



## IWU PHYSICAL PLANT SAFETY PROGRAM

Revision: 1

### LOCKOUT/TAGOUT – CONTROL OF HAZARDOUS ENERGY

Section: 1

## **STANDARDS**

The Control of Hazardous Energy (Lockout/Tagout), Title 29 Code of Federal Regulations (CFR) Part 1910.147

Safeguards for personnel protection, Title 29 CFR Part 1910.335

### **1.0 INTRODUCTION**

It is the policy of the Illinois Wesleyan University that all equipment is locked out during servicing and/or maintenance work to protect against accidental or inadvertent activation that could result in personal injury or equipment damage. In addition to disconnecting the power source, it is also required that all residual pressures be relieved and energizing lines closed (secured) prior to and during any such work.

### **2.0 PURPOSE**

This policy establishes the minimum requirements for the lockout of energy sources whenever maintenance or servicing work is done 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 work where the unexpected/unintended energization or start-up of the machine or equipment, or release of stored energy could cause injury.

### **3.0 RESPONSIBILITIES**

- All employees (authorized, affected, or others) are required to comply with the requirements of lockout.
- The authorized employees are required to perform the lockout following this procedure.
- All employees, upon observing a machine or piece of equipment is locked out for servicing or maintenance work, shall not attempt to start, energize or use that machine or equipment.
- Employees shall consult with supervision/management whenever there are any questions regarding energy control procedures or methods.



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- Supervision/management shall enforce the energy control procedure including the use of corrective disciplinary action when necessary.

## 4.0 APPLICATION

### 4.1 OBTAINING A LOCK AND IDENTIFICATION LABEL

- Authorized employees shall be issued Master Locks from their Manager as their personal safety locks. Safety locks used for personal protection will be tagged for each employee. One key will be in the possession of the employee using the safety lockout lock. The other key or a master key will be maintained by the Manager in a lock box in the maintenance office for emergency lock removal as established in the energy control procedure.
- Personal safety locks are for the personal protection of employees and are to be used solely for the control of hazardous energy sources (power lockout).

### 4.2 WHAT TO LOCKOUT

- During servicing or maintenance, a machine utilizing any mechanical power source such as electrical, pneumatic, steam, hydraulic, and/or air must be locked out when the unexpected energization or startup of the machine or equipment or release of stored energy could cause injury to employees. The lockout must render the machine inoperative and immovable.

### 4.3 WHEN LOCKOUT METHODS ARE REQUIRED

- 4.3.1. **Equipment cleaning or Jam-clearing Tasks** - When a normally moving piece of equipment is stopped for cleaning, clearing, or adjustment during which a startup could cause injury, lockout is used.
- 4.3.2. **Equipment Repair** - Whenever a repair is being performed on or near equipment where there is a possibility of injury as a result of starting the equipment, lockout is used. This



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includes any and all equipment from which a guard or other safety device has been removed.

**4.3.3. Installation Tasks** - Frequently during installation, either part of all of the components making up the installation can be operated before the installation is complete. If needed for testing, precautions must be taken to prevent injuries to personnel during the test periods and the equipment again locked out when the test is complete or interrupted.

**4.3.4. Electrical Repair Tasks** - Whenever any work other than testing is to be performed on an electrical circuit, the wiring involved must be deactivated and locked out so that it cannot be reactivated during this work.

**4.3.5. Seasonal Maintenance** – Whenever any equipment is taken out of service for a season, all sources of energy shall be locked out during the entire period.

#### 4.4 GROUP LOCKOUT

**4.4.1** Before the work begins, the lockout procedure will be reviewed with each group member. One authorized employee will be designated as responsible for the lockout.

**4.4.2** If more than one shift is involved, one authorized employee will coordinate the lockout to ensure that all control measures are applied and that there is continuity of protection for the group.

**4.4.3** Each authorized employee will affix a personal safety lock to the group lockout and will remove their lock when he/she stops working on the machine or equipment. Each lock must have that person's name affixed to it.

#### 4.5 SHIFT CHANGES

**4.5.1** The continuity of machine safeguarding during shift or personnel changes will be accomplished with the incoming



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authorized person affixing their lock and the outgoing authorized person removing their lock from the machine. During long intervals of time between work we use an **equipment lock**. Personnel placing equipment out of service will have the Manager install an **equipment lock** to the lockout adapter. A tag indicating the status of the machine/equipment will be attached to the equipment lock.

**4.5.2** Equipment locks shall be clearly identified and will be used to lock out machines/equipment that are off line and to prevent unintentional operation.

**4.5.3** Equipment locks are not to be used as energy control devices for personal protection. Equipment locks will be applied and removed by the Manager.

#### 4.6 WHEN LOCKOUT METHODS ARE NOT REQUIRED

**4.6.1** Minor tool changes (for example, changing a drill bit) are not covered when a stop button is used to control unexpected motion during the tool change or minor adjustment and when the start button is both visible and under the employee's immediate control.

**4.6.2** Other minor servicing activities that take place during normal production operations are not covered by this standard if they are routine, repetitive, and integral to the use of equipment for production and if work is performed using alternative protective measures that provide effective employee protection.

**4.6.3** Cord and plug connected equipment must be unplugged and under the exclusive control of the employee performing the service or maintenance work. The plug must physically be in the possession of the employee, or in arm's reach and in the line of sight of the employee. Lockout devices are available to lockout the plug when disconnected.

**4.6.4** Repair, trouble-shooting and set-up adjustments must be performed on energized equipment **only** when it is



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absolutely necessary to leave the machine energized. For the purpose of this procedure, the trouble-shooting process will end and a lockout will be required when:

- Power is shut-off;
- A particular problem has been located and repairs start;
- Individual machine components are being replaced;
- Circuit changes are being made.

## **5.0 PROCEDURES**

The essential part of lockout of any equipment or lines is to **ensure the equipment cannot be started** or source lines opened by unauthorized personnel during servicing and maintenance work. If you have questions relating to the appropriate procedures to be followed, ask your supervisor prior to commencing work.

### **5.1 APPLICATION OF LOCKOUT CONTROL**

**5.1.1 Preparation for Shutdown** - Personal Safety Locks and keys will be kept by each employee. Authorized employees shall review the written lockout procedure to have complete understanding of the type(s) and magnitude of the energy, the hazards of the energy to be controlled, and the methods or means to control the energy

**5.1.2 Notification of Employees** - Affected employees shall be notified by the authorized employees that the machine or equipment is going to be locked out.

**5.1.3 Machine or Equipment Shutdown** - The machine or equipment shall be turned off or shut down using the energy control procedures established for the machine or equipment.

**5.1.4 Machine or Equipment Isolation** - All energy-isolating controls that are needed to control the energy of the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or



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equipment from the energy sources (e.g., steam, pneumatic, hydraulic, and air). A Zero Energy State must be proven. If the valves do not permit the use of a standard lock out, another method such as a wire cable and lock can be used.

- 5.1.5** Lockout Device Application - The multiple lock adapter (if needed) and lock shall be affixed in such a manner as to hold the energy isolation devices in a safe or off position.
- 5.1.6** Notification of Affected Personnel - the authorized employees shall notify affected employees that the machine or equipment is locked out. In addition to verbal notification, a sign indicating a power lockout condition will be placed near the machine/equipment controls.
- 5.1.7** Verification of Isolation - Prior to starting work on a machine or equipment that has been locked out, each authorized employee involved shall verify that the isolation and de-energization of the machine or equipment have been accomplished by testing the effectiveness of the lockout by attempting to cycle the machine or start the equipment at the motor control center panel or start/stop switch (key/lock system). Each authorized employee will notify other authorized and affected personnel in the area that they are going to attempt to cycle the machine or equipment prior to doing so and shall ensure that personnel are free and clear of the machine or equipment prior to operating the controls. If the controls activate the machine or equipment or cause any machine or equipment movement, each authorized employee will begin again with the first step of this procedure.
- 5.1.8** Preparation for Shutdown - If there is the possibility of re-accumulation of stored energy to a hazardous level, verification or isolation shall be continued until the servicing or maintenance is completed, or until the possibility of re-accumulation no longer exists. Stored or potential energy will be relieved, restrained, or otherwise made safe.
- 5.1.9** Begin Work Activity - Work activity will begin once each authorized employee involved has verified the current



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control of hazardous energy sources has been effective.

#### **5.2 TESTING/POSITIONING OF MACHINES/EQUIPMENT/COMPONENTS**

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

- 5.2.1** Clear the machine or equipment of tools and materials.
- 5.2.2** Remove employees from the machine or equipment area
- 5.2.3** Notify affected employees that the lockout devices are going to be removed.
- 5.2.4** Each authorized employee who applied a safety lock will remove his or her own safety lock.
- 5.2.5** Notify affected employees that the safety locks have been removed and that the machine or equipment is going to be energized.
- 5.2.6** Energize and test the equipment.
- 5.2.7** De-energize all systems and reapply energy control measures in accordance with established procedures.

#### **5.3 LOCK REMOVAL**

Lockout locks shall be removed from each energy-isolating device by the authorized employee who applied the device except for conditions specified in “5.4 Emergency Lock Removal.” A lockout must never be broken (lock removed) by anyone other than the employee who performed that lockout.

#### **5.4 EMERGENCY LOCK REMOVAL**

When an authorized employee is not available to remove their lock,



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the Manager and Director have the authority to request the removal of a lock in the absence of the employee. In those cases when a Manager exercises that authority, the following procedure must be followed:

The Manager shall contact an authorized person and request assistance in this procedure.

- 5.4.1** The Manager and an authorized person must attempt to contact (at least verbally) the employee to whom the lock belongs and determine if the employee is on the premises.
- 5.4.2** If the employee is on the premises, he/she alone has the authority to determine whether the lock can be removed based on the guidelines of the lockout procedure.
- 5.4.3** If the employee is not on the premises, the Manager or an authorized person will make a reasonable effort to contact the employee and will ask the employee whether the work is complete and the equipment is ready to be activated. The employee will be advised that his/her lock will be removed.
- 5.4.4** If the employee advises that the equipment is not ready to be activated, the Manager must arrange to have another lock placed on the equipment as soon as the existing lock is removed.
- 5.4.5** If the employee advises that the equipment is ready to be activated, the Manager shall inspect the work area to verify that there is no danger in re-energizing the equipment, remove the lock, and inform all affected employees that the equipment is operational.
- 5.4.6** If contact is not established, the Manager will inspect the equipment for completeness of work and authorize the removal of the lock. The employee whose safety lock has been removed will be notified immediately





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upon return to work by e-mail requiring that they come to Manager's office for safety lock.

- 5.4.7** If the equipment is ready to be activated, the Manager will inform the affected employees that the equipment is operational. At this point, the Manager can authorize removal of the lock.

***The person removing the safety lock is responsible for making certain that all requirements for restoring power are followed prior to removing the safety lock.***

## **6.0 LOCKOUT DEVICES**

- 6.1 Electrical disconnect or breaker lockout device** - the switch lever must be padlocked in the *OFF* position using a shackle and/or padlock with an identification label.
- 6.2 Valve lockout device** - can be locked out by using a padlock, a cable and lock, or a valve handle lockout devices. The type of valve determines the method used.
- 6.3 Line Blinds or “Pancakes”** - to isolate the time flow of fluid or gases in piping systems. (To be used in conjunction with pipe breaking procedures.)
- 6.4 Multiple locks (gang hasp)** - when more than one person or group has to work on a machine, a lock adapter shall be used. Each person or group must place a lock on the adapter thus assuring each person a safe and complete lockout. It is important that during a shift change, locks be left in place until the time that the next crew is present and have placed their locks on the adapter.
- 6.5 Wall Switch Lock-Out** - the wall switch lock-out must be fastened to the wall plate.

## **7.0 TRAINING REQUIREMENTS**

### **7.1 CATEGORIES OF EMPLOYEE TRAINING**



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**7.1.1 Authorized employees** will receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the work place, and the methods and means necessary for the energy isolation and control. An employee will not be considered authorized until training has been completed.

**7.1.2 Affected employees** shall be instructed in the purpose and use of the energy control procedure.

**7.1.3 “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 their responsibility not to restart or re-energize machines or equipment which are locked out

## 7.2 EMPLOYEE RETRAINING

**7.2.1** Retraining shall be provided for all **authorized** and **affected** employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.

**7.2.2** Additional retraining shall also be conducted whenever periodic inspection reveals, or whenever there is reason to believe, that there are deviations from or inadequacies in the employee’s knowledge or use of the energy control procedures.

**7.2.3** Retraining will re-establish employee proficiency and introduce new or revised control methods and procedures, as necessary.

## 7.3 CERTIFYING TRAINING/RETRAINING

**7.3.1** Management shall certify that employee training/retraining has been accomplished and is being kept up to date. Certification shall include written documentation containing the employee’s name, category status (authorized, affected, other), and dates of training.



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## **8.0 PERIODIC INSPECTION**

### **8.1 INSPECTION**

- 8.1.1** At least annually, periodic inspections by an authorized employee who is engaged in the process of performing the energy control procedure being inspected must be done and records kept on this inspection. This will be accomplished by reviewing the procedure with authorized employees who normally lockout this equipment.
- 8.1.2** The authorized employee conducting the inspection will observe the actual implementation of the procedure. The inspection shall also include a review of the employee's responsibilities under the energy control procedure.
- 8.1.3** Use the Inspection Certificate located in Appendix B.
- 8.1.4** The authorized person conducting the periodic inspection shall certify that such inspection has been conducted. Certification shall include written documentation which identifies the machine or equipment on which the energy control procedure was being utilized, the employees included in the inspection, any deviations or inadequacies in employee's knowledge or use of energy control procedures identified, the name of the authorized person performing the inspection, the date of the inspection, and a signed statement by the authorized employee conducting the inspection.

## **9.0 ENFORCEMENT**

- 9.1** Due to the seriousness of this policy and the degree of injury that may be caused by not following this policy and the specific procedures that are included in this policy, corrective action, up to and including immediate discharge, may result if this policy is violated.

## **10.0 CONTRACTORS**



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**10.1** All outside contractors are required to comply with this procedure while performing work for Illinois Wesleyan University.



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**APPENDIX A:**

APPENDIX A ATTACHED



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APPENDIX B:

CONTROL OF HAZARDOUS ENERGY ( LOCKOUT/TAGOUT )

PERIODIC INSPECTION CERTIFICATION

DATE: \_\_\_\_\_

INSPECTOR: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

MACHINE OR EQUIPMENT ON WHICH LOCKOUT / TAGOUT PROCEDURES WERE PERFORMED:

\_\_\_\_\_

EMPLOYEE(S) PERFORMING THE LOCKOUT/TAGOUT PROCEDURES

EMPLOYEE NAME (Please Print)

EMPLOYEE SIGNATURE

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WERE ALL THE LOCKOUT / TAGOUT PROCEDURES PERFORMED CORRECTLY?

YES \_\_\_\_\_ NO \_\_\_\_\_

COMMENTS ON IMPROPER LOCKOUT/TAGOUT PROCEDURES BEING USED ON THE REVERSE SIDE OF THIS SHEET (ex. List of improper procedures being used which require retraining for the employee or notification of the procedures.):