source found at the University. Training shall also be conducted on the methods and means to properly identify, isolate and control such energy. Authorized employees shall receive such training when initially hired, and annually thereafter.

2. Affected Employees
Affected Employees (employees who do not conduct servicing or maintenance on equipment) working at the University shall be trained on the existence and purpose of the written Lockout Policy and instructed to never attempt to restart or re-energize the equipment or machine where a lock is in use. Affected employees shall receive such training when initially hired and anytime a new hazard is introduced.
3. Re-Training
   To assure employee competency in the Lockout Policy all employees shall receive re-training under the following conditions:
   a. Annual refresher training (Authorized Employees.)
   b. Anytime a new hazard is introduced through a job change, equipment or process change, etc. (Affected and Authorized Employees.)
   c. Where the inspection audit reveals program deficiencies/deviations or inadequacies. If the inspection reveals inadequacies in an employee’s knowledge as to proper use of the procedures, the specific employee shall receive re-instruction immediately (Authorized Employees.)

I. Periodic Inspections
   1. At least annually Environmental Health & Safety shall direct Facility Services to conduct a formal inspection to verify compliance with this policy. Through random selection, at least 15% or 5 Authorized Employees, whichever is greater, will be inspected.

   2. The auditor shall have each Authorized Employee selected individually demonstrate the application of the lockout policy. Where deficiencies are noted during the inspection, guidance as to the correct policy shall be given immediately by the auditor.

   3. The auditor shall document the inspection utilizing the Lockout Inspection Form (Appendix B). If a trend or a significant number of deficiencies are noted during the inspection, then retraining of all Authorized Employees will be required.

VI. Related Information

VII. History
   Policy Effective 5-96
   Revisions, 2-99, 5-04, 3-05, 12-09, 5-14, 3-15, 5-16, 7-17
VIII. Responsible University Division Department
Vice President
Facilities Management Office
800 Lancaster Avenue
Villanova, PA 19085
610-519-4589

IX. Responsible Administrative Oversight
Executive Vice President
Office of the Executive Vice President
800 Lancaster Avenue
Villanova, PA 19085
610-519-4530

RB/mgs 7-17


### Appendix B

**Villanova University**

**Lockout/Tagout Policy**

**LOCKOUT INSPECTION FORM**

<table>
<thead>
<tr>
<th>Date:</th>
<th>Equip./Machine:</th>
<th>Location:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspector:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorized Employees:</td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inspection Item</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the inspector review the Authorized Employee’s responsibilities under the University’s Lockout Policy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the Authorized Employee have the necessary lockout equipment (Tags, Locks, hasps, chains, blocks, etc. available?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the Authorized Employee notify all Affected Employees of the need to perform Service or Maintenance work on machine/equipment?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the Authorized Employee knowledgeable of the type, magnitude and hazards of the energy to be controlled?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the Authorized Employee turn off or shut down the machine or equipment in an orderly manner?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the Authorized Employee locate and operate all Energy Isolating Devices to isolate the machine or equipment from the Energy Source and apply a Lock and Tag to each device?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the Authorized Employee verify that isolating and de-energization have been accomplished and return the controls to the neutral position?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was test equipment used to verify disconnect of electrical circuits exceeding 600 V?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did each Authorized Employee work only under his own lock?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Were the following steps taken by the last Authorized Employee to remove his lock from the equipment:

- Conduct an inspection of the work area to insure that the machine or equipment is operationally intact?
- Conduct an inspection to assure that all employees are safely positioned?
- Assure all guards have been replaced?
- Verify the controls are in the neutral position?
- Remove the Lockout Devices and Tags and re-energize the equipment?
- Test the equipment to assure it is operational?
- Notify the Affected Employee that the Lockout Device(s) have been removed?

Has the Authorized Employee(s) demonstrated an adequate knowledge of Lockout practices?

Has a need for retraining been demonstrated?

Has the Authorized Employee(s) received training in Lockout practices in the past 12 months?
Appendix C
Villanova University
Lockout/Tagout Policy

ABANDONED LOCK REMOVAL REPORT

DATE: ___________________________
TIME: __________________________

EMPLOYEE’S NAME: ________________________________
EMPLOYEE’S DEPARTMENT: __________________________

MACHINE/EQUIPMENT: _______________________________
NUMBER OF LOCKS REMOVED: _________________________

REASON FOR LOCK REMOVAL

__________________________________________________
__________________________________________________
__________________________________________________

AUTHORIZED SUPERVISOR

AUTHORIZED EMPLOYEE SHALL BE NOTIFIED OF LOCK REMOVAL
BEFORE THE EMPLOYEE RESUMES WORK

EMPLOYEE NOTIFIED BY: _____________________________

DATE AND TIME OF NOTIFICATION: ____________________

AUTHORIZED SUPERVISOR ____________________________
AUTHORIZED EMPLOYEE ______________________________