



ADMINISTRATIVE INSTRUCTION NO. 46

Energy Control Program

Lockout/Tagout 29 CFR 1910.147

Policy Statement

The City of Bowling Green, Ohio is committed to providing a healthy and safe work environment free from any potentially hazardous conditions for all its employees. Employees, for their part, are expected to comply with the municipality's policies and procedures as mandated by State law as it applies to 29 CFR 1910.147 of the Occupational Safety and Health Administration's (OSHA) regulations.

1. Responsibilities

- 1a. The Personnel Director is designated as the "Safety Coordinator" and is authorized by the Municipal Administrator to direct the safety activities for each of the departments operating within the municipality. The department and division heads or their assigned designees shall be responsible for implementing and maintaining State mandated safety standards, as required by law. Employees working for the City of Bowling Green are responsible for practicing and maintaining a safe working environment, as described in this program.
- 1b. Emergency responders are designated as the Fire Division, Police Division, and the local hospital. Employees shall utilize any of these agencies in the event of an emergency beyond the scope and limitations of their respective municipal department or division. This shall include but not necessarily be limited to medical, fire, water, air or land contamination or weather related emergencies. All corrective actions will be at the discretion of the trained emergency responder.

This program covers all employees working for the City of Bowling Green, but more specifically, to those employees who work in the maintenance, servicing and/or repairs of machines and equipment located within and on City property.

Employee Requirements

Newly hired, full time or permanent part-time, employees.

- 1) Upon hire, new affected employees shall be informed of the City's "Energy Control Lockout/Tagout Standard" and what lockout and tagout (LO/TO) devices look like. Employees shall be informed that they are not to compromise the integrity of any lockout or tagout device. At no time shall a new employee practice lockout/tagout until trained, tested, and otherwise deemed an "authorized" employee.
- 2) Affected employees shall be given a copy of the City's "Energy Control Program" to review. They shall take the written LO/TO exam within (30) days of employment. Supervisors may grant more time, as necessary.
- 3) The employee will work alongside an authorized employee (trained and tested in LOTO), as appointed by his/her supervisor, until such time as the supervisor is confident that the employee has reach an acceptable level of knowledge regarding lockout/tagout procedures.
- 4) The employee will take the exam. A passing of at least 80% is required in order to pass the exam. If an employee does not achieve an acceptable score, he/she may take the exam at a later date at the discretion of his/her supervisor. If additional help is needed, the supervisor will work with the employee to achieve an acceptable score.

- 3) Upon successful completion of the written exam, the employee shall continue to work with an authorized employee until such time as the authorized employee feels that the new employee is capable of performing lockout/tagout independently. Documentation of this authorization shall be forwarded to the Personnel Director or his/her designee.

General

The Lockout/Tagout Program shall consist of energy control procedures, employee training, and periodic inspections to ensure that before an employee performs any maintenance, service or repairs on machines or equipment where the unexpected energizing, start-up or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative.

Normal production operations are not covered by 29 CFR 1910.147. However, the standard does apply when servicing and/or maintenance takes place during normal production operations if:

- An employee is required to remove or bypass a guard or other safety device.
- 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 process (point of operation) or where an associated danger zone exists during a machine operation cycle.

Exception: Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.

The 29 CFR 1910.147 standard does not apply to the following:

- 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 by the plug being under the exclusive control of the employee performing the servicing or maintenance.
- 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 employer demonstrates that (1) continuity of service is essential; (2) shutdown of the system is impractical; and (3) documented procedures are followed, a special equipment is used which will provide proven effective protection for employees.
- Management will provide all protective materials and hardware necessary to prevent the accidental start-up and/or release of energy. These lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.

The responsibility to ensure that repaired, modified or newly purchased machines and equipment include considerations for the design, compatibility and acceptance of a lockout device(s) will be that of the department and division heads.

Lockout System

Lockout device(s) shall be primarily utilized when cutting power source(s) for maintenance, service, and/or repairs. Periodic assessment of new and improved methods to permanently mount lockout devices on machines and equipment shall be taken into consideration when purchasing new machinery and equipment. The following considerations shall be taken when new lockout devices are purchased:

Durable

- Lockout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

Standardized

- Lockout devices shall be standardized within the department in at least one of the following criteria: color; shape; or size.

Substantial

- Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

Identifiable

- Lockout devices shall indicate the identity of the employee applying the device(s).

Tagout System

Tagout device(s) may be used if an energy-isolating device is **Not Capable** of being locked out. The Tagout System shall be considered only as a secondary alternative to the Lockout System and shall meet the requirements of lockout devices plus the following provisions:

- Tagout devices shall be constructed and printed so that exposure to weather conditions or wet damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
- Tags shall not deteriorate when used in a corrosive environment such as areas where acid, alkali, and chlorine are handled and stored.
- Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.
- Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: Do Not Start. Do Not Open, Do Not Close. Do Not Energize. Do Not Operate

If an energy isolating device is **Capable** of being locked out, and the authorized employee is confident that the Tagout System will provide **“full employee protection”** as described in the 29 CFR 1910.147 paragraph (c)(3) of the OSHA Regulations, (see below) then the employee shall complete the energy control form (the tagout device).

Full Employee Protection (c)(3)

“When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the Tagout

System will provide a level of safety equivalent to that obtained by using a Lockout System.”

Training and Communication

The City of Bowling Green shall provide training to all affected and authorized employees in order to ensure that the purpose and function of its “Energy Control Program” is understood by all affected and authorized employees, and to make sure that the knowledge and skills required for the safe application, usage, and removal of the energy-isolating devices are acquired by employees. The training shall include the following:

- Every employee who will be considered “authorized” 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.
- Every employee who will be considered “affected” shall be informed about the purpose of the “Energy Control Program” and understand what a lockout/tagout device is and be informed that they are not to jeopardize the integrity of any lockout/tagout device.
- Every employee who will be considered “other” shall be informed about the “Energy Control Program.”
- 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.
- Additional retraining shall also be conducted whenever a periodic inspection reveals or the employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the Energy Control Program.
- The City shall document employee training.

Lockout/Tagout Procedures

- 1) Turn Off The Equipment And Disconnect The Energy Source
 - a) Notify all affected employees that a lockout procedure is beginning and why.
 - b) Locate and identify all switches, valves and other devices that will have to be locked or tagged out.
 - c) Shut down the equipment by normal stopping procedures.
 - d) Turn the power switch to the OFF position.
 - e) Disconnect the plug.
 - f) Break the circuit.
 - g) Close the valve or otherwise neutralize stored energy.
- 2) Lockout Energy Sources
 - a) Use a lock to prevent the flow of energy from being restored.
 - b) Snap the lock on the control lever or on a multiple lock adapter.
 - c) Test disconnect to be sure it cannot be moved to the ON position.
 - d) Each energy isolating device will be locked and tagged singularly.
- 3) Tagout At Disconnect Point
 - a) Provides vital information
 - i) Name of employee
 - ii) Date
 - iii) Time work began

- iv) Type of Work
 - v) Reason
 - b) Provides extra protection.
- 4) Release Residual Energy
- a) ZMS (Zero Mechanical State) - means that the equipment has been put in a state in which the possibility of an unexpected mechanical movement has been reduced to a minimum
 - b) Release Residual Energy by:
 - i) Discharging capacitors
 - ii) Grounding circuits
 - iii) Bleeding lines
 - iv) Releasing built-up pressure.
- 5) Protecting Yourself
- a) Be sure the equipment has stopped moving completely before starting work.
 - b) Release stored energy.
 - c) Secure loose and moveable parts prior to work.
 - d) Wear required Personal Protective Equipment.
 - e) Lock off or reduce accumulators and air tanks to atmospheric pressures.
 - f) Do not overlook timers, remote controls or computers.
 - g) Take into consideration any chemicals or vapors present.
- 6) Testing Equipment
- a) Turn switch to ON or push start button to make sure that all energy sources are successfully locked out. Return switch to OFF position.
 - b) If energy source is controlled in a remote location, communicate that all steps have been taken. Verify before proceeding.
- 7) Testing Or Positioning Of Machine, Equipment Or Components
- In some situations, lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component. In that case the following steps will be taken:
- a) Clear the machine or equipment of tools and materials.
 - b) Remove employees from the machine or equipment area.
 - c) Remove the lockout and/or tagout devices.
 - d) Energize and proceed with testing or positioning.
 - e) Deenergize all systems and reapply energy control measures as previously stated.
- 8) Restoring Machines Or Equipment To Normal Operation
- a) Lockout/tagout devices will be removed from the energy isolating device by the employee who applied it unless:
 - i) It is verified by the employer that the authorized employee who applied the device is not at the facility.
 - ii) All reasonable efforts were made to contact the authorized employee to inform him/her that their lockout/tagout device has been removed.
 - iii) The authorized employee has this knowledge before he/she resumes work at the facility.
 - b) Check to make sure that:
 - i) All tools have been removed
 - ii) All lines have been reconnected or unblocked.
 - iii) All guards have been replaced.
 - iv) All workers are safely out of the way.

- c) Remove all Lockout and Tagout devices and notify the affected employees of their removal.
- d) Restore energy to the machine or equipment.

Group Lockout/Tagout

Group lockout occurs when more than one employee services the same equipment and must lock out the same energy-isolating device. Each employee is required to receive the same level of safety from group lockout as he or she would receive from individual lockout. Therefore, each worker must attach his or her own lock to a hasp so that each person will be protected.

Larger jobs involving a number of workers, for example a whole crew or department, will require special lockout procedures that are supervised by a single authorized employee. At any point in time, the entire procedure must remain under this person's authority and control. In such instances, a special "lockout box" may be used to keep all keys.

Removal of Lockout Devices

If the employee, who placed a lockout device on an energy-isolating source is not able to remove it, his or her supervisor shall be immediately notified. Lockout/tagout devices shall not be removed unless:

- 1) The supervisor shall make every possible attempt to locate the employee.
- 2) The supervisor shall verify that the employee is not on the job.
- 3) The supervisor shall, if possible, find out the status of the job.
- 4) The supervisor shall inform the employee who placed the lockout/tagout device on the energy source that his/her lock has been removed before the employee returns to work.
- 5) The supervisor is the only authorized person to remove anyone's lockout device.

If supervisor determines that the lockout/tagout device can be removed, the supervisor will either:

- 1) Replace the lockout/tagout device with another lockout/tagout device, if the job has not been completed or,
- 2) Restore energy if the job was completed, provided that all authorized and affected employees are aware of the start-up of power to the area or equipment.

Outside Contractors

Whenever outside servicing personnel (contractors) are to be engaged in activities covered under the City's "Energy Control Program," the affected City staff and the outside contractor will inform each other of their respective "Energy Control Programs" and lockout/tagout procedures. The affected department/division head is responsible for ensuring that affected City employees understand and comply with the restrictions and prohibitions of the outside contractor's energy control program and procedures.

In order to document that an "outside" contractor provides the City a copy of his/her company's "Energy Control Program," the form found on page 9 of 9 (Appendix A) of this written program shall be completed and a copy filed with the applicable contract. Additionally, a copy of the completed form must also be provided to the Personnel Department.

Shift/Personnel Changes

Specific procedures will be utilized during shift or personnel changes to insure the continuity of lockout or tagout protection. This includes a provision for the transfer between outgoing and incoming employees to minimize exposure to hazards. A change over period should be established so that authorized employee(s) can exchange their assigned locks/tags. Also, the authorized personnel assuming control should be fully briefed on the scope and stage of work by those who are being relieved, as well as any changes that have occurred that could be potentially hazardous to employees.

Electrical Lockout/Tagout(29 CFR 1910.333(b))

Electrical work is required to be locked or tagged out or both. A lock may be placed without a tag under the following conditions:

- A. Only one circuit or piece of equipment is deenergized.
- B. The lockout period does not extend beyond the work shift.
- C. Employees exposed to the hazards associated with reenergizing the circuit or equipment are familiar with this procedure.

The circuits and equipment to be worked on will be disconnected from all electric energy sources. Push buttons, selector switches, interlocks or other control circuit devices will not be used in place of a lockout/tagout procedure. Stored electric energy will be released. Capacitors shall be discharged and high capacitance elements will be short-circuited and grounded if the stored electrical energy might endanger employees.

A qualified person will use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed, and will verify that all is deenergized. If the circuit being tested is over 600 volts, test equipment shall be checked for proper operation immediately before and after the test.

A qualified person will conduct tests and inspect to verify that all is clear and that the circuits and equipment can be reenergized. The employee who applied it will remove each lock and tag.

Only qualified persons will perform work on energized equipment. These employees will be capable of working safely on energized circuits and are familiar with the use of special precautionary techniques, personal protective equipment, insulating material and insulated tools.

Electric Power Generation, Transmission, and Distribution. – 29 CFR 1910.269

Employees whose work involves any of the above shall, in addition to 29 CFR 1910.147, follow the requirements of 29 CFR 1910.269.

Definitions

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

Authorized Employee. A person who locks out or tags 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 covered under this section.

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.

Energized. Connected to an energy source or containing residual or stored energy.

Energy Isolating Device. A mechanical device that physically prevents the transmission or release or 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.

Energy Sources. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other.

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.

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.

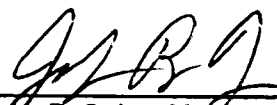
Normal Production Operations. The utilization of a machine/equipment to perform its intended production.

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.

Setting Up. Any work performed to prepare a machine/equipment to perform its normal production operation.

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

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.


John B. Quinn, Mayor 3-15-04
Date

