UNIVERSITY OF KENTUCKY
CONTROL OF HAZARDOUS ENERGY
LOCKOUT - TAGOUT PROGRAM
FOR

_____

(DEPARTMENT)

PURPOSE

To ensure that machines and equipment are isolated from potentially hazardous energy, whether it is steam, electrical, mechanical, hydraulic, or gas. Lockout or tagout must occur before employees perform service, maintenance, or renovation. This is important where unexpected start-up could cause personal injury, fire, or equipment damage.

POLICY

All equipment shall be locked out where possible. Where such control is not possible, equipment may be tagged out-of-service. In all instances, equipment shall be made inoperable to protect against possible operation where such operation may cause personal injury or damage. Employees must not attempt to operate any switch, valve, or source of energy which is locked out or tagged out.

PROCEDURES

1. When working on systems which could accidentally be activated, the system shall be locked out or tagged out by use of a safety lockout device and padlock. In addition, a tag shall be used to identify the purpose of the shutdown, the employee involved, the date the unit was removed from service, and when the system may operate again. (See **Appendix A**)

2. If more than one source of energy is present, all such sources must be locked out or tagged out. Special procedures must be followed to ensure that the equipment is disconnected from an energy management system or emergency generator system that may start or energize the equipment.

3. A lockout is required on all systems where possible. A tagout is only an acceptable means of protection on systems which are less hazardous. An example of less hazardous is a device, which if started accidentally, would not cause personal injury or damage and simply would startle someone.

4. If the source is electrical, such as a circuit breaker in a panel, the load side conductor shall be removed from the breaker with a tag tied to the breaker as noted in step 1.

5. If more than one person is involved in the repair, each person shall install a lock and or tag to the equipment energy source. An employee may not use the tag or lock or another employee. The employee's supervisor shall have the only duplicate key and is the only other employee authorized to remove a lock or tag of another person.

6. When the equipment has been de-energized, and after ensuring that personnel are not exposed to danger, test the equipment to determine if the energy source is indeed isolated. Further tests with a meter will verify if electrical energy has been successfully disconnected. Those electrical units that store electrical charges are also required to be de-energized or isolated (disconnected).

7. When working with hydraulic, steam, or air systems, bleed down the cylinders, block valves with a chain and lock and attach a **"DANGER"** tag or sign to the control. In some operations a "double block and bleed" system may be used to control unwanted energy. Block gears, dies, and other devices capable of movement. Release coiled springs, spring loaded devices, and secure cams. Place blocks under equipment which might descend, slide, or fall. Place stands or blocks under raised vehicles, vehicle beds, or other equipment to protect against failure of hoists, jacks or elevating equipment.

8. After servicing, renovation, or maintenance is complete, the area must be checked for tools, parts, removed guards, and assurance that no personnel are in the danger zone. Then the lockout or tagout will be removed by the same employee who initially locked it out so energy may be restored to the equipment.

9. If the employee who locked out or tagged out the equipment is unavailable, the supervisor may remove the lock or tag if the following conditions are met:

    a. Verification that the authorized employee who applied the device has left for the duration of the shift and is not at the job site.

    b. Made reasonable efforts to reach the authorized employee.

    c. Inform the employee that the lock or tag has been removed and the system is no longer de-energized, before the employee resumes work.

10. Employee's authorized to use lockout/tagout devices shall have initial training about this program, and shall have annual retraining to ensure that the employee understands and follows this program. The training and retraining shall be documented with the training records maintained by the training coordinator. (See **Appendix B**)

11. Outside contractors are required to follow this policy or provide a similar policy that is in compliance with Occupational Safety and Health Administration (OSHA) Standard 1910.147. Under no circumstances are outside contractors authorized to remove a University lockout/tagout device nor are they allowed to energize a locked out/tagged out system.

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The following area equipment is required to be locked out

MACHINE NAME OR NUMBER	ENERGY SOURCES

APPENDIX A

LOCKOUT - TAGOUT AND SHUTDOWN PROCEDURES CHECKLIST

This check list is for DEPARTMENT _____

The following steps must be followed
in sequence to properly lockout/tagout
and re-establish energy to the __ _____

APPLICATION OF LOCKOUT/TAGOUT

1. Understand the hazard. (Check all that apply)

_____**ELECTRICAL. Shock and or burn** could result from contact with the exposed conductors line voltage or high voltage equipment. Flying parts or fire could result if this circuit were shorted. Electricity should be controlled at the **(circuit breaker) (main switch), or (fuse box).**

LOCATED _____

_____**PNEUMATIC**. High velocity air impingement can inflict injury to the eyes, ears and to openings or cuts to the skin. Air flow can cause small objects to become airborne missiles. Compressed air should be controlled at the **(shutoff valve), (cylinder control valve) or (air line valve).**

LOCATED _____

_____**CHEMICAL**. _____ gas or liquid can produce illness or injury through its **(toxicity) (flammability) (corrosively) (reactivity)**. It can be controlled from accidental release by the turning the **(cylinder valve) (gas line control valve).**

LOCATED _____

_____**MECHANICAL.** The _____can inflict tissue or skeletal injury through **(crushing) (laceration) (impalement)**. It can be controlled through the **(main electrical switch)(plug)(circuit breaker) (anti-motion pin).**

LOCATED _____

THERMAL. The _____can cause **(burns) (fires)**. It can be controlled by the (**main electrical switch) (electrical plug control) (electrical circuit breaker) (electrical fuse box) (steam valve) (fluid line vale) (shielding).**

LOCATED _____

_____**UV.** Exposure to ultraviolet rays from the _____ can result in burn injuries to the skin and eyes. It can be controlled by the **(main electrical switch)** or **(electrical circuit breaker).**
LOCATED_____

or by using an **appropriate shield such** as _____

2. Shut down the _____following normal procedures.

3. Isolate the source of energy by: (Check all that apply)

_____**ELECTRICAL**. Locate the **main switch box** or **circuit breaker** to the following:

_____ in circuit breaker box

number_____. The correct circuit is Number_____

LOCATED _____

(Open the breaker),(open the switch),(or remove the plug). Attach a lockout enabling device if the circuit cannot otherwise accommodate a padlock. Place plug in a plug lock box.

_____**VALVE.** Locate and close the _____shut-off valve that supplies

the _____to the _____

Apply the appropriate **(ball valve) (gate valve) (donut) (handle) (chain energy isolation device).**

_____**MECHANICAL/STORAGE/POTENTIAL ENERGY. (Block) (pin)** the _____

with a _____. Apply a lockout enabling device to

prevent removal of the _____

Secure the energy controlling lockout by attaching a personal lock and completed tag to the lockout enabling device. If more than one person will be performing the work, each must apply his own lock to a multiple lock device.

5. **Release all stored energy in the** _____

   If there is a heat exposure, allow the _____to cool.

   Release any (type)_____ pressure trapped between the **shut-off valve and equipment**.

   Purge the system **(drain) (purge)** all _____trapped between the **shut-off valve and the equipment.**

   Check to ensure the _____has come to a complete stop. **Discharge any large capacitors** and ensure they remain shorted.

6. **Verify that no potential energy can be released.** Verify that no voltage is present by:

   testing the _____ with **(voltmeter) (operating switch)**.

   Verify that no _____can _____.

Release from Lockout/Tagout

7. Inspect the _____and the surrounding area following completion of work for **loose tools, parts, correct valve settings, system integrity, exposed conductors.** Check that **all machine guards are in place** and reconnected if applicable.

8. **Notify** others in the area that the _____is about to be made operational and returned to service.

9. **Remove** personal lock, tag, and lockout enabling device from _____. This step must be performed by the same person who applied the tag and lock.

TYPES OF ENERGY CHECKLIST

ENERGY TYPE	HAZARD	MAGNITUDE	CONTROL
ELECTRICAL	Shock	110 VAC	Main Switch
	Burn	220 VAC	Plug Control
	Fire	208 VAC/30	Fuse Blocks
			Shielding
PNEUMATIC	Mechanical/		
	Pinch Points	Moderate	Air Line Valve
	Crush	Slight	Gas Cylinder Valve
CHEMICAL (GAS)	Flammable	Slight	Cylinder Valve
	Corrosive	Moderate	Gas Line Valve
	Toxic	High	
	Reactive		
CHEMICAL (Liquid)	Flammable	Slight	Valve
	Corrosive	Moderate	Flange Plate
	Toxic	High	
	Reactive		
MECHANICAL	Shaft in Motion	Slight	Main Electrical Switch
	Moving Parts	Moderate	Plug Control
	Crushing	High	Shielding
	Laceration		Blocking
	Impalement		Anti-motion Pin
UV	Skin and Eye Burns	Slight	Shielding
		Moderate	Main Switch
		High	Plug Control
			Circuit Breaker
ELECTROMAGNET	Strong Field	Slight	Main Switch
		Moderate	Plug Control
		High	Circuit Breaker
THERMAL	Burns	Moderate temperature	Main Switch Plug Control
		High Temperature	Steam Valve
		Cryogenic	Fluid Line Valve

Appendix B

University of Kentucky Lockout -Tagout Training Program

Name _____ ID # _____

Division/Department _____ Job Title _____

The named employee has completed lockout-tagout training presented by:

_____ on _____
(trainer) (date)

The training included the following elements:

1. The reasons for a lockout/tagout program.
2. The need to ensure the equipment can not be accidentally re-energized.
   a. By tagging all operations in the **OFF** or **STOP** position.
   b. Deactivating and tagging out the control circuits at the automatic controls.
   c. Deactivate and lockout the control circuit at the breaker or at the main control **ON - OFF** switch.
3. The only certain way to ensure the circuit is deactivated is at the motor disconnect. To verify the disconnect, the circuit should be tested at the load side of the control with a tester that has just been tested on a known energized voltage source.
4. The requirement to disconnect and lockout all energy sources.
5. Attempt to activate the equipment to verify the lockout has deenergized the equipment and that all secondary energy sources are controlled.
6. The lockout procedure will be in force until all work is completed and guards are reinstalled as required.
7. Before activation, all effected employees will be informed the equipment will be put back in service.
8. Re-activate all switches and systems, remove any blanks or blinds, close any opened bleed valves, and ensure that all disconnected secondary energy sources are re-activated and operational.
9. Make certain the machine performs as intended by observing it in operating mode.
10. Respect the lockout/tagout system used by others.

Employee signature _____