

Purpose and Scope

The purpose of this lockout tagout program is to prevent injuries to YSU students, faculty and staff by establishing policies and procedures which identify the appropriate energy isolating process to be used during routine service and/or maintenance of equipment. Employees must ensure a machine or piece of equipment is isolated from all potentially hazardous energy and locked out and/or tagged out before performing any service or maintenance where the unexpected energizing, start up or release of stored energy could cause injury.

This program applies to all students, faculty and staff of Youngstown State University whose activities may require them to perform service and/or maintenance on University machines and equipment. Contract personnel working at all YSU owned properties shall have their own Lockout Tagout Program established prior to beginning work on campus and are to be made aware of the provisions of YSU's Lockout Tagout Program.

This program is applicable to service and maintenance work performed on any equipment and/or machine capable of storing and/or releasing energy. Lockout Tagout procedures are not required for normal machine operation unless:

- An affected employee is required to bypass a guard or other safety device present or
- An affected 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 being performed or
- Where an associated danger zone exists during a machine's operating cycle.

This program does not apply to work on electrical circuits of 50 volts or less (i.e., low voltage lighting) or electrical equipment connected by a cord and plug where exposure to the hazard of unexpected energizing or start up is controlled solely by unplugging the equipment from its energy source and the plug is under the exclusive control of the affected employee performing the service or maintenance.

This program also excludes hot tap operations involving the transmission and distribution systems for gas, steam, water or petroleum products when they are performed on pressurized lines where continuity of service is essential, shutting down the service is impractical, and employees are provided with an alternative form of protection that is equally effective.

Definitions

Affected Employee is any University student, faculty or staff whose activity requires them to operate or use equipment or machines on which service and/or maintenance is being performed under the Lockout Tagout Program or whose job requires them to work in an area in which such servicing or maintenance is being performed.



Authorized Employee is any University student, faculty or staff who has been authorized to remove from service or shut down (using the Lockout Tagout procedures established in this program) machines or equipment in order to perform servicing and/or maintenance.

Energized means any machine or piece of equipment that is connected to an energy source or contains residual or stored energy.

Energy Isolation Device is 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 underground supply connectors, and in addition, no pole can be operated independently.
- A line valve.
- A block valve.
- Any similar devices used to block or isolate energy.

****NOTE:** Push buttons, selector switches and other control circuit type devices ARE NOT energy isolating devices.

****NOTE:** Automatic Block Valves - Use of Automatic Block valves can be used for isolation as follows:

- Only used if no manual block valve and as a last resort
- Only used if valve stem can visually be confirmed closed
- Energy sources to valve can be disconnected and tagged.
- Fails in the "Fail Close" position. Fail open or Fail Last Position not permitted.
- A method is available to confirm downstream the valve is closed (ex. bleed valve)
- Is documented for simple lockout or Group Lockout sheet.
- If criteria cannot be met a JHA is required.

Energy Source means any source of electrical, mechanical, hydraulic, pneumatic, chemical, gravity, thermal or other energy.

Hot Tap is a procedure used in repair maintenance and service activities which involves welding on a piece of equipment (pipelines, vessels or tanks) that is under pressure.

Lockout means placement of a lockout device on an energy isolating device in accordance with an established procedure ensuring the energy isolating device and the equipment being controlled cannot operate until the lockout device is removed.

Lockout Device is any device that uses a positive means such as a lock, to hold an energy isolating device in the safe position and prevents the energizing of a machine or equipment. The use of blank



flanges and bolted slip blinds are considered using positive means.

Normal Production Operation is the use of a machine or equipment to perform its intended production function.

Servicing or Maintenance means activities such as constructing, installing, setting up, adjusting, modifying and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machine or equipment and making adjustments or tool changes, where a University employee/person may be exposed to the unexpected energization or startup of the equipment or release of stored energy.

Tag is an identification device that can be securely attached to the isolation lockout device which identifies the lockbox the lock is associated with. Such tag will state "DANGER – DO NOT OPERATE" and identify the person or group who is responsible for the Lock.

Program Responsibility

The EHS Department is responsible for:

1. Implement a training program for employees who will be required to perform service and/or maintenance on equipment which possess the potential to release stored energy as identified in YSU's Lockout/Tagout Program.
2. Conduct periodic inspections of the facility to determine program performance.
3. Provide supervisors with the proper equipment to implement a lockout/tagout procedure which includes but it not limited to locks and tags.
4. Provide all authorized personnel with personal lock(s) and key(s)
5. Survey the workplace with Facilities personnel to identify all machinery and equipment which possesses hazardous energy or may be subject to unexpected energizing.
6. Ensure this procedure meets OSHA requirements.
7. Annually audit compliance with this procedure and revise as necessary. Review procedure annually with the Facilities Supervisor(s). Deficiencies noted during the audit shall be documented and addressed at the time of the audit.

The Supervisors of Authorized and Affected Employees are responsible for:

1. Assist Facilities, as needed, to identify all sources of potential stored energy which includes but are not limited to electrical, mechanical, hydraulic, pneumatic, chemical and thermal in nature within their facility areas.
2. Assure their Authorized and Affected employees follow the requirements of this program.
3. Assure their Authorized and Affected employees complete all required training.
4. Develop equipment specific isolation procedures for machines and equipment in their areas.
5. Instruct their Authorized and Affected employees to check to ensure no other student or other employee is operating machinery or a piece of equipment prior to de-energizing it.
6. Ensure that their Authorized and Affected employees understand and comply with any outside



- employer's energy control program that can affect them.
7. Review procedure annually with the EHS Department. Deficiencies noted during the audit must be documented and addressed at the time of the audit.

An Authorized Employee is responsible for:

1. Notify Affected employees of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment.
2. Each authorized employee actively working on the equipment must place their personal lock on the lockbox before beginning work. Apply locks and tags to isolation device (Simple Lockout) and/or on the Lockbox (Group Lockout) prior to performing Service and/or Maintenance activities.
3. Designate a person to verify that all energy isolation devices are verified for Group Lockouts prior to applying the Craft Lock to the Lockbox.
4. Maintain control of keys for personal locks and remove locks and tags when not working under the lockout.
5. Manage the key for Craft Lock when applied to Group Lockbox.
6. Remove the Craft and Isolation Locks when work has been verified completed.
7. Assure steam, air and/or hydraulic lines are bled, drained and cleared out so that no pressure exists in these lines or in reservoir tanks.
8. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.
9. Assure the release and blocking of the tension or pressure (e.g., springs) or any mechanism.
10. Verify all energy sources which could activate during servicing of a machine are isolated.
11. Try/test the equipment to ensure it is truly deenergized.
12. Check all electrical circuits with properly calibrated electrical testing equipment and safely discharging stored energy in electrical capacitors.
13. Secure/block all machinery possessing a ram, such as a power press, with safety blocks or pins to prevent the ram from falling.
14. When an Authorized Employee stops working on the equipment, they must remove their personal lock.
15. Authorized Employee will coordinate with shift change personnel as needed to assure the isolation locks, lock box, and craft lock will remain intact until the completion of the job.

Contractor Employees are responsible for:

1. Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the YSU management and the outside employer shall inform each other of their respective lockout or tagout procedures.
2. The YSU management shall ensure that their employees understand and comply with the



- restrictions and prohibitions of the outside employer's energy control program.
3. Contract personnel working at all YSU owned properties shall have their own Lockout Tagout Program established prior to beginning work on campus and are to be made aware of the provisions of YSU's Lockout Tagout Program.

Hazardous Energy Evaluation

All University machinery and equipment will be evaluated to determine if the release of hazardous energy may be present during servicing or maintenance activities. Machinery and equipment that meet this criteria will have equipment specific energy isolation procedures developed.

Equipment Isolation

- Any equipment that meets the scope of this program must be turned off and completely isolated from all energy sources before servicing and/or maintenance begins. Depending on the equipment and the scope of work, there may be different isolation devices and procedures needed.
- If a piece of equipment has a single energy isolation device, the authorized employee must de-energize the equipment and place their orange personal lockout lock onto the energy isolation device.
- If a piece of equipment has more than one isolation device, then a group lockout box must be used.
- Tags must be attached to each red isolation lockout lock to identify the lockbox number it is associated with.
- Once all energy isolation devices are locked and tagged out, the Authorized Employee must attempt to start the equipment to verify that full energy isolation has been achieved prior to the start of any work on the equipment.
- The STOP button(s) must always be depressed after attempting to start the equipment as a safeguard to prevent the equipment from automatically starting when the system is re-energized.

Interrupting LOTO

- Interrupting LOTO for testing or positioning of machines, equipment or components thereof:
 - In situations in which lockout locks must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:
 - Clear the machine or equipment of tools and materials
 - Remove all employees from the machine or equipment. Ensure all employees involved with the work have been notified, and all work associated with the job has been stopped.
 - Each craft removes their craft lock and all employees remove their orange personal locks from the lockbox and obtain the keys to the red isolation locks.



- *Off shift facilities personnel can remove both Blue and Green craft locks
- Remove red isolation locks
- Energize and proceed with testing or positioning.
- When testing/positioning is complete, deenergize all systems and reapply lockout in accordance with the group lockbox procedures below.
- Radiation Devices: The Radiation Safety Officer, or properly trained YSU Staff, must lock out ionizing radiation devices.

Energy Isolation Procedure (EIP)

Specific energy isolation procedures (EIP) for each machine and/or piece of equipment must be developed which describe how the machinery and/or equipment is to be isolated from its hazardous energy sources.

EXCEPTION: The employer need not document the required procedure for a particular machine or equipment, when all of the following elements exist: (1) The machine or equipment has no potential for stored or residual energy or reaccumulation of stored energy after shut down which could endanger employees; (2) the machine or equipment has a single energy source which can be readily identified and isolated; (3) the isolation and locking out of that energy source will completely deenergize and deactivate the machine or equipment; (4) the machine or equipment is isolated from that energy source and locked out during servicing or maintenance; (5) a single lockout device will achieve a locked-out condition; (6) the lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance; (7) the servicing or maintenance does not create hazards for other employees; and (8) the employer, in utilizing this exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.

Appendix 1, Energy Isolation Procedure must be completed and kept at the piece of equipment while the servicing and maintenance is performed. Once the work is complete, the EIP must be kept on file by the Authorized Employees Supervisor for annual review.

For equipment that has multiple energy isolation devices, a Group Lockout Box will be established in accordance with this plan.

Group Lockout Box

If a piece of equipment has multiple energy isolation devices a group lockbox must be used.

- The authorized employee will follow the Energy Isolation Procedure (EIP) Appendix 1 for that equipment and place the red isolation locks and tags on each energy isolation device associated with the maintenance/ servicing work to be performed.
- The keys to the red isolation locks will be placed into a group lockout box that will be located at the piece of equipment along with the completed EIP.
- Each isolation lock must have a tag on it to identify the lockbox number it is associated with.
- Once the verification of de-energization is complete (by the authorized employee) they must



- hang a craft lock on the group lockout box.
- Once the craft lock is placed on the box the authorized employee must sign the EIP.
- Any additional crafts must verify de-energization, then place their craft lock on the box, and sign the EIP.
- Each authorized employee actively working on the equipment must place their personal lock on the lockbox before beginning work.
- When the authorized employee stops working on the equipment they must remove their orange personal lock.
- The isolation locks, lock box, craft lock and the EIP will remain intact until the completion of the job.

Lockout Equipment

Craft Lock - color-coded lock issued to each facilities craft to use on group lockboxes. The locks will be keyed alike.

Building Maintenance - GREEN

Electricians - YELLOW

Boiler Tech/Plumber - BLUE

Isolation Lock - RED lockout lock placed on the equipment energy isolation device. The locks will have a unique key and a unique number.

Personal Lock - Each authorized employee will be issued 1 ORANGE lock and key. Each lock will have its own unique ID number and key (no master key will be available) which must be kept in the possession of the employee to which it was issued at all times. The EHS Department maintains the Unique ID number personnel assignment master list. Under no circumstances will any individual lock be removed by anyone except the owner of the lock unless procedures for Removing a Personal Lock (Section F) are followed.

Group Lockbox Kits - will be assigned to each facilities craft supervisor to use for group lockouts. The supervisor is responsible to maintain each kit as issued, if items are lost contact the EHS department for replacement.

Removing Personal Locks

- Only in extreme cases where the employee is not available or able to remove their personal lock will the Supervisor cut the lock, after Appendix 2 form and it's procedures are completed..
- The onsite YSU facilities supervisor must first try to contact the employee and have them remove the lock. If the employee has left campus, they must return to campus to remove their lock (if able).
- If the supervisor is not able to verbally contact the employee, they must physically verify the employee is not working on the equipment/system.
- Once the supervisor has attempted to contact the employee and also verified the employee is



not working on the equipment, they must notify the Associate Vice President of Facilities and the EHS Director (or their designee) and complete Appendix 2. The Supervisor will provide full details of the situation and request to cut the employees personal lock. Upon approval from the Associate Vice President of Facilities and the EHS Director, (or their designees), the onsite YSU facilities supervisor will cut the lock.

- The supervisor must complete Appendix 2, Personal Lock Removal Form, and have the employee immediately review and sign the form upon their return to campus.
- The employee must bring the completed form to the EHS department and be issued a new personal lock.

Lost Keys

If for any reason an employee's key becomes lost, damaged or inaccessible so that they are not able to remove their lock, the employee will notify their supervisor. The on-site YSU Management Supervisor is allowed to cut the employees personal lock after completing Removing a Personal Lock form.

Training

All individuals designated as authorized personnel under this program will complete a training program specifically designed to provide information relative to the lockout procedures they are expected to follow. In addition, the training will review all sections of 29 CFR §1910.147.

No employee will be permitted to become authorized under this program until initial training has been completed. Refresher training will be provided as needed and in the following situations:

- Violation of the program by authorized employees or supervisors.
- Changes to the program.
- Injury due to inadequate energy isolation.

Program Review

This program will be reviewed by the EHS Department and Facilities Supervisor(s) on an annual basis.

Appendices

Appendix 1. Energy Isolation Procedure

Appendix 2. Personal Lock Removal Form

