

Administrative Policy 3-5-1

DISTRIBUTION: City Manager, All Departments

SUBJECT: **Lockout/Tagout**

PURPOSE: The purpose of this procedure is to ensure that maintenance performed on equipment is done in a safe manner:

This procedure is not intended as a substitute for the manufacture's maintenance procedures, but to supplement those procedures.

This procedure is based upon the concept of "Zero Energy State". Any energy source (electrical, chemical, potential or gravity, kinetic or motion) should be isolated from the technician servicing the equipment. There are three categories of hazards to be avoided. These are physical, chemical and electrical. Physical hazards include being struck by an object, being pinched, being crushed or being burned. Chemical hazards include contact or inhalation of hazardous gases, vapors, liquids, or solids. Electrical hazards include both AC and DC currents.

BACKGROUND: See purpose

POLICY/

PROCEDURES: Lockout/Tagout

A. OSHA Regulation

This policy complies with or exceeds the Occupational Safety and Health Administration Standards, Subpart J – the control of Hazardous energy (Lockout/Tagout), 1910.147.

B. Definitions

1. **Affected Employee** – An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.
2. **Authorized Employee** – A person who locks or implements a tagout system procedure on machines or equipment to perform the servicing or maintenance on that machine or equipment. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine or equipment which must be locked or a tagout system implemented.

3. Capable of Being Locked Out – An energy isolating device will be considered to be capable of being locked out either if it is designed with a hasp, or other attachment or integral part to which, or through which a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices will also be considered to be capable of being locked out, if a lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.
4. Energized – Connected to an energy source or containing residual or stored energy.
5. Energy Isolating Devices – 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; A disconnected switch; A manually operated switch by which the supply conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; A slide gate; A slip blind; A line valve; A block; and any similar crevice used to block or isolate energy. The term does not include a push button, selector switch, and other control circuit type devices.
6. Energy Sources – Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
7. Hot Tap – A procedure used in the repair, maintenance and service activities which involves welding on a piece of equipment (pipelines, vessels, or tanks) under pressure, in order to install connections.
8. Lockout – The placement of a lockout device on an energy isolating device in accordance with established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
9. Lockout Device – A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of machines/equipment.
10. Servicing and/or Maintenance – Workplace activities such as constructing, installing, setting up, modifying, and maintaining, inspecting or adjusting machines/equipment. These activities include lubrication, cleaning, or unjamming of machines/equipment and making adjustments or tool changes,

where the employee may be exposed to the unexpected energization or start up of the equipment or release of hazardous energy.

11. Setting Up – Any work performed to prepare machines/equipment to perform its normal production operation.
12. Tagout – The placement of a tagout device on an energy isolating device to indicate that the energy isolating device and the equipment is being controlled may not be operated until the tagout device is removed.
13. Tagout Device – A prominent warning device such as a tag, and a means of attachment which can be securely fastened to an energy isolating device, to indicate it may not be operated until the tagout device is removed.

C. Procedures

1. If an energy isolating device is capable of being locked out, a lockout device is to be used. If an energy isolating device is not capable of being locked out, a tagout system is to be used.
2. Whenever major replacement, repair, renovation or modification of machines/equipment is performed and whenever new machines/equipment are installed, energy isolating devices for such machines or equipment is to be designed to accept a lockout device.

D. Protective Materials and Hardware

1. Locks, tags, chains, wedges, key blocks, adapter pins, and other fasteners, or hardware will be provided for use in isolating, securing, or blocking of machines/equipment from energy sources.
2. Lockout devices and tagout devices shall be singularly identified; shall be the only devices used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

Durable Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

Tag shall not deteriorate when used in corrosive environments such as areas where acid or alkali chemicals are handled and stored.

Standardized Lockout and tagout devices shall be standardized within the facility

Substantial Lockout devices. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

Tagout devices. Tagout devices including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means it shall be of a non-reusable type, attached by hand, self-locking, and non-reusable with a minimum unlocking strength of not less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.

Identifiable Lockout devices and tagout devices shall also indicate the identity of the employee applying the device. The tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as: "Do Not Start," "Do Not Open," "Do Not Close," "Do Not Operate," etc.

E. Inspections

1. The department shall conduct a periodic inspection of the energy control procedure to ensure that the requirements of this policy are being followed. An inspection will be done at least annually.
2. The periodic inspections shall be designed to correct any deviations or inadequacies observed. The inspection is to include review of the employees' responsibilities under the energy control procedures being inspected.
3. The departments shall maintain records of these periodic inspections. These records shall include the date of inspection, the person performing the inspection,

and what energy control procedures were being used, as well as any deviations from the policy and inadequacies observed.

F. Training

1. The immediate supervisor shall be responsible to provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage and removal of energy controls are required. The training shall include the following:
 - a. Each authorized employee shall receive 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.
 - b. Each affected employee shall be instructed in the purpose and use of the energy control procedures.
 - c. All other employees whose work operations are or may be in an area where energy control procedures may be utilized, are to be instructed about the procedure, and about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out.
2. When tagout systems are used, employees shall also be trained in the following limitations of tags:
 - a. 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.
 - b. 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, and it is never to be bypassed, or ignored, or otherwise defeated. If an emergency arises and the authorized person cannot be reached for authorized removal, the removal must be done with the approval, and in the presence of the immediate supervisor, or person in charge. The removal is to be documented and the person who installed the tag notified as soon as practical.
 - c. Tags must be legible and understandable by all authorized employees, affected employees, and others whose work operations, are, or may be in the area, in order to be effective.
 - d. Tags and their means of attachment must be made of materials which will

withstand the environmental conditions encountered in the workplace.

- e. Tags may evoke a false sense of security, and their meaning needs to be understood as a part of the overall energy control and safety program.
- f. Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

G. Retraining

- 1. Retraining is to be provided for all authorized and affected employees whenever there is a change in their job-assignments, a change in machines, equipment, or processes that present a new hazard, or when there is a change in the energy control procedures.
- 2. Retraining will also be conducted whenever an inspection reveals, or whenever there is reason to believe there are deviations from, or inadequacies in the employees' knowledge or use of the energy control procedures.
- 3. The retraining shall re-establish employee proficiency and introduce new or revised control methods and procedures, as necessary.
- 4. All of the training is to be fully documented and kept up-to-date. The documentation is to include each trained employee's name, signature and date of training

H. Procedures for Equipment that can be De-energized during Servicing

1. Mechanical Systems

- a. Lower all arms, pistons, rams, and other mechanical members to their lowest position.
- b. If it is necessary to keep a mechanical part in a certain position, either place blocks of the desired height under the part and then lower the part onto it or pin it in place. Any materials used should be of adequate strength and design to fully support the part. Any block used should be one continuous piece of material. Do not stack several pieces together to gain added height. The blocks should be marked "DO NOT REMOVE" and should have the name of the technician who placed the blocks on the machine.
- c. All moving parts such as flywheels or rotating shafts should be allowed to coast to a stop before working on the equipment.
- d. If the rotation or movement of a flywheel, shaft, or linkage could cause a

striking, crushing, or pinching injury, the part should be pinned or otherwise locked into place and tagged with a "DO NOT START" tag noting the name of the technician performing the work.

2. Chemical Systems

- a. Isolate or remove all chemicals used in the machine or process. This includes any gases or liquids being supplied to the machine from high pressure cylinders, low pressure cylinders, tanks or piped supply systems. Be especially careful in handling cryogenic materials and very hot materials. Surface temperature should be between 39° F and 113° F.
- b. Tag any associated valves with "DO NOT OPEN VALVE" tags marked with the name of the technician performing the work.
- c. Lock out the valves if it is possible to do so.
- d. If feasible, the lines from cylinders or piped supply systems should be disconnected from the apparatus and capped (blanked).

3. Electrical Systems

- a. The electricity feeding the machine should be shut off at the source.
- b. For cord-and-plug connected equipment simply unplug the cord.
- c. The plug should be placed where it can be watched by the technician performing the service work.
- d. For equipment that is not cord and plug connected, have an electrician or authorized person shut off the power at the disconnect or breaker box.
- e. Padlock the disconnect, switch, or breaker in the "OFF" position. Add your lock to the electricians.
- f. The disconnect, switch, or breaker should be labeled with a "DO NOT START" tag noting the name of the technician performing the work. If the equipment is served by more than one circuit, be sure that each control is properly disabled.
- g. All capacitors, inductors, and high voltage assemblies (flybacks, triplers, etc.) should be grounded to drain off any accumulated charge. This can be done through a resistor (of 1 megohm or greater and 2 watts or higher) to avoid an arc.
- h. High voltage electrical circuits (those capable of supplying over 650 volts)

should have all conductors grounded.

4. Pressure System

- a. All hydraulic, pneumatic, and vacuum pressure should be bled from the system by operating the controls.
- b. If a hydraulic pump, vacuum pump, or compressor is supplied from a separate electrical system, its power source should be isolated following the procedures presented in the Electrical Systems, Section .83.
- c. If the possibility exists that a cylinder, actuator, motor, or other device may extend or move (due to leakage or some other cause it should be blocked or pinned in place.
- d. Tag any associated valves with "DO NOT OPEN VALVE" tags marked with the name of the technician performing the work. The valves should be locked shut if possible.

I. Procedures for Equipment that Cannot be Totally De-Energized during Servicing

1. Any system that is not needed for troubleshooting should be isolated or de-energized to the extent possible as per the procedures listed above.
2. Use protective equipment to guard against burns, chemical contact or other injuries.
3. Do not work on energized equipment alone. Be sure that someone is available nearby to help you if you are injured.
4. Make sure that it would be obvious to a rescuer how to de-energize the machine (by signs or labels, for instance).
5. The machine's electrical supply disconnect should be clearly labeled as to what it controls.
6. If the equipment is cord-and -plug connected, make sure that a rescuer will be able to get to the plug without contacting the equipment, should it become live. If the plug is obstructed, be sure that the equipment is labeled as to what panel number and breaker control the equipment and what room the panel is located in.
7. Use insulated tools when working on live electrical parts. Make sure that all insulated grips are free from nicks, cuts, and burns.
8. Use insulated screwdrivers for adjustments where possible.

9. Be sure to observe insulation ratings on cables and probes when measuring high voltages.
10. Be sure that all guards that can be left in place are. After servicing is complete, replace all guards and interlocks that have been removed. Verify that interlocks are working.

J. General Guidelines

1. Plan your work carefully.
2. Follow the manufacturer's established guidelines if they are available.
3. If you are not certain what the proper procedures are, do not proceed without contracting your supervisor or someone else with experience in repairing that item.
4. Do not leave a machine unattended if live parts are exposed.
5. Use warning tags to call attention to any item that may cause harm to the servicing technician or passers-by if accidentally operated.
6. Remove any jewelry and loose-fitting clothing when working on equipment.
7. Inform everyone who will be affected by the operation prior to de-energizing the equipment.

K. Taking a Machine out of Service

1. Inform everyone who will be affected by the lockout.
2. Have an electrician or authorized person lock out permanently-connected electrical sources.
3. Add our lock and tag to the electrician's lockout device.
4. Test the supply conductors for voltage.
5. Bleed down and ground all capacitors.
6. Remove or isolate all chemicals.
7. Place blocks and pins as needed.
8. Test the machine by operating all of the controls.


9. EACH REPAIRMAN PLACES HIS OWN LOCK AND TAG on the system.

L. Putting a Machine Back into Service

1. Make sure that everyone is through working.
2. Remove all blocks and pins.
3. Remove all grounding jumpers.
4. Reconnect any chemical and pressure lines.
5. Replace all guards.
6. Make sure that all of the controls are in the "OFF" position.
7. Have EACH REPAIRMAN REMOVE HIS OWN LOCK AND TAG.
8. Remove the lock and tags from the power source.
9. Have the electrician remove his lock and tag and reconnect the power.

EFFECTIVE DATE: This policy shall be effective on and after Nov. 09, 2009

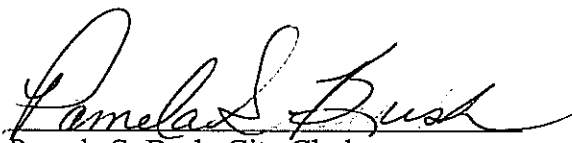
RESPONSIBLE DEPARTMENT: Human Resources



Greg Buckley, City Manager

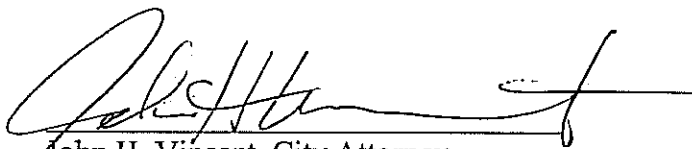
11-9-09
Date





Pamela S. Bush, City Clerk

APPROVED as to form and legality this 9th day of November, 2009.



John H. Vincent, City Attorney