LockOut/TagOut Program

I. Purpose

The purpose of the Auburn University Lockout/Tagout program is to prevent injury or risk of fatality to all faculty, staff and students caused by the unexpected energizing, start-up or release of stored energy when working on equipment, machinery or systems. Types of energy sources include: electrical, chemical, mechanical, thermal, pneumatic, and hydraulic.

II. Policy

Authorized Employees or Students must isolate the energy source and make the machine, equipment or system inoperative (establish a Zero Mechanical State) prior to performing any service or maintenance. Energy sources that must be safely controlled include electrical, hydraulic, pneumatic, chemical, thermal and mechanical system or other energy sources. Only properly trained Authorized Employees or Students may isolate the energy source. This policy requires the Authorized Employees or Students to turn off and disconnect the machinery or equipment from all energy sources before carrying out service or maintenance. It also requires these individuals to lockout and/or tagout the energy-isolating device to prevent the release of hazardous energy, and take all necessary measures to confirm that the energy has been isolated successfully. When physically locking the device is not possible, a secondary control system of “tagging out” will be put into place.

III. Definitions

Authorized Employee or Student – A person who is trained and authorized to Lockout/Tagout machinery or equipment.

Affected Employee or Student – An employee or student whose job requires him/her to operate or use a machine or piece of equipment on which servicing or maintenance is being performed under Lockout/Tagout. Also includes employees or students whose job requires them to work in areas where servicing or maintenance is being performed.

Capable of being locked out – An energy isolating device that has a locking mechanism built into it, or one that has a hasp or other means of attachment to which a lock can be affixed.

Energized – When the machine or equipment is connected to an energy source, or it contains residual or stored energy.

Energy Isolating Device – 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;
- Disconnect switch;
- Manually operated switch where the conductors of a circuit can be disconnected from all ungrounded supply conductors, and no pole can be operated alone;
- Line valve; or
- A block or any similar device that is used to block or isolate energy.

Energy Source – Any source of electrical, chemical, mechanical, thermal, pneumatic, hydraulic, or other energy.

Hot Tap – A system that is used in repair, maintenance, and service activities that involves welding on a piece of equipment (pipelines, vessels, or tanks) under pressure to install connections or accessories. It is generally used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam and petrochemical distribution systems.

Lockout Device – A device that uses a positive means such as a lock to hold an Energy Isolation Device safely and prevent the startup of a machine or equipment. Lockout devices include valve wheel covers, ball valve locks, locks for circuit breakers, and plug and switch plate locks.

Lockout – The placement of a lockout device including a padlock on the Energy Isolating Device of a piece of equipment, machinery or system. The placement is done in accordance with the Department's/Division's established procedures to ensure the energy isolation device and

equipment being controlled cannot be operated until the lockout device is removed. Only the Authorized Employees or Students who placed the lock can remove it at the completion of the job. Procedures must include those conditions when employees or students other that the Authorized Employees or Students can also be affected by accidental release of hazardous energy. An example would be multiple employees or students performing work activities in a controlled space (e.g., electrical power has been secured to a work area, equipment, machinery or system). During lockouts by multiple employees or students, the equipment, machinery or system must remain secured until the last Authorized or Affected Employee or Student has completed his or her work task and has removed his or her lock.

Servicing or Maintenance Activities – Workplace activities that include but are not limited to: installing, setting up, inspecting or maintaining equipment; and lubrication, cleaning and making tool changes where the employee or student may be exposed to the unexpected energization of the equipment or release of hazardous energy.

Tagout – Posting a prominent warning tag with durable string, with a minimum unlocking strength of no less than 50 pounds, onto the energy isolation device and/or lockout device of the piece of equipment, machinery or system being controlled. This tag documents the Authorized Employees or Students taking the equipment out of operation and the date. It is a warning to others that the equipment cannot be put back into operation until the tag and lock have been removed by the Authorized Employee or Student.

Zero Mechanical State – The mechanical potential energy of all portions of the equipment or machine is set so that the opening of pipes, tubes, hoses or actuation of any valve, lever or button, will not produce a movement which could cause injury.

IV. Department/Division Responsibility

Each Department/Division is responsible for evaluating areas under its administrative control to determine whether there are processes or equipment where the Lockout/Tagout program would apply. Departments/Divisions that find Lockout/Tagout requirements applicable are responsible for establishing and documenting Lockout/Tagout procedures. The procedures shall clearly and specifically outline the scope, purpose, authorization, rules and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance.

The established procedures for the application of energy control (Lockout/Tagout procedures) shall cover the following elements and actions shall be done in the following sequence.

- Before an Authorized Employee or Student turns off a machine or equipment, the Authorized Employee or Student shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled and the method or means to control the energy.
- The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be used to avoid any additional or increased hazards to employee or students as a result of the equipment stoppage.
- All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).
- Lockout/Tagout devices shall be affixed to each energy-isolating device by the Authorized Employee or Student.
- Lockout devices shall be affixed in a manner that will hold the energy isolating devices in a "safe" or "off" position
- Tagout devices shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.
- Following the application of Lockout/Tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained and otherwise rendered safe.
- 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.
- Prior to starting work on machines or equipment that have been locked and tagged out, the Authorized Employee or Student shall verify that isolation and de-energizing of the machine or equipment has been accomplished.

The established procedures for the release from Lockout/Tagout shall cover the following elements and actions shall be done in the following sequence.

- The work area shall be inspected to ensure that non-essential items have been removed and to ensure that machine or equipment components are operationally intact.

- The work area shall be checked to ensure that all employees and students have been safely positioned or removed.
- After Lockout/Tagout devices have been removed and before a machine or equipment is started, Affected Employees or Students shall be notified that the Lockout/Tagout devices have been removed.
- Each Lockout/Tagout device shall be removed from each energy-isolating device by the Authorized Employee or Student who applied the device.
- When the Authorized Employee or Student who applied the Lockout/Tagout devices is not available to remove them, the devices may be removed under the direction Department/Division provided that specific procedures and training for such removal have been developed, documented and incorporated into the program. The Department/Division shall demonstrate that the specific procedure provides a level of safety equivalent to the removal of the devices by the Authorized Employee or Student who applied them.

Some available resources to assist Departments/Divisions include: Equipment manufacturers, their service representatives or; the equipment operator's manual, can provide information on how to safely isolate the equipment's energy source(s) during service or maintenance activities. These procedures shall apply to each piece of equipment, machinery or system under the Department's/Division's control that is serviced and maintained by the Department's/Divisions faculty, staff and/or students. Procedures may be established for classes of equipment or machinery if their function and operation are similar and the procedure can collectively account for the control of all hazardous energy sources.

Departments/Divisions must evaluate and document the effectiveness of their Lockout/Tagout program each year and correct any noted deficiencies.

The Departmental/Divisional program must meet the following requirements:

- Authorization through Training and Qualification – All employees or students must be authorized through training and qualification on the Departmental/Divisional Lockout/Tagout procedures for the equipment and machinery they are assigned to work on. This training must be completed before they can perform any service or maintenance. Training and qualification must include understanding safe operation of

the equipment and the use of the lockout devices and warning tags provided by the Department/Division.

- Lockout devices, individually keyed padlocks and warning tags – Departments/Divisions must provide appropriate lockout devices, individually keyed padlocks and warning tags to each Authorized Employees or Students. Affected Employees or Students who will be assigned to work on a locked out piece of equipment, machinery or system including working in a controlled area, must be provided with his or her individual padlock and warning tag.
- Training for Affected Employees or Students on Lockout/Tagout – Departments/Divisions must train all employees or students, who may be affected by equipment and machinery shutdown. Training for those affected by equipment or machinery lockout must include: recognition of warning tags, lockout devices, and that tags and locks can only be removed by the Authorized Employee or Student who took the equipment or machine out of operation. In addition, Affected Employees or Students who will be assigned to perform a work task on the locked out piece of equipment, machinery or system, including working in a controlled work area, must know how to install his or her own individual padlock and warning tag.
- Recordkeeping – Departments/Divisions must maintain records of training documenting the date, the name of the worker, and the name of the instructor. Records of lock assignment and Lockout/Tagout equipment assigned to a worker are to be kept by both the Departments/Divisions.

Departments/Divisions are responsible for requesting the installation of lockable energy isolation devices onto their equipment or machinery whenever there is major replacement, repairs, renovation or modification to the equipment. Generally, the referenced equipment and machinery is production equipment (i.e., printing presses, press brake, etc.) and Facilities equipment (i.e., HVAC, fans, motors, boilers, etc.) All newly purchased equipment and machinery must include specifications that the energy isolation device(s) are lockable.

A contractors Lockout/Tagout program must be reviewed by the Department/Division to ensure that University employees and students could not be injured as a result of allowing the Contractor's Lockout/Tagout program and procedures to be implemented. The contractor’s personnel and the Department’s/Divisions employees or students must comply with all restrictions, whichever is stricter, of one another’s Lockout/Tagout procedures.

V. General

The Lockout/Tagout procedure applies to those situations where:

- An employee or student is servicing, repairing or maintaining a piece of equipment, and
- The employee or student could be injured because they must bypass guards, or place their body into an area, which exposes them to the unexpected energization or activation of the equipment.

If an energy-isolating device is capable of being locked out, the energy control procedures shall utilize Lockout/Tagout. If an energy-isolating device is not capable of being locked out, the energy control program shall utilize a tagout.

VI. Exceptions

Cord and plug equipment that only has a single electrical energy source that can be isolated by removing the cord and plug from the electrical receptacle is exempted from this policy provided that the following conditions apply:

- The employee or student will keep the cord and plug under his/her exclusive control while performing the service or maintenance task; and
- There is no other stored energy source inside the equipment such as a capacitor that could harm the employee or student if it was not identified and/or isolated prior to doing the service or maintenance task.

Minor tool changes and adjustments and other minor service activities that take place during normal operations if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternate measures that provide effective protection i.e., changing a drill bit on a drill press.

Work on equipment that cannot be shut down, provided that continuity of service is essential; shutdown of the system is impractical, and special equipment is provided or special protective procedures are used that will provide effective protection for employees and students i.e., work on electrical circuits supplying network computer equipment, hot tap operations.

VII. Related Information

Lockout/Tagout ppt