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Ferris State University Hazardous Energy Control Standard



FERRIS STATE UNIVERSITY

SAFETY, HEALTH, ENVIRONMENTAL AND RISK MANAGEMENT

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1. PURPOSE

- a. The purpose of this standard is to establish Ferris State University requirements for protection of all employees from injury resulting from unanticipated startup of machinery or equipment or the sudden or gradual release of energy.
- b. This standard establishes requirements for:
 - i. Development of a written hazardous energy control program;
 - ii. Procedures for achieving zero energy state;
 - iii. Assignment of responsibility;
 - iv. Training; and,
 - v. Administrative and disciplinary procedures.

2. APPLICABILITY AND SCOPE

- a. This standard applies to operations including all department activities such as research or test facilities, laboratories, model shops, maintenance, tool rooms, or any operation where the unexpected startup or sudden or gradual release of energy from machinery, equipment, processes or systems could result in an injury.
- b. In the event of a conflict between this standard and local, state/provincial or federal requirements, the more stringent shall apply.

3. RESPONSIBILITY

- a. Employees
 - i. No employee shall perform maintenance or non-routine work on energized equipment or any other hazardous source of energy, unless equipment is locked out, or deemed safe by a competent person with complete understanding of energy isolation and the hazards of such equipment. Any and all employees who violate will be subject to progressive and corrective discipline including termination.
- b. Department /Supervisor / Instructor
 - i. It is the responsibility of each Department Supervisor/Manager to ensure that a hazardous energy control program is established and maintained in accordance with this standard.
- c. Environmental Health and Safety Department
 - i. Responsible for overseeing the administration of this program, but ultimate responsibility rests with each department.

4. STANDARD ELEMENTS

- a. Application:
 - i. Lockout and tag procedures to control hazardous energy shall be followed any time safeguards are bypassed or an employee is required to place their

- hand or any other body part in the point of operation or other danger point for the purposes of conducting service work of any kind.
- ii. Each piece of equipment covered by this standard shall have a written lockout and tag procedure specific to the equipment which identifies who is authorized to perform the lockout, the location of each energy source and associated lockout and tag devices to be used, and the circumstances under which lockout must be performed.
 - iii. Normal operations are not covered by this standard.
- b. Routine and minor equipment adjustments or maintenance that occur during normal working hours, such as lubrication or clearing **are covered** by this standard:
- i. If a guard or safety device is removed, bypassed, or otherwise not functioning as designed or an employee is required to place any part of his/her body in the point of operation or another equipment danger point, **or**
 - ii. More than one person is involved in the adjustment or service activity.
- c. Procedures:
- i. Lockout and tag procedures shall include but not be limited to the following energy sources:
 - 1. electrical
 - 2. hydraulic
 - 3. compressed gases and steam
 - 4. stored energy in springs
 - 5. potential or kinetic energy
 - 6. stored quantities of toxic materials
 - 7. heat, radiant sources, lasers
- d. All energy sources shall be identified and isolated before repair, maintenance, or other work which presents a risk of injury if performed.
- e. Every department shall have general and equipment-specific written lockout and tag procedures that includes the following:
- i. Notification of affected employees prior to lockout,
 - ii. Shut down procedures to be followed prior to lockout,
 - iii. Identification, location and means of isolation for all energy sources,
 - iv. Identification of positions or work groups authorized to perform lockout,
- f. Specific procedures when lockout must be used for set-up, equipment jams or other service activities not covered by minor tool adjustment, and the relevant energy sources required to be locked out for each procedure.
- i. Release of any stored energy including blocking or bleeding methods,
 - ii. The use of approved key locks and "Do Not Operate" warning tags,
 - iii. Identification of the name and date the lockout was performed written on the warning tag,
 - iv. Testing/trying equipment controls to verify that all energy sources have been isolated,

- v. Releasing equipment from energy control for operation, including temporary removal to jog or reposition equipment,
- vi. The changing of locks and tags when repairs extend across more than one shift or involve other work crews and the removal and notification procedures when employees abandon lockout devices.
- vii. Group or multiple lockout methods when applicable, and
- viii. Key control and security of lockout devices.
- g. One Person - One Lock:
 - i. Each person who will work on the locked equipment shall place their own lockout device on the equipment energy supply, the only exception being group lockout as defined below.

5. GROUP LOCKOUT

- a. When multiple energy sources require lockout and more than one authorized employee will work on the equipment a group lock may be used provided that the following procedures are followed: group lockout procedures are defined in writing and authorized employees are trained; one authorized employee disconnects and locks all energy sources; keys for the locks are placed in a lock box; and each authorized employee who will work on the equipment will put their lock on the lock box.
- b. In the event of an employee forgetting to remove their lock, contact must be made between said individual and the supervisor and a written notice must be created prior to the lock being cut. Before a cut lock, an authorized employee must inspect all reasonable areas and ensure safety. All effort must be made to eliminate the need to cut a lock.

6. TRAINING

- a. Each department shall establish, implement and maintain documentation for a hazardous energy control training program, including refresher and update training to support the requirements of this standard.
- b. **Affected Employees** – shall receive a general description of the lockout and tag procedure and its intent. They shall be taught to identify nonstandard operations and the requirement for hazardous energy control.
- c. **Authorized Employees and Supervisors** – shall receive a thorough understanding of the standard and the specific facility implementation procedure. They shall be able to recognize hazardous energy sources, types of energy sources at the facility, methods of energy isolation, verification and control.
- d. **Other Employees** – shall receive a general description of the lockout and tag procedure and its intent.
- e. Training shall include a review of the relevant regulatory requirements.

7. CONTRACTORS

- a. Contractors who perform work in the facility shall follow the Ferris State University Hazardous Energy Control standard or their own energy control procedures if they are more stringent. The University shall be responsible for ensuring that contractors comply with these requirements.
- b. Contractors must notify affected Ferris Staff prior to any work being performed that involves energy isolation.

8. INSPECTION

- a. Each department shall perform periodic inspections of its hazardous energy control process to ensure compliance. Records of non-compliance shall be maintained until the deficiencies are corrected. If an inspection results in a non-compliance, retraining must be redone prior to any other energy isolation work.

9. RECORD AND DOCUMENTATION

- a. Each department shall maintain records of hazardous energy control inspections, and training for 5 years.

10. DISCIPLINE

- a. Any employee who is found to have **knowingly** disregarded a lockout/tag out work rule shall be terminated.
- b. In the event that an employee is found to be violating a lockout/tag out work rule with the knowledge of a supervisor, the supervisor shall be terminated.

11. DEFINITIONS

- a. **Affected Employee** - employees whose job responsibilities include operating equipment that is maintained, changed over, or under lock out conditions.
- b. **Authorized Employee** - employees who are authorized and trained to perform lock out and tag.
- c. **Capable of Being Locked out** - energy sources have cut offs, switches, levers, etc. that are shaped in such a way that a lock can be attached to them in the off position and not capable of being turned to the on position unless the lock is removed.
- d. **Compressed Gas** - gases that are pressurized above 1 atmosphere i.e. air, nitrogen, acetylene.
- e. **Danger Point** - that position or point about a machine or piece of equipment where part of an employee's body may come in contact with movement or hazardous energy on or about the machine.

- f. **Energized** - equipment that is capable of performing its designed function as a result of it being connected to a power supply.
- g. **Energy Isolation** - a mechanical device that physically prevents the transmission of energy i.e. circuit breakers, disconnects, switches, levers, line valves, blanking unions. It does not include push buttons, selector switches, or other control circuits.
- h. **Energy Source** - any source of electrical, hydraulic, pneumatic, chemical, thermal or other forms of energy.
- i. **Multiple Lockout** - An alternative procedure to a Group Lockout where a multiple lockout adapter clip designed to accept multiple individual locks is used when more than one person is working on the same equipment.
- j. **Kinetic Energy** - energy produced by motion such as a rotating flywheel.
- k. **Lockout Device** - a lock, chain, clamp, etc. that can be locked with a key and that secures an energy isolation device in the off position and requires significant effort to remove without the key.
- l. **Minor Tool Adjustment** – An operation of short duration, relatively minor, routine, repetitive, is expected, occurs frequently, and is integral to the normal production operation. In addition, the adjustment minimally interrupts the production process and does not involve disassembly.
 - i. If this definition is met, then the following alternative to Lockout/Tagout may be applied:
 - ii. All machine safeguards are fully functional and not bypassed;
 - iii. At least two independent machine control devices (i.e. E- Stop and an interlock or a selector switch) are in place to act as a redundancy while the adjustment is being made;
 - iv. The person performing the adjustment is the only one involved and has total control over the machine or equipment; and
 - v. Control devices are tested for operation at the beginning of each shift; or the controls and safeguards are self-checking (control reliable) devices that ensure that the controls and safeguards are functional before each operating cycle.
 - vi. ***Note: Clearing a jam is not considered a minor tool adjustment and energy control procedures, including the use of locks and tags must be followed.***
- m. **Point of Operation** - the place/ point of actual contact between a machine and the material being processed.
- n. **Potential Energy** - stored energy, examples of which are, gravity, spring or electrical charge.
- o. **Warning Tag** - a prominent warning device that is attached to an energy isolation device that alert employees of the hazard and instructs them not to operate the tagged device. The warning tag and their means of attachment must be made of material that will withstand the environmental conditions encountered in the workplace.

- p. **Zero Energy State** - the mechanical state of a machine in which every power source that can produce a machine member movement has been locked out.

12. REFERENCES

- a. ANSI/ASSE Z233.1-2003; Control of Hazardous Energy, Lockout/Tagout and Alternative Methods <http://www.asse.org/>
- b. OSHA Standard 29 CFR 1910.147; The control of hazardous energy (lockout/tagout).
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9804
- c. MIOSHA Part 85 The Control of Hazardous Energy Sources

APPENDIX A

Lockout-Tagout Decision Flow Chart

