

**ADVISORY NO. 2.1: CONTROL OF HAZARDOUS ENERGY SOURCES
LOCKOUT & TAGOUT PROGRAM**

PURPOSE:

The Federal Occupational Health & Safety Administration (OSHA) and the State of Ohio Public Employer Risk Reduction Program (PERRP) regulate health and safety in the workplace. The University of Cincinnati has implemented the following program to comply with the OSHA's Control of Hazardous Energy Sources Standard in 29 CFR 1910.147 (www.osha.gov/comp-links.html). This program is intended to safeguard the health and well being of employees and students exposed to the hazards of energized machines or equipment. Compliance with this program shall ensure that machines and equipment are isolated from all potentially hazardous energy sources and locked-out and tagged-out before anyone performs any servicing or maintenance activities where the unexpected energization, start-up or release of stored energy could cause serious injury or death. Energy sources present at the University of Cincinnati include electrical, mechanical, hydraulic, and pneumatic sources.

Faculty, staff, and students who use research, teaching, or other equipment with permanent connections to energy sources, or equipment that stores energy (in capacitors, storage batteries, accumulators, compressed gas or vacuum tanks, flywheels, or similar devices), are also bound to observe this standard to insure their safety and well being. This standard also applies to materials handling equipment (cranes, lifting devices) where a suspended load could become a source of energy or when accidental activation by "others" could create a serious threat to health and well being.

All who work with equipment that is permanently attached to energy sources or stores energy are required to develop, manage, and administer their own Lockout and Tagout Programs. Assistance is available from Environmental Health & Safety, 6-4968.

This standard is also applicable to equipment that is not permanently attached to energy sources when the point of connection to the energy source is not able to be seen or controlled by the person servicing the equipment.

RESPONSIBILITIES:

The Lockout & Tagout Program shall include the following components:

- ▶ Energy source surveys
- ▶ Authorized employees and students
- ▶ Affected employees and students
- ▶ Other employees and students
- ▶ Training
- ▶ Lockout & Tagout methods
- ▶ Lockout & Tagout procedures
- ▶ Restoring equipment to use
- ▶ Outside contractor information exchange

ENERGY SOURCE SURVEYS

It is the intent of the University of Cincinnati to have each department and individual audit their respective work environment to develop a detailed energy source survey of all instruments, equipment, and/or machines with permanent connections to energy sources or equipment that stores energy. This survey will be conducted on all campuses and shall include the location of all energy sources and the location of energy shutoff for each piece of equipment. This survey shall result in the production of a written lockout and tagout control procedure for each piece of equipment. New equipment and machinery shall be inspected by the ordering department or designee during installation and a written lockout and tagout procedure shall be developed for each piece of new piece of new equipment before it is energized.

The directors of physical plant operations and maintenance must initiate a Lockout and Tagout Program integrated with their work activities and facilities under their control. In such departments, site specific implementation must be through existing line functions. Academic department faculty, staff, and students who need assistance developing site specific Lockout and Tagout Programs should contact Environmental Health & Safety (6-4968) for assistance.

Follow-up surveys shall be made yearly and when engineering or production procedures are modified changing the energy source or controls.

AUTHORIZED EMPLOYEES AND STUDENTS

Lockout & tagout authorized employees and students are persons who have been trained in the procedures necessary to lockout and tagout equipment, instruments, or machinery prior to servicing or performing maintenance on them. Only authorized employees and students may install or remove locks and tags installed as part of the program. Furthermore, a list of trained personnel shall be maintained in their respective offices. A copy shall also be forwarded to Environmental Health & Safety to update training records.

AFFECTED EMPLOYEES

Affected employees and students include persons who operate or use equipment, instruments, or machinery on which servicing or maintenance is being performed under lockout and tagout procedures, or whose job requires him/her to work in an area in which servicing or maintenance work is being performed. All affected employees and students must be trained to recognize locks and tags and the need for lockout and tagout procedures. Any employee or student who attempts to remove, alter, bypass, or override lockout and tagout devices shall be subject to disciplinary action.

OTHER EMPLOYEES

All other employees and students shall be trained to recognize the locks and tags used for locking and tagging out equipment, instruments, and machinery so that they shall not attempt to disturb any lockout and/or tagout device.

TRAINING

Training shall be provided to all authorized employees in the procedures for lockout and tagout. Only trained employees and students shall be authorized to install or remove lockout and tagout devices. Quality control for training programs shall be the responsibility of the Chief OSHA Compliance Officer in Environmental Health & Safety.

LOCKOUT & TAGOUT METHODS

Lockout & tagout shall be accomplished using a padlock or combination of padlocks and multiple lock hasps in combination with a warning tag. The padlock shall ensure that the hazardous energy source cannot be re-energized. Chains and special hardware may also be used to isolate energy sources. Authorized employees shall retain padlocks with keys, with a master key retained in the key safe for use only by the Lockout & Tagout Program Administrator or Assistant Administrator in each department. Each person shall have his/her own padlock and key.

The lockout and tagout warning tag shall communicate the reasons why the energy source should not be re-energized. The warning tag shall be attached at the lockout and at the equipment control panel, and shall be composed of reusable, all weather construction, and fastened with a permanent fastener.

The name of the authorized employee, date and time of the lockout & tagout, and a brief description of the work to be performed shall be included on a warning tag.

Examples of padlocks, hasps, warning tags, and signage are available in catalogs of safety equipment and supplies. Call Environmental Health & Safety on 556-4968 if additional information is needed.

Prior to initiating any repairs, or modifications to operating equipment or machines, the steps listed in the table below shall be performed.

LOCKOUT & TAGOUT PROCEDURES

The supervisor who is in charge of the affected equipment or machine shall be notified that the energy sources shall be deactivated using the lockout & tagout procedures.

All sources of energy to the affected equipment shall be identified; have the energy released, locked out and tagged by the authorized employees or students performing the work. Energy sources include mechanical, electrical, hydraulic and pneumatic.

All controls shall be turned off or blanked and locked out. Stored energy shall be released. If more than one authorized employee or student is assigned to work on the equipment, a multiple lock hasp shall be used. If more than one individual is working, each shall provide his/her individual and personal lock and tag.

A warning tag shall be filled out and affixed to the controls and to the lockout device(s).

Prior to starting any work on the locked out equipment, the authorized employee shall attempt to start the equipment to ensure that the lockout device provides adequate protection. Operating controls must be reset to the "off" position after this test.

Work on the locked out & tagged out equipment may now be performed.

RESTORING EQUIPMENT TO USE

After the completion of all repairs or maintenance to the locked out & tagged out equipment, it shall be restored to use as follows:

Restoration Procedures

The authorized employees and/or students and the appropriate supervisor(s) shall verify that all areas around the equipment are safe before the equipment is re-energized. No employees or students shall be permitted in unsafe areas around the equipment, and all guards or covers shall be properly reinstalled.

Each lockout and tagout device shall be removed from each energy-isolating device by the employee or student who applied the device. After these devices are removed, and before the equipment is started, all affected employees and students shall be notified that the lockout and tagout devices have been removed. After notification is made, the equipment may be restarted.

When the authorized employee or student who applied the lockout and tagout device is not available to remove it, that device may be removed under the direction of the employer (or employer's designee, i.e., the responsible unit supervisor), provided that specific procedures and training for such removal have been incorporated into the employer's energy control program. The employer (or employer's designee, i.e., the responsible unit supervisor) shall demonstrate that the specific procedure provides equivalent safety the removal of the device by the person who applied it. The specific procedure shall include at least the following elements:

- Verification by the employer (or employer's designee, i.e., the responsible unit supervisor) that the authorized employee or student who applied the device is not present at the facility.

- Making all reasonable efforts to contact the authorized employee or student to inform her/him that her/his lockout and tagout device has been removed; and
- Ensuring that the authorized employee has this knowledge before he/she resumes work at the facility.

Lockout/Tagout Checklist

- √ Train authorized Lockout & Tagout employees and affected employees.
- √ Assign work and define work area.
- √ Identify all energy sources to equipment.
- √ Notify affected employees.
- √ Turn off energy source at controls.
- √ Turn off energy source at circuit breaker or valves.
- √ Release stored energy.
- √ Attempt to restart equipment.
- √ Check for operation.
- √ Return controls to "off" position.
- √ Install warning tags at all locks and controls.
- √ Perform repair, maintenance or servicing.
- √ Check equipment and notify affected employees.
- √ Remove warning tags and lockouts.
- √ Restore equipment to operating condition.

OUTSIDE CONTRACTOR INFORMATION EXCHANGE

Whenever outside contractor personnel are engaged to perform work on equipment or machines, the Lockout & Tagout Administrator shall provide a copy of the Lockout & Tagout Program and receive a copy of the contractor's written program. All authorized and affected employees shall be informed of significant differences between the two programs and shall observe the locks and tags of all contractors.