

2018

CONTROL OF HAZARDOUS ENERGY (Lockout/Tagout).

Pottawattamie County Safety & Health Program Section B 10

It is the policy of Pottawattamie County to provide a safe and healthful workplace for employees. It is the intent of this policy to comply with OSHA requirements listed in 29 CFR 1910.146; all local, state, and federal laws.



Important Contact Information

Garfield Coleman, Risk Manager:
Work: 712-328-4784 Cell: 402-595-8575

“Company Nurse”:
888-770-0928

CHI Occupational Health Services/Mercy Hospital
712-328-5550

Approved by the Board of Supervisors
October 30, 2018



CONTROL OF HAZARDOUS ENERGY Lockout/Tagout

TABLE OF CONTENTS

I.	Objective.....	3
II.	Scope & Accountability.....	3
III.	Definitions.....	4
IV.	Authority & Responsibility.....	5
	A. Risk Management.....	5
	B. Department & Supervisors.....	6
	C. Program Coordinators.....	6
	D. Employees.....	7
V.	Hazard Assessment.....	7
VI.	General Procedures & Employee Protection.....	7
VII.	Lock & Tag Requirements.....	8
VIII.	Energy Control Procedure.....	8
IX.	Audit.....	12
X.	Policy Violations.....	13
XI.	Training & Recordkeeping.....	14

MODEL FORMS

- Appendix A: Lockout/Tagout Program Audit Report
- Appendix B: Lockout/Tagout Information Placard
- Appendix C: Lockout/Tagout Absentee Removal Form

I. Objective

To prevent the unexpected startup or release of hazardous energy from machines and equipment during servicing or maintenance

Pottawattamie County has developed the Control of Hazardous Energy Program or Lockout/Tagout (LOTO) Program to safeguard employees against the unexpected release of hazardous energy. Sources of hazardous energy may be any source of radiation, electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy. This Program establishes the minimum performance requirements for the control of such hazardous energy in accordance with the Occupational Safety and Health Administration (OSHA) Standards contained within 29 CFR 1910.147. Further performance requirements and provisions for achieving an electrically safe work condition can be found in the Pottawattamie Electrical Safety Program.

II. Scope and Applicability

- A. This Program applies specifically to the servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machines or equipment, or release of stored energy could cause injury to employees.
- B. Normal production operations are also covered by this Program when:
 - 1. An employee is required to remove or bypass a guard or other safety device; or
 - 2. An employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is actually performed upon the material being processed (point of operation) or where an associated danger zone exists during a machine operating cycle.
- C. **The following exceptions are not covered by this Program:**
 - 1. Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start-up of the equipment is controlled by the unplugging of the equipment from the energy source and the plug remains under the exclusive control of the employee performing the servicing or maintenance.
 - 2. Minor tool changes and adjustments, and other minor servicing activities, which take place during normal maintenance operations, if they are routine, repetitive, and integral to the use of the equipment, provided that the work is performed using alternative measures which provide effective protection; and

3. Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that the supervising department demonstrates:
 - a. Continuity of service is essential;
 - b. Shutdown of the system is impractical; and
 - c. Documented procedures are followed, and special equipment and procedures are used which will provide proven effective protection for employees.

III. Definitions:

- A. **Authorized employees:** Employees who lockout or tag out machines or equipment in order to perform servicing or maintenance. An affected employee becomes an authorized employee when that employee's duties including performing servicing or maintenance.
- B. **Affected employees:** Employees whose jobs require them to operate or use machines or equipment that need servicing or maintenance and are in the lockout/tag out program or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.
- C. **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 are 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.
- D. **Energized.** Connected to an energy source or containing residual or stored energy.
- E. **Energy-isolating device:** A mechanical device that physically prevents the transmission or release of energy.
- F. **Energy source.** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- G. **Hot tap.** A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.
- H. **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.

- I. **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.
- J. **Normal production operations.** The utilization of a machine or equipment to perform its intended production function.
- K. **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.
- L. **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.
- M. **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.
- N. **Qualified person:** A person who is familiar with the construction and operation of the equipment and the hazards involved.
- O. **Zero energy state:** The point at which all sources of energy are removed.

IV. Authority & Responsibility

A. Risk Management is responsible for:

1. Developing the LOTO program and reviewing the program on annual basis.
2. Maintaining a list of departmental Program Coordinators.
3. Assisting departments, as needed, in implementing program and monitoring for compliance.
4. Assisting departments with the inspection and identification of machines and equipment requiring LOTO program.
5. Providing training for employees who are in the LOTO program and maintain training records.

B. Departments and Supervisors involved in tasks covered by the program shall be responsible for:

1. Assigning a Program Coordinator.
2. Identifying equipment and energy sources where LOTO protection is necessary.
3. Developing equipment-specific energy control procedures as necessary.
4. Providing all necessary LOTO equipment.
5. Maintaining a current list of all authorized employees.
6. Ensuring that employees are following the LOTO program and taking appropriate disciplinary action whenever an employee fails to follow safety precautions outlined in this program.
7. Assisting with training and maintaining departmental training records on LOTO. Forward copies of training records to Risk Management.

C. Program Coordinators shall be responsible for:

1. Removing or approving the removal a lockout device with approved methods, when necessary, if the initial authorized employee is unavailable.
2. Approving the use of specific lockout devices to be used for each type of equipment that may need to be serviced.
3. Ensuring that all affected employees receive training on the appropriate procedures as necessary for their particular job duties.
4. Taking the appropriate action when an employee or supervisor reports unsafe conditions.
5. Conducting or coordinating periodic inspections of LOTO procedures.
6. Pursuing the appropriate corrective action for employees that are not complying with the LOTO Program or any other energy control procedures.
7. Ensuring coordination, cooperation, and conveyance of necessary information between employees and outside contractors when the unexpected energization or start-up of machines or equipment, or release of stored energy could cause injury to employees or contractor employees.

D. Employees involved in tasks covered by the Program shall responsible for:

1. Complying with all aspects of the LOTO Program and related procedures.
2. Attending and completing LOTO training; and
3. Notifying the supervisor of any unsafe conditions.

V. Hazard Assessment

A. [Responsible Person in the Department] shall conduct a hazard assessment to determine all the sources of hazardous energy to be controlled. This will facilitate creating specific procedures for energy control.

1. Hazardous energy types include the following: electrical, mechanical, chemical, hydraulic, and pneumatic.
2. In addition, the assessment will consider the following: stored or potential energy, thermal sources, and human factors.

VI. General Procedures and Employee Protection

- A. Execution of LOTO procedures shall only be performed by authorized employees in accordance with the requirements of this Program. Affected employees shall be notified by the authorized employee prior to the application and removal of LOTO devices. No other employee may attempt to start, energize, or use a machine or piece of equipment that is locked out or tagged out.
- B. A LOTO device shall ONLY be removed from equipment by the employee who applied the device unless:
 1. the employee who applied the lockout or tagout device is unavailable; and
 2. approval has been received from the Program Coordinator to remove the device.
- C. When servicing and/or maintenance is performed by a crew, department or other group, the group shall utilize a group LOTO procedure that provides an equivalent level of protection to that of an individual LOTO procedure.

VII. Lock and Tag Requirements

- A. Locks, tags, gang hasps, chains, gate valve locks, ball valve locks, wedges, key blocks, adapter pins, self-locking fasteners, and any other equipment necessary for complying with this Program shall be provided to employees by the supervising department. LOTO devices shall be identifiable to the authorized employee; shall be the only device(s) used for controlling energy; and shall not be used for other purposes. Devices must meet the following criteria:
1. **All devices** must be:
 - a. Durable;
 - b. Standard in color, shape, and appearance;
 - c. Substantial enough to prevent accidental removal (Tags must have a minimum unlocking strength of 50 lbs.);
 - d. Labeled with the authorized employee's name.
 2. **Tags** must contain instructions not to operate or energize equipment and the names of employees working on the equipment. The tags must also be:
 - a. Readable and understandable by all employees;
 - b. Single-use and self-locking;
 - c. Non-releasable;
 - d. Applied by hand.

VIII. Energy Control Procedures

- A. The Program Coordinator for each department shall coordinate the inspection of facilities and consult with employees and supervisors assigned to service and maintain equipment/machinery in order to develop equipment-specific energy control procedures. Equipment-specific energy control procedures shall be developed, documented, and utilized for the control of potentially hazardous energy during servicing and maintenance of equipment. If an energy isolating device is capable of being locked out, equipment-specific LOTO procedures shall specify the use of a lockout system. If an energy isolating device is not capable of being locked out, equipment-specific LOTO procedures may specify the use of a tagout system.
- B. Equipment that possesses a single hazardous energy source that can be easily identified and isolated with a single lock may be exempt from equipment-specific procedures. All exemption criteria specified under 29 CFR 1910.147(c)(4)(i) must be adequately met for the exemption. Contact Risk Management for consultation if uncertain the equipment is exempt from equipment-specific lockout procedures.

- C. All equipment-specific LOTO procedures shall be designed to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources, and locked or tagged out before any employee performs servicing or maintenance on equipment. Equipment-specific LOTO procedures shall be designed to follow the general sequence of energy control and the general sequence of re-energization; however, these procedures should include specific procedural details on how to safely control energy during servicing or maintenance of the specific equipment.
- D. General Procedures: Employees shall not work on or in equipment, vessels, and other similar items, which are **not** in a zero-energy state. *Only authorized employees may perform lockout/tag out.*

1. Preparing for shutdown:

- a. Identify and locate all sources of energy that could affect individuals involved;
- b. Notify affected employees of activities - This can be done verbally, visually, or by hanging a warning tag on the control panel.
- c. Identify shutdown procedures;
- d. Identify energy isolation devices needed;
- e. Determine quantity and type of lockout/tag out devices required.

2. Shutdown:

- a. Shut equipment down by its normal start/stop method.

3. Isolating energy sources:

- a. Use energy-isolating devices appropriate for the energy source, such as:
 - i. Manually-operated circuit breakers or electrical disconnects for electrical energy;
 - ii. Valves for pneumatic energy;
 - iii. Blocking or bars for mechanical energy.
- b. All devices must be equipped with a place to attach a hasp or a lock or have a built-in locking mechanism.

4. Applying locks and tags:

- a. Locks are attached so that the device cannot be operated until locks are removed;
- b. Devices must be in the off position;

- c. Tags indicate that the device and equipment may not be operated and include the name of employees working on the equipment;
- d. Locks, tags, signs, and seals must be securely attached;
- e. The name of the authorized employee must be included.

5. Control residual energy:

- a. Release, restrain, or dissipate energy;
- b. Prevent the re-accumulation of energy;
- c. Isolate the space:
 - i. Blind the lines;
 - ii. Disconnect and misalign the lines;
 - iii. Double block the valves and bleed the residual materials.

6. Verify energy control methods:

- a. Assure that switches, valves and other mechanisms cannot be turned on;
- b. Activate equipment control switches and levers, and depress start buttons to assure the power is isolated;
- c. Return switches, levers, and buttons to the off position;
- d. Use a meter to assure that electrical energy is not present.

7. Appropriate start-up procedures:

- a. Inspect area and remove all tools, rags, and other materials;
- b. Assure that equipment is operationally intact;
- c. Replace all guards and other safety devices, if applicable;
- d. Notify affected employees that equipment will be restarting;
- e. Check work area to assure all employees are safely positioned;
- f. Verify all controls are in the neutral or off position;

- g. Remove lockout/tag out devices;
- h. Notify affected employees that lockout/tag out devices have been removed and the equipment or machinery is ready for use.

E. Group Lockout:

1. When a crew or other group performs service or maintenance on equipment, a single authorized employee must assume the overall responsibility for the control of hazardous energy for all members of the group while the servicing or maintenance work is in progress, and implement the group lockout energy control procedure.
2. Each person who enters the danger zone will be required to verify that the hazardous energy sources have been locked out and the keys to these locks have been secured in a group lockout box. Then they will affix their personal devices to the group lockout box or equivalent. For example, multiple valves and breakers require lockout by three people who will be working on the same piece of equipment. A lock and tag is placed on each lockout location and the keys are stored in a group lockout box. Each employee then places their personal locks on the group lockout box.
3. Group lockout procedure must provide all employees **with the same level of protection** provided by an individual lockout or tag out device.

F. Lockout/tag out occurring over multiple shifts:

1. Protection must extend between shifts;
2. If work extends through the initial shift:
 - a. The incoming staff that will be working on the process or equipment must add their own lockout controls in accordance with standard lockout procedures.
 - b. The outgoing shift staff must review all work done and the status of lockouts, and transfer the responsibility of lockout to the incoming shift.

G. Temporary operation of locked out source:

1. Temporary operation may be required for certain tasks, such as tests. ***These steps must be done by authorized employees only.***
 - a. Make sure everyone is clear of the system;
 - b. Make sure tools are clear;

- c. Remove locks and tags;
- d. Energize the system and conduct the test if applicable;
- e. Immediately de-energize the system and replace locks.

H. When Authorized Employee is not available to remove lock and tag:

Unauthorized removal of lock and tag is prohibited. When an authorized employee is not available to remove lock and tag, the following procedure may be utilized by a **qualified person** to remove locks and tags.

1. Verify that the authorized employee is not on site and available to remove the lock and tag. Attempt to contact the authorized employee. If the authorized employee cannot be contacted, continue;
2. Verify equipment is safe to operate, tools have been removed, and guards have been replaced;
3. Notify affected employees that equipment will be restarting, and check work area to assure all employees are safely positioned;
4. Verify all controls are in the neutral or off position;
5. Remove lock/tag and energize equipment;
6. Notify affected employees that lockout/tag out devices have been removed and the equipment or machinery is ready for use;
7. Before the authorized employee (who could not be contacted earlier) resumes work, he or she **must be informed** that the lockout device has been removed.

IX. Audit

- A. The purpose of an audit is to make continuous improvements and needed corrections to the lockout/tag out plan.
 1. The audit is conducted at least annually or if a weakness or issue is noted.
 2. Audits are performed by *authorized employees*.
 3. Audits shall review the following:

- a. Adherence to energy isolation procedures;
- b. Effectiveness of lockout/tag out procedures;
- c. Employee training;
- d. Assigned roles and responsibilities;
- e. The authorized person's responsibilities.

B. Audit process: An authorized employee who is not involved in the lockout procedure for the equipment being inspected will conduct the review and inspection.

1. Review equipment to assure that lockout is effective and safe;
2. Authorized employees will be subject to an oral review of machine-specific lockout procedures for equipment that they are authorized to service. This review will address the authorized employee's responsibilities under the lockout procedure for each piece of machinery that he/she is authorized to work on.
3. Authorized employees will also be subject to an observed evaluation of their proficiency in controlling hazardous energy on selected equipment that they are authorized to service;
4. Any deficiencies must be corrected immediately.

C. Audit Documentation:

1. Audits must be documented and the records maintained. A copy of each audit shall be forwarded to Risk Management.
2. Each audit needs to be certified by Risk Management. The certificate must include the following information: the equipment being controlled, the date of review, the names of employees involved, and the name of the auditor.
3. Records should also include information about the pieces of equipment, problems observed, and recommendations to correct those problems.

XI. Policy Violations

The consequences of violating this policy can be severe in terms of human suffering and loss. Violations of this policy will be handled aggressively, with a goal of determining how to improve the employee behaviors and procedures so that no similar violation will occur.

XII. Training and Recordkeeping

A. Training

1. Supervising departments shall maintain a current list of all authorized employees. A copy of the list shall be accessible to Risk Management upon request to the department Program Coordinator.
2. Risk Management shall provide basic LOTO training for authorized employees to ensure that the purpose and function of the energy control program are understood and that employees possess the basic knowledge and skills required for the safe application, usage, and removal of energy controls. Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control. Authorized employees shall also be trained in the following specific limitations of tags:
 - a. Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock;
 - b. When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated;
 - c. Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective;
 - d. Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace;
 - e. Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program; and
 - f. Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.
3. The supervising departments are responsible for ensuring that employees are trained and for validating comprehension of equipment-specific LOTO procedures. The supervising department is also responsible for:

- a. Instructing any affected employees on the purpose and use of energy control procedures.
- b. 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 presents a new hazard, or when there is a change in the energy control procedures.
- c. Retraining shall also be conducted whenever a periodic inspection reveals, or whenever the supervising department or Risk Management has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.
- d. Retraining shall be conducted whenever a periodic inspection reveals, or whenever the supervising department or Risk Management has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures. The training shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

B. Recordkeeping

1. Each department shall verify that training is current. Basic lockout/tagout training records shall be maintained by the department and forwarded to Risk Management for placement in the employees training file. Employee training records shall contain the employee name, date of training, and the subject of the training;
2. Absentee lock/tag device removal forms (Appendix C) shall be maintained by the supervising department for the lifetime of the applicable machine or equipment.
3. Specific energy control procedures shall be readily accessible in the area of the specific equipment. Note: This may be accomplished by electronic means, by posting procedures on the equipment, or by providing a binder in the mechanical room. Copies of all energy control procedures shall be kept by the department Program Coordinator. Energy control procedures shall be available to all affected employees upon request.
4. Periodic inspection documentation, at a minimum, shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, any deviation or inadequacy, any corrective action taken, the employees included in the inspection, and the person performing the inspection

MODEL FORMS

Model forms for this program are located on the following pages. Departments may modify or develop their own forms based on the specific needs of their department.

Modified forms are subject to review and approval of Risk Management

Appendix A: Lockout/Tag out Program Audit Report

	OK	Improvement Needed
1. The written program is developed and accessible.	<input type="checkbox"/>	<input type="checkbox"/>
2. Awareness-level training is provided to affected employees.	<input type="checkbox"/>	<input type="checkbox"/>
3. Full lockout/tag out training with lockout procedures for specific machinery and equipment is provided to authorize employees.	<input type="checkbox"/>	<input type="checkbox"/>
4. Skills evaluations are done as part of training.	<input type="checkbox"/>	<input type="checkbox"/>
5. Lockout/tag out supplies is readily available and good quality.	<input type="checkbox"/>	<input type="checkbox"/>
6. Locks are individually keyed.	<input type="checkbox"/>	<input type="checkbox"/>
7. Tags are readable and understandable, identify who is performing lockout, and contain instructions not to operate or energize equipment.	<input type="checkbox"/>	<input type="checkbox"/>
8. Lockout/tag out is performed for de-jamming activities.	<input type="checkbox"/>	<input type="checkbox"/>
9. Lockout/tag out is effective in that no employee can reach in or come into contact with areas where injury could occur.	<input type="checkbox"/>	<input type="checkbox"/>
10. The program addresses all applicable stored energies.	<input type="checkbox"/>	<input type="checkbox"/>
11. Specific lockout/tag out procedures are developed for each piece of machinery and posted on each piece of machinery.	<input type="checkbox"/>	<input type="checkbox"/>
12. Lockout/tag out procedures is included for vehicles and mobile equipment.	<input type="checkbox"/>	<input type="checkbox"/>
13. Front-line supervisory staff observes employee behavior and enforce the lockout/tag out procedures.	<input type="checkbox"/>	<input type="checkbox"/>
14. Audits take place annually or more frequently.	<input type="checkbox"/>	<input type="checkbox"/>

Date	Audit by

Corrective Actions Needed

Actions and Responsible Persons
--

Appendix B: Lockout/Tag out Information Placard

This equipment must be serviced by Authorized Personnel ONLY!

Equipment/Machine:	Name	ID Number
Authorized Personnel:	Name/Phone	
Location of Lockout Device:	Detailed Info	

Electrical Energy Sources:

Primary Electrical Source:	Panel #	Breaker #
Additional Electrical Source:	Panel #	Breaker #
Additional Electrical Source:	Panel #	Breaker #
Additional Electrical Source:	Panel #	Breaker #

Other Hazardous Energy Sources (Active or Stored Energy):

Common Types: Chemical, Hydraulic, Mechanical, Pneumatic, Potential, Other

Type/Description	Location
Type/Description	Location
Type/Description	Location
Type/Description	Location
Type/Description	Location

Notes/Diagram:

DO NOT REMOVE THIS TAG FROM ANY MACHINE!

APPENDIX C: ABSENTEE LOCK/TAG REMOVAL FORM

By signing this document, the supervisor certifies that all reasonable attempts have been made to contact the individual whose device is to be removed. The supervisor removing the affected individual's energy control device will assure that this individual has knowledge of his device being removed before he/she resumes work at the facility.

Signature of Supervisor Initiating Removal:	
Date/Time Lock/Tag Removed	
Name of Individual (i.e. whose device was removed)	
Location/Name of Equipment (i.e. where device was removed):	
Type of Energy (i.e. Electric, Mechanical)	

Detailed Reason for Removal: _____

Was this individual contacted and aware that his/her control device was going to be removed?

Yes

No

Phone Number or Method of Contact	
Date/Time Contact was Attempted	

By signing this document, the individual whose lockout/tagout device was removed certifies that they have been made aware of the fact that their energy control device identified above was removed under the supervision of an authorized supervisor and realize that they no longer have this equipment under isolation.

 Signature

 Date