



## **Hazardous Energy Control Procedures: Lock-out Tag-out (LOTO)**

### **I. Purpose and Scope**

Effective hazardous energy control procedures will protect employees during machine and equipment servicing and maintenance where the unexpected energization, start up or release of stored energy could occur and cause injury, as well as while working on or near exposed de-energized electrical conductors and parts of electrical equipment. Hazards being guard against include being caught in, being crushed by, being struck by, being thrown from, or contacting live electrical circuits/parts.

The procedure herein established (III - VIII) will insure that machines and equipment are properly isolated from hazardous or potentially hazardous energy sources during servicing and maintenance and properly protect against re-energization as required the Brevard Public School (BPS) District's Comprehensive Environmental Health and Safety Plan (Section 24 LOTO & 25 Machine Guarding) and required by 29 CFR 1910.147.

While any employee is exposed to contact with parts of fixed electrical equipment or circuits that have been de-energized, the circuits energizing the parts shall be locked out and tagged out of service in accordance with the Districts Safety Plan and reference safety codes.

### **II. Enforcement**

Any District employee who fails to follow these occupational safety procedures will face progressive disciplinary action(s) in accordance with the most current edition of the District's collective bargaining agreement(s) with applicable labor union.

Any outside contracted employee who fails to follow these occupational safety procedures will be face disciplinary action in accordance with the terms of the contract agreement with the District.

### **III. Definitions**

**Affected employee** - an employee whose job requires him/her to operate/use a machine or equipment or work in an area in which servicing or maintenance is being performed under LOTO.

**Authorized employee** - a person who locks out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance that exposes him/her to potentially hazardous 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 electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches, and other control circuit type devices are not energy isolating devices.



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

**Lockout** - The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, 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 the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

**Other employee** - an employee whose work operations are or may be in an area where energy control procedures may be utilized.

**Servicing and/or maintenance** - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the *unexpected* energization or startup of the equipment or release of hazardous energy.

**Tagout** - The placement of a tagout device on an energy isolating device, in accordance with an established procedure, 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 and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

For additional definitions see the District's Safety Plan (Sections 24 & 25) as well as reference safety codes established in OSHA General Industry 29 CFR 1910.147 (b).

### **IV. Authorization / Responsibility**

Appropriate employees will be instructed in the safety significance of the LOTO procedures.

### **V. Rules**

Use lockout devices for equipment that can be locked out. Tagout devices may be used in lieu of lockout devices only if the tagout program provides employee protection equivalent to that provided through a lockout program. Generate a log of LOTO activity by use of attached Log Form (Appendix B) or use a Maintenance Department Work Control *SmartSheet*™ app.

**A.** Locks, chains, wedges, or other hardware which meet the requirements defined in OSHA 1910.147 (c) (5) (ii) shall be provided by the employer (either District Department of contracted business owner).

**B.** LOTO devices shall be singularly identified. They shall be the only devices used for controlling energy and shall not be used for other purposes.



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**C.** All LOTO devices shall indicate the identity (name and cell #) of the employee applying them.

**D.** All machines/equipment shall be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. LOTO will also apply when working on or near exposed de-energized electrical circuits / parts.

**E.** No employee shall attempt to operate any switch, valve, or other energy -isolating device that has a LOTO device attached.

**F.** Each LOTO device shall only be removed by the employee who applied the device.  
(*Exception: see VII. B. 2.*)

### **VI. LOTO Procedures and Techniques**

#### **A. Preparation for Shutdown.**

1. In preparation for LOTO, an initial survey must be made to locate and identify all energy isolating devices to be certain which switch, valve, or other energy isolating devices apply to the machine / equipment to be locked out. More than one energy source (electrical, hydraulic, pneumatic, chemical, thermal, or others) may be involved.

2. Before an authorized or affected employee turns off a machine or piece of equipment, the authorized employee must have knowledge of the type and magnitude of the energy to be controlled, and the methods or means to control the energy.

#### **B. Machine or Equipment Shutdown.**

1. All affected employees shall be notified that a LOTO system is to be utilized and the reason for it, before the controls are applied.

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

#### **C. Machine or Equipment Isolation.**

Physically locate and operate the switch, valve, or other energy isolating devices so that the equipment is isolated from its energy sources and apply adequate hardware.

#### **D. LOTO Device Application.**

1. Authorized employees shall LOTO the energy isolating devices with assigned individual locks or tagout device.

2. LOTO devices shall be applied so that they will hold the energy isolating devices in a "Neutral" or "Off" position.



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**3.** Maintain and record a minimum of 24-months listing of LOTO activities. District employees of the Facilities Maintenance Division shall use the Work Control Office's *SmartSheet*™ web enabled spreadsheet for such recordings. Contracted business performing new construction or renovation/ remodel work by controlling access of entire portion(s) of district property [or building system(s)] may use their own LOTO procedure and record keeping that complies with specific OSHA Standards (ref. 29 CFR 1910.147) and BPS District Safety Plan (ref. Sections 24 LOTO & 25 Machine Guarding). School employees and other support function employees (i.e. applied technology teachers, auditorium manager, transportation mechanic, computer technician, etc.) shall follow this procedure and maintain site-specific records (ref. Appendix A Inspection Certificate & Appendix B Log Form). Information to record includes: school, building, equipment description, energy sources being isolated, date applied and employee key & tag number(s).

### **E. Stored Energy.**

All stored or residual energy in rams, flywheels, springs, pneumatic, or hydraulic systems, etc. shall be blocked or dissipated. If there is a possibility of re-accumulation of stored energy, verification of isolation must be continued until servicing or maintenance is completed.

### **F. Verification of Isolation.**

Prior to starting work on machines or equipment that have been locked and after ensuring that no personnel are exposed, the authorized employee shall operate the push button or normal operating controls to verify that the appropriate equipment or machine has been de-energized and make certain it will not operate.

**CAUTION:** Return Operating Controls to the "Neutral" or "Off" Position after the Test.

The machine / equipment is now locked out. Servicing or maintenance may now occur.

## **VII. Removal of LOTO Devices**

**A.** After the servicing and / or maintenance is completed and before the LOTO devices are removed and energy is restored, the sequence of activities.

**B.** If the authorized employee who applied the lock is not available, the supervisor shall take the following steps:

1. Clear the machine or equipment of tools and materials.
2. Remove employees from the machine or equipment.
3. Remove the LOTO device.
4. Close LOTO entry in record/log (i.e. *SmartSheet*™, project/site log) by entering LOTO removal date.
5. Energize and proceed with testing or positioning.
6. De-energize all systems and reapply energy control measures in accordance with procedures set forth under SECTION VI.



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### **VIII. Additional Requirements**

**A. *Group LOTO*** - In the proceeding steps, if more than one individual is required to LOTO machines/ equipment (group LOTO), the following procedures shall be implemented to provide protection to all employees.

1. A primary authorized employee will be designated and responsible for the number of people working under the protection of the group LOTO device. The primary authorized employee will ascertain the exposure status of the individual member participating in the group LOTO to ensure continuity of protection for each individual. In addition, this primary authorized employee will be responsible for notifying affected employees before and after LOTO procedures are performed.
2. Each authorized employee will place his/her own personal LOTO device on the energy isolating device(s).
3. When an energy- isolating device cannot accept multiple locks, a multiple LOTO system must be used.

**B. *Personnel Changes*** - If a LOTO procedure will extend into the following shift, the authorized employee who originally placed the lock will remove it and it will immediately be replaced with the lock of the authorized employee who is to continue the repair or maintenance on that equipment or machine.

**C. *Cord and Plug Connected Equipment*** - If servicing or maintenance is performed on cord and plug connected equipment the following procedure shall be performed to protect employees.

1. Unplug equipment from its electrical socket.
2. Place a lockable cover over the plug and a lock on the plug cover during machine/ equipment servicing or maintenance.

**D. *Outside Contractors*** - If outside contractors perform servicing or maintenance that requires LOTO, the lead Supervisor shall take the following steps.

1. Inform the outside contractor of District's LOTO procedures and supply them with a copy.
2. Obtain and review a copy of the outside contractor's LOTO procedures.
3. Ensure that District employees understand and comply with the responsibilities and prohibitions of the outside contractor's LOTO procedure.

### **E. *Training***

1. Authorized employees shall receive training covering:
  - a) Recognition of hazardous energy sources.



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- b) Types and magnitude of hazardous energy in the workplace.
  - c) Methods, devices, and procedures used to LOTO, verify LOTO, and otherwise control hazardous energy on all pieces or types of equipment (including cord and plug connected equipment).
  - d) Procedures for removing locks and returning a machine or piece of equipment to operation.
  - e) Transfer of LOTO responsibilities.
  - f) Group LOTO procedures.
2. Affected and all "other" employees shall receive training so that they are able to:
- a) Recognize when energy control procedures are being implemented, and
  - b) Understanding the purpose of the procedures and the importance of not attempting to start up or use the machine / equipment that has been locked out.

**F. Retraining** - Authorized and affected employees shall receive retraining in proper application of LOTO procedures when there is a change in:

1. Job assignment(s) that expose an authorized employee to new hazards or LOTO procedures.
2. Machines, equipment, or processes that present a new hazard or require modified LOTO procedures.
3. Energy control procedures for a piece or type of equipment.
4. Or, when it becomes known that an employee incorrectly performs LOTO procedures.

Retraining will re-establish employee proficiency in LOTO, and ensure that employees are knowledgeable of new or revised procedures. All retraining will be certified.

### **G. Periodic Inspections**

1. An inspection of the energy control procedures will be conducted and will be certified (see Appendix A).
2. Energy control procedures for each machine or type of machine must be inspected.
3. The inspection shall include a review of LOTO responsibilities with each individual authorized to LOTO the machine/ equipment.
4. The person who performs the inspection must be authorized to perform the LOTO procedures being inspected. The inspector cannot, however, review his/her own use of LOTO procedures.
5. Any deviations or inadequacies identified shall be immediately addressed.



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### **H. Equipment Hazard Evaluation**

1. An equipment hazard evaluation form is included for newly installed equipment to evaluate and identify hazardous energy control procedures. (See Appendix B).
2. This form can also be used on existing equipment if the equipment has not previously had a hazardous energy control evaluation performed.



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### Appendix A

### Periodic Inspection Certification

DATE OF INSPECTION: \_\_\_\_/\_\_\_\_/\_\_\_\_

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

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

**Machine or equipment on which LOTO procedures were performed:**

Employee(s) performing the LOTO procedures:

**Employee Name (Please Print) Employee Signature**

Employee Name (Please Print)	Employee Signature
_____	_____
_____	_____
_____	_____

**Were all the LOTO procedures performed correctly? YES NO**

Comments on improper LOTO procedures being used (ex. list improper procedures being used that require retraining for the employee or modification of procedures):





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## Appendix B HAZARDOUS ENERGY CONTROL PROCEDURE FORM

Name of employee(s) exposed to the hazard: \_\_\_\_\_

Machine / Equipment on which the task is being performed: \_\_\_\_\_

Servicing / Maintenance task being performed: \_\_\_\_\_

\_\_\_\_\_

Frequency in which the employee performs the task: \_\_\_\_\_ times per \_\_\_\_\_

Duration for which the employee has performed the task: \_\_\_\_\_ hour/day/week

### Hazard to which the employee is exposed when performing this task:

caught in \_\_\_\_\_ crushed by \_\_\_\_\_  
struck by \_\_\_\_\_ thrown from \_\_\_\_\_  
contact with \_\_\_\_\_ other \_\_\_\_\_

### Energy source which exposes the employee to a hazard:

\_\_\_ Electrical \_\_\_ Engine \_\_\_ Spring \_\_\_ Counter Weight  
\_\_\_ Flywheel \_\_\_ Hydraulic \_\_\_ Pneumatic \_\_\_ Chemical  
\_\_\_ Thermal \_\_\_ Other \_\_\_\_\_

### Magnitude of the energy source:

\_\_\_ Volts \_\_\_ Phase \_\_\_ PSI \_\_\_ Degree F \_\_\_ Tons

### Potential Injury associated with the improper isolation of energy:

Crushed \_\_\_\_\_ Fractured \_\_\_\_\_  
Amputated \_\_\_\_\_ Lacerated \_\_\_\_\_  
Punctured \_\_\_\_\_ Burns \_\_\_\_\_  
Air Embolism \_\_\_\_\_ Electric Shock \_\_\_\_\_  
Other \_\_\_\_\_ Death \_\_\_\_\_

### Means of Isolating the Energy Source (Procedures Used)

[If is used see 1910.147 (c) (3) (ii)]

Location: \_\_\_\_\_

Method: \_\_\_\_\_

If Electrical, cord / plug (circle one); YES NO

### Hazard Communication with Exposed Employees

Hazards discussed with exposed employee Mr. / Ms. \_\_\_\_\_

Remarks/Signed Statement (if documenting past exposure) \_\_\_\_\_

Hazard reviewed with employer Mr. / Ms. \_\_\_\_\_

Remarks: \_\_\_\_\_

### FORM FILLED OUT BY:

Print Name of Facilities Shop, Contracted Business Name, School Shop: \_\_\_\_\_

Print Name of Competent & Responsible Employee: \_\_\_\_\_

Signature and Date of Form Completion: \_\_\_\_\_

**NOTE: The electronic version of the LOTO Procedures Form (SmartSheet™ - developed by the District's Facilities Division Work Control Office) can be used in instead of the above provided standard form.**