

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

Purpose:

To provide the minimum requirements for the lockout or tagout of energy isolating devices whenever work is performed or servicing is done on County of DuPage machinery, equipment, vehicles and other applicable equipment. The following procedures shall be used to ensure that machinery and equipment is stopped or isolated from all potentially hazardous energy sources and locked-out or tagged-out before DuPage County employees or DuPage County subcontractors perform any servicing or electrician or where the unexpected energization, start-up of machinery or equipment, or release of stored energy could cause injury.

Policy:

This procedure covering work on energized wiring, transformers, machinery, equipment, and vehicles shall be adhered to by all DuPage County employees and contractors in all County work areas and locations.

General Information:

Responsibility:

Appropriate employees such as Electricians, Facilities Management, PW Maintenance, Highway Mechanics, Stationary Engineers, etc. shall be instructed in the safety significance of the Lockout or Tagout Procedure (names/job title of employees authorized to Lockout or Tagout). Each new or transfer-affected employee and other employees, whose work operations are or may be in the area, shall be instructed in the purpose and use of the Lockout or Tagout Procedure.

Preparation for Lockout or Tagout:

Make a survey to locate and identify all isolating devices to be certain which switch, valve or other energy isolating device(s) apply to the equipment to be locked or tagged out. More than one energy source (electrical, mechanical or other) may be involved.

Sequence of Lockout or Tagout Procedure:

Notify all affected employees that a Lockout or Tagout system is going to be utilized and the reason therefore.

The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards thereof.

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

Sequence of Lockout or Tag out Procedure continued:

If the machine or equipment is operating, shut it down by the normal stopping procedure.

Operate the switch, valve, or other energy isolating devices so that the equipment is isolated from its energy source. For a battery operated tool remove the battery, for an electric tool this could be as simple as removing the plug from the electrical outlet and placing it by you to assure no one plugs it back in while you are working on the tool.

Stored energy (springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam or water pressure) must be dissipated or restrained by a method such as repositioning, blocking, bleeding down, etc.

Lockout and/or Tagout the energy isolating devices with assigned individual locks or tags.

After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.

CAUTION: Return operating controls to neutral or off position after the test.

The equipment is now locked and tagged out.

Restoring Machines or Equipment to Normal Production:

After the servicing is complete and equipment is ready for normal production operations, check the area around the machine to ensure that no one is exposed.

After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all Lockout/Tagout devices to restore energy to the machine or equipment.

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

Procedure Involving More Than One Person:

In the preceding steps, if more than one individual is required to lockout or tag-out equipment, each shall place his/her own personal lockout device on the energy isolating device(s).

When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used.

If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet which allows the use of multiple locks to secure it.

Each employee will then use his/her own lock to secure the box or cabinet.

As each person no longer needs to maintain his or her lockout protection, that person will remove his/her lockout protection, that person will remove his/her lock from the box or cabinet.

Basic Rules For Using Lockout or Tagout System:

All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel.

DO NOT ATTEMPT to operate any switch, valve, or other energy isolating device where it is locked or tagged out.

A File for Personnel authorized to perform Lockout/Tag out should be maintained and updated when new staff are added: See Exhibit 1.

Training:

All employees involved shall be trained in the correct implementation of this program and its elements.

A “certification” will be prepared with the names and dates of training.

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

Periodic inspection:

- At least annually, there will be an inspection of Lock Out equipment and verification all employees exposed has been properly trained in this procedure.
- A certification record will be prepared with the date and name of inspector for each periodic check.
- These records should be kept on hand for at least the current and previous inspection.

Procedures:

Notification:

The DuPage County authorized employee, or outside contractor authorized and qualified to maintain or service affected equipment, should notify the supervisor of the machine, equipment that requires servicing the equipment will be shut down and locked out to perform the planned service work.

Deactivation:

The electrician or other authorized employee, shall deactivate the machinery or equipment to be worked on by shutting it down using normal stopping or deactivating procedures.

This may be accomplished by depressing a stop button, turning an on/off switch, or turning off and removing keys from the vehicle or heavy equipment.

Final deactivation and isolation shall be accomplished by opening the service disconnect and applying a locking device.

Some equipment may be deactivated and isolated by removing a fuse, removal and securement of the electrical plug, or removal of keys.

Only properly trained electrician or personnel shall be allowed to deactivate equipment when there is exposure to energized electrical components such as fuses, capacitors, electrical leads on motors, etc.

No other personnel will be allowed to isolate or deactivate equipment that exposes them to energized electrical components. Appropriate safety precautions shall be taken such as the use of eye, face protection and clothing per NFPA 70E requirements when working around energized electrical components.

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

Isolation:

Electrical:

After the equipment has been deactivated using normal methods to shut it down, electrical power shall be isolated from the machinery or equipment by shutting off the source of electrical feed by shutting switches off at main panels, machinery or equipment service disconnects, by opening the appropriate circuit at the circuit breaker panel, or simply by removing the electrical plug from the outlet.

Some of the machinery and equipment at DuPage County Division/Department facilities is furnished with a lockable service disconnect.

Some equipment is equipped with plug type connections and procedures for that equipment follow.

All service disconnect furnished equipment is identified through a marking system that corresponds to identical markings on the service disconnect for the equipment.

Steam, Pneumatic & Hydraulic:

Equipment that operates with pneumatic energy must be isolated by disconnecting the source of air by uncoupling or disconnecting air hoses or lines from the equipment to be serviced.

Air & Steam lines that are not equipped with a quick disconnect type connections must be removed with caution.

Air & Steam pressure should first be bled from all non-quick disconnect type hose or air line connections to prevent injury to the electrician or employees disconnecting lines under pressure.

Hydraulic systems should be isolated by shutting off power to pump Systems and in some cases, removing stored pressure within hydraulic lines and cylinders.

Lockout:

Once electrical power to the wiring, machinery or equipment has been isolated, a lock shall be placed through the switch, hasp, or handle to prevent unauthorized activation of the circuit, machinery or equipment.

If the equipment is plug connected, a device shall be placed over the plug

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

end and a lock placed on the device to prevent persons from plugging the machine or equipment into an outlet before servicing or electrician or has been completed.

Outside contractors will be expected to furnish their own locks for work covered by this procedure.

The electrician or other designated person shall be the only individual with possession of the key for their lockout lock.

A multiple locking hasp must be used when more than one person is working on the machine or equipment, including outside contractors that may be working on equipment.

Tag out:

If isolation of electrical power to machinery or equipment can only be accomplished through removal of an electrical power cord or removal of electrical leads or fuses, the plug end of the equipment, or fuse panel, shall have a tag fastened to it warning not to plug back in until cleared by the electrician or person performing work on the machine or equipment. **AT NO TIME** shall a tag be removed from machinery or equipment without first checking with electrician or maintenance personnel or other persons working on the equipment in question.

Eliminate Stored Or Residual Energy:

Stored or residual energy may be present in capacitors, springs, hydraulic systems, and dump bodies that can be moved by gravity.

Stored pressure must be protected by grounding, blocking, or bleeding down.

Extreme caution must be exercised when removing or blocking residual energy to prevent contact with electrical sources or moving components.

Electrical:

Caution must be exercised when working near electrical components, which are capable of storing energy.

Such components include capacitors, which are capable of storing high voltage for extended periods of time long after the source of electricity has been disconnected.

Only qualified employees should work on electrical components or systems.

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

Capacitors should be carefully bled to ground to remove stored energy.

Pneumatic:

Equipment that is powered by pneumatics (air pressure) is capable of storing energy in the form of unreleased air pressure.

Air cylinders on this equipment can store air pressure long after air lines and hoses have been removed and compressors shut off.

This equipment could accidentally be activated with this remaining air pressure in actuating cylinders contained in the equipment.

The air contained in these cylinders should be bled off, or the machine should be cycled until the air has been exhausted in the cylinder.

Hydraulic:

Equipment that is powered by hydraulics (fluid pressure) is capable of storing energy in the form of unreleased hydraulic pressure. Hydraulic cylinders can store energy after hydraulic pumps have been shut down.

The equipment could accidentally be activated with this remaining hydraulic pressure, or the electrician or employee could be injured by rapidly escaping hydraulic pressure contained in hydraulic lines and cylinders.

Verify Isolation of Equipment:

Isolation of the equipment must be verified by attempting to start or operate the equipment by normal starting or operating procedures.

Prior to any attempt to start the equipment, first verify that no other persons are exposed to the equipment being started.

This includes checking all areas around the machine, equipment, or.

Deactivation and isolation of the equipment shall be verified by pressing start buttons and other controls on the equipment.

Equipment should not operate, cycle, or drift when controls are operated.

Once isolation of the equipment has been verified, return all operating

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

controls, switches, and foot pedals to the neutral or off positions.

Restoring Equipment to Service:

The mechanic, other electrician or employee, or qualified contractor, shall check the machine or equipment and ensure that the machine or equipment components are operationally intact, including the reinstallation of all machine or equipment guarding.

There should be no exposed electrical components, or other hazardous moving parts such as gear drives or transmissions that could injure servicing or setup employees during start up.

The mechanic or electrician or employee, shall verify that all employees have been safely positioned or removed from the area when the equipment is reenergize and initially operated.

Once the machine or equipment has been restored to service and reenergize, verify that the machine or equipment controls are in the neutral or off position.

Remove Locks and Tags from Machinery and Equipment:

The electrician or employee responsible for completing work on the affected machine or equipment shall be responsible for removing all locks and tags under his control.

AT NO TIME shall another person remove the lock or tag from equipment being worked on by another employee.

Removal of a lock or tag by a person other than the technician or electrician shall be by a DuPage County Division/Department Manager and only after an attempt has been made to locate the original servicing employee.

Notification:

The mechanic, electrician or employee, or qualified contractor shall notify the supervisor of the department that the work has been completed on the affected machinery, equipment, or and that the equipment can now be safely operated and used.

Failure of the electrician or employee to notify the operator or department

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

that work has been completed on the equipment is a safety violation.

Outside Contractors:

Outside contractors may be used to perform work on various machinery, equipment, or facility equipment.

All outside contractors are required to comply with the requirements of the DuPage County lockout/tag out program.

Additionally, all contractors **MUST** notify DuPage County's Division/Department supervision prior to beginning work on any machinery or equipment.

Failure of a contractor to contact a Department supervisor will result in notification to the contractor that a violation of the lockout/tag out program has occurred.

Additional violations may result in a termination of the contract or services provided by the contractor.

Enforcement of Lockout/Tag out Procedures:

The following actions will be considered serious safety rule violations subject to disciplinary action per Human Resources policy:

Removing a lock or tag from machinery or equipment unless the lock or tag being removed is their own.

Operating, or attempting to operate, equipment which has been locked out and/or tagged out for an electrician or repair contractor.

Electrician and/or servicing employees that do not remove their lock and tag immediately after work has been completed, unless there is some specific reason that the equipment should not be returned to service.

DuPage County Environmental, Safety, Health & Property Loss Control Program Hazardous Energy Control (Lockout/Tagout)

TRAINING:

Employees affected by this lockout/tag out procedure, including electricians, mechanics, shop and Power Plant personnel, etc. shall receive initial training and refresher training as needed.

The purpose of the training shall be to ensure that the knowledge and skills required for the safe application, usage, and removal of energy controls are communicated to affected employees.

The level of training for personnel includes the actual procedures necessary to safely deactivate and isolate equipment.

The content of the training program shall include the following:

The recognition of applicable hazardous energy sources, the type and magnitude of the energy source available in the work area, and the methods necessary for energy isolation and control.

The application and use of this lockout/tag out procedure and machinery and equipment specific procedures.

**DuPage County Environmental, Safety, Health & Property Loss Control Program
Hazardous Energy Control (Lockout/Tagout)**

SUMMARY OF LOCKOUT/TAGOUT REQUIREMENTS

NOTIFY the machine operator that equipment will be shut down

DEACTIVATE the machine or equipment by shutting down through normal methods.

ISOLATE the machine or equipment by removing the source of energy.

LOCKOUT/TAGOUT by placing a lock and/or tag on the isolation switch or device.

REMOVE stored energy by grounding or bleeding residual or stored energy.

VERIFY isolation of equipment by attempting to start it using normal methods.

RESTORE equipment to normal safe operating condition including any guarding.

REMOVE locks and tags from affected machine or equipment.

NOTIFY the operator or other employee that works on equipment is complete.