

**LOCKOUT/TAGOUT PRACTICES
FOR MONTGOMERY COUNTY GOVERNMENT**

The purpose and goal of this Lockout/Tagout Practice, control of hazardous energy sources, is directed to provide increased protection for County employees. OSHA Standard 1910.147 states that lockout is “the placement of a lockout device on an energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed” and a lockout device is “a device that utilizes a lock, either key or combination type, to hold an energy isolating device in a safe position and prevents the energizing of a machine or equipment.”

This Lockout/Tagout Practice requires that any time maintenance is being performed on machinery or equipment, the power source is inactivated from all potentially hazardous energy sources before any employee begins to service the equipment or machinery where the unexpected energizing of the machine or equipment could cause injury.

Energy Control Program

Montgomery County has established a program consisting 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 source and rendered inoperative.

If an energy isolating device is not capable of being locked out, Montgomery County Energy Control Program shall utilize lockout, unless the utilization of a tagout system will provide full employee protection as established under the *Full Employee Protection* section.

Full Employee Protection

When a tagout device is used on an energy isolating device which is incapable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and Montgomery County shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program. Where tagout devices are used with energy isolating devices designed with the incapability of being locked, the tag attachment will be fastened at the same point at which the lock would have been fastened.

In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, Montgomery County shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

Energy Control Procedure

The following dictates the appropriate steps taken to comply with the County’s lockout/tagout program:

- Notify **ALL** affected employees that the machinery and equipment will be shut down by lockout/tagout. As part of the notification, communicate the reason for the shut down. **NOTE:** A sudden loss of power

can cause accidents if employees are not notified. During notification, emphasize the importance of **NOT** operating machinery and equipment while it is locked out.

- The locking out of a machine and also any maintenance or service required is performed by authorized, trained personnel.
- If the machine is operating, shut it down by normal procedures, such as depressing the stop button. This step de-energizes all electrical and hydraulic components.
- Deactivate the energy source to the machine or equipment.
- Lock out the energy isolating source with individual locks in which only one key exists and maintenance personnel has the key.
- Stored energy must be restrained by such methods as grounding, blocking or repositioning.
- Confirm by a visual check that all personnel are away from the machine and verify the energy disconnect by testing the start up of the machine ensuring that after the test, the controls are returned to the neutral or off position.

The following steps are procedure for restoring the equipment:

- Complete a visual check of the machine or equipment to verify that tools and equipment have been removed from the interior and exterior of the machine.
- Check the area to ensure that all personnel are removed from the area.
- Verify that the controls of the machine or equipment are in the neutral or off position.
- Remove the lock out devices and re-energize the machine or equipment.
- Notify personnel that the machine or equipment is now operational.

Every authorized, trained person shall be issued his/her own lock for use with the lock out procedure. It is the responsibility of the employee performing maintenance on machinery or equipment to ensure that the lock he/she is using is one that has been issued by the County and is not keyed the same as another lock. If repairs are in progress during a shift change, the person going off duty should remove his/her lock and it should be promptly replaced by the person from the oncoming shift.

Periodic Inspection

Montgomery County shall conduct periodic inspection of the Energy Control Procedure at least annually to ensure that the procedure and the requirements are being followed. This inspection shall be performed by an authorized employee other than the one(s) utilizing the Energy Control Procedure being inspected. It shall be used to correct any deviation or inadequacies identified.

Where lockout/tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the Energy Control Procedure being inspected.

Training and Communication

Montgomery County shall 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 the energy controls are acquired by all authorized employees.

Authorized employees will 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. Affected employees will receive instructions 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, shall 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.

Tagout Systems Training

When tagout systems are used, employees shall be 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 tags are 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, 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.
- Tags and their means of attachment must be made of material which will withstand the environmental conditions encountered in the workplace.
- Tags may evoke a false sense of security, and 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.

Employee Retraining

Retraining shall 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.

Safety-Related Work Practices

Safety-related work practices are employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.

De-energized Parts. Live parts to which an employee may be exposed shall be de-energized before the employee works on or near them, unless Montgomery County can demonstrate that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations. Live parts that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

Energized Parts. If the exposed live parts are not de-energized (i.e., for reasons of increased or additional hazards), other safety-related work practices shall be used to protect employees who may be exposed to the

electrical hazards involved. Such work practices shall protect employees against contact with energized circuit parts directly with any part of their body or indirectly through another conductive object. The work practices that are used shall be suitable for the conditions under which the work is to be performed and for the voltage level of circuit parts.

Lockout and Tagging. While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits energizing the parts shall be locked out or tagged or both in accordance with 1910.333 (b)(2). Montgomery County shall maintain a written copy of the lockout and tagging procedures that comply with paragraphs (c) through (f) of 1910.147.

De-energizing Equipment. Safe procedures for de-energizing circuits and equipment shall be decided before circuits or equipment are de-energized.

The circuits and equipment worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, may not be used as the sole means for de-energizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged and high capacitance elements shall be short circuited and grounded, if the stored electric energy might endanger personnel. If the capacitors or associated equipment are handled in meeting this requirement, they are treated as energized.

Stored non-electrical energy in devices that could re-energize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.

Application of Locks and Tags. A lock and a tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed. The lock is attached to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools.

- Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.
- If a lock cannot be applied, or if Montgomery County can show that tagging procedures will provide a level of safety equivalent to that obtained by using a lock, a tag may be used without a lock.
- A tag used without a lock shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by using a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.
- A lock may be placed without a tag only under the following conditions:
 1. Only one circuit or piece of equipment is de-energized, and
 2. The lockout period does not extend beyond the work shift, and
 3. Employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with this procedure.

Verification of De-energized Condition. The requirements of this paragraph are met before any circuits or equipment are considered and worked as de-energized.

- A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
- A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment are de-energized. The test shall also determine if any energized condition exists because of inadvertently induced voltage or unrelated voltage back feed although specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment shall be checked for proper operation immediately before and immediately after this test.

Re-energizing Equipment. These requirements are met, in the order given, before circuits or equipment are re-energized, even temporarily.

- A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other devices have been removed, so that the circuits and equipment can be safely energized.
- Employees exposed to the hazards associated with re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- Each lock and tag is removed by the employee who applied it or under his/her direct supervision. However, if this employee is absent from the workplace, then the lock and tag may be removed by a qualified person designated to complete this task if:
 1. Montgomery County ensures that the employee who applied the lock or tag is not available at the workplace, and
 2. Montgomery County ensures that the employee is aware that the lock or tag has been removed before he/she resumes work at the workplace.
- There shall be a visual determination that all employees are clear of the circuits and equipment.

Work on Energized Equipment. Only qualified persons may work on electric circuit parts or equipment not de-energized under the procedures in the previous paragraphs. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary equipment, insulating and shielding materials, and insulated tools.

Personal Protective Equipment. Employees working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed. Protective equipment is maintained in a safe, reliable condition and periodically inspected or tested, as required in 1910.137. Employees shall wear non-conductive head protection wherever there is a danger of head injury from electric shock or burns due to contact with exposed energized parts. Employees shall wear protective equipment for the eyes or face wherever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from electrical explosion.

General Protective Equipment and Tools. When working near exposed energized conductors or circuit parts, each employee shall use insulated tools or handling equipment if the tools or handling might make contact with such conductors or parts. If the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material shall be protected.

- Fuse handling equipment shall be used to remove or install fuses when the fuse terminals are energized.
- Ropes and hand lines used near exposed energized parts shall be non-conductive.

Protective shields, protective barriers, or insulating materials shall be used to protect each employee from shock, burns or other electrically related injuries which might occur while that employee is working near exposed energized parts. When normally enclosed live parts are exposed for maintenance or repair, they shall be guarded to protect unqualified persons from contact with the live parts.

Alerting Techniques. The following alerting techniques shall be used to warn and protect employees from hazards which could cause injury due to electric shock, burns, or failure of electric equipment parts:

- **Safety Signs and Tags.** Safety signs, safety symbols, or accident prevention tags shall be used where necessary to warn employees about electrical hazards which may endanger them, as required by 1910.145.
- **Barricades.** Barricades shall be used together with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to non-insulated energized conductors or circuit parts. Conductive barricades may not be used where they might cause an electrical contact hazard.
- **Attendants.** If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant shall be stationed to warn and protect employees.