Control of Hazardous Energy Sources (Lockout/Tagout)
OSHA – 29 CFR 1910.147

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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 a key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment. Included are

2.0 Written Program

- CWRU will review and evaluate this standard practice instruction on an annual basis when changes occur to 29 CFR 1910.147 prompting revision or when facility operational changes occur requiring a revision of this document. Effective implementation of this program requires support from all levels of management within the University. This written program will be communicated to all personnel that are affected. It encompasses the total workplace, regardless of the number of workers employed or the number of work shifts and is designed to establish clear, concise goals and objectives.

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 it is demonstrated that (1) continuity of service is essential (2) shutdown of the system is impractical and (3) documented company procedures are followed and special equipment is used which will provide proven effective protection for our employees

- CWRU utilizes procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices, and to otherwise disable machines or equipment to prevent unexpected energization, start-up or release of stored energy in order to prevent injury to employees.

4.0. Program Implementation

- CWRU's program consists of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy and rendered inoperative.

  - Tagout: If an energy isolating device is not capable of being locked out, the University energy control program utilizes a tagout system.

  - Lockout: If an energy isolating device is capable of being locked out, the University's energy control program utilizes lockout, unless it can be demonstrated that the utilization of a tagout system will provide full employee protection.

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- The machine or equipment is isolated from that energy source and locked out during service or maintenance.
- A single lockout device will achieve a locked out condition.
- The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance.
- The servicing or maintenance does not create hazards for other employees.
- CWRU, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance. In the event of such occurrences, energy control procedures will be developed.

7.0 Energy Control Procedures

- Once a facility evaluation has been accomplished, procedures shall be developed, documented and utilized for the control of potentially hazardous energy.
- The following format will be followed for each machine requiring procedures: The plant services administrator will be responsible for the execution of these 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 including, but not limited to, the following:
  - A specific statement of the intended use of the procedure
  - Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control followed whenever possible.)
  - Specific procedural steps for the placement, removal and transfer of lockout or tagout devices and the duties of person(s) responsible for them
  - Specific requirements for testing a machine or equipment to

8.0 Facility/Department Evaluation

- CWRU's Plant Services Department shall evaluate our facility(s) annually by department to determine which machines or pieces of equipment require steps for shutting down, isolating or blocking and securing machines or equipment to control hazardous energy.

9.0 Protective Materials and Hardware

- Appropriate lockout devices such as locks, tags, chains, wedges, key blocks, adapter pins, self- locking fasteners or other hardware shall be provided by the responsible University department for isolating, securing or blocking of machines or equipment from energy sources based on the individual machine/equipment evaluation conducted by the following personnel authorized to evaluate lockout/tagout requirements:

  - Selection of lockout devices will be determined by the following personnel authorized to evaluate lockout/tagout requirements:

- Tagout Devices: Tagout devices, including zip ties, paper tags and their means of attachment shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means must be 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 the basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.

- Identification Requirements

  - Lockout/tagout devices must identify the employee who applied for the device(s).

  - 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, etc.

10.0 Periodic Inspections and Certifications

- Inspections: CWRU shall conduct a periodic inspection of the energy control procedure for each machine or piece of equipment to ensure that the procedure and the requirements of this instruction are being followed.

  - The date of the inspection

  - The employees included in the inspection

  - The person performing the inspection

11.0 Initial Training

- CWRU provides training to ensure that the purpose and function of the energy control program is understood by employees and that the knowledge and skills required for the safe application, usage and removal of the energy controls are acquired by employees. The training includes the following:

  - Each authorized plant employee receives 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.

  - Each affected employee is instructed in the purpose and

use of the energy control procedure.

- All other employees whose work operations are or may be in an area where energy control procedures may be utilized, are instructed about the procedure and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

- When tagout systems are used, employees are also trained in the following limitations of tags:

  - Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock.

  - When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it. It is never to be bypassed, ignored or otherwise defeated.

  - Tags must be legible and understandable by all authorized employees, affected employees and all other employees whose work operations are or may be in the area in order to be effective. Non-legible or missing tags must be reported immediately.

  - Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

  - Tags may evoke a false sense of security. Therefore, their meaning needs to be understood as part of the overall energy control program.

  - Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

12.0 Refresher Training

- Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in their machines, equipment, 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 whenever the University has reason to believe, there are

deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

- The retraining shall re-establish employee proficiency and introduce new or revised control methods and procedures as necessary.

- CWRU shall certify that employee training has been accomplished and is being kept up to date.

13.0 Energy Isolation

- Lockout or tagout shall be carried out only by the authorized employees who are performing the servicing, maintenance or repair.

14.0 Notification of Employees

- Affected employees shall be notified of the application and removal of lockout or tagout devices. Notification shall be given before the controls are applied and after they are removed from the machine or equipment.

15.0 Application of Control

- The lockout or tagout procedures shall cover the following elements and actions and shall be done in the following sequence:

    - Preparation for shutdown: Before an authorized or affected employee turns off a machine or equipment, the authorized employee 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.

    - Machine or equipment shutdown: The machine or

- Lockout device application
  - Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.
  - Lockout devices, where used, shall be affixed in a manner that will hold the energy isolating devices in a "safe" or "off" position.
  - Tagout devices, where used, 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.
- Tagout device application
  - Where tagout devices are used with energy isolating devices that are designed with the capability o isol h e

16.0 Release From Lockout or Tagout

- Before lockout or tagout devices are removed and energy is restored to the machine or equipment, the following procedures must be followed and actions taken by the authorized employee(s) to ensure:

  - The machine or equipment: The work area must be inspected to make sure nonessential items have been removed and to confirm that machine or equipment components are operationally intact.

  - Employees: The work area must be checked to ensure that all employees have been safely positioned or removed.

  - After lockout or tagout devices are removed and before a machine or equipment is started, affected employees must be notified that the lockout or tagout device(s) have been removed.

  - Lockout or tagout devices removal: Each lockout or tagout device must be removed from each energy isolating device by the employee who applied the device. When the authorized employee who applied the lockout or tagout devices is not available to do so, /Span <

17.0 Testing of Machines, Equipment or Components

- In situations in which lockout o

lockout or tagout device (such as an operations lock).

- Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment will be made.

- When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tagout control responsibility will be vested to an authorized employee designated to coordinate affected work fo0P <</MCID -0.009g