



# TYNDALE

• UNIVERSITY COLLEGE & SEMINARY •

## Joint Health and Safety Committee

# Tyndale University College & Seminary Lockout Tagout Policy and General Procedures

**November 2008**

### **Applicable Legislation/Standard**

Occupational Health and Safety Act (OHSA), R.S.O. 1990

Ontario Regulation 851, R.R.O. 1990, Industrial Establishments, Sections 42,43,75,76

Ontario Ministry of Labour Engineering Data Sheet 9-02: Lock-Out Procedure for Machinery

### **Intent & Scope**

To prevent injuries and fatalities from unexpected and/or accidental release of energy or start up of machines or equipment, or release of stored energy during service, repair, maintenance, operation, and associated activities; and to outline general procedures for the safe lockout and tagout of electrical equipment, machinery and pressure systems.

This policy does not apply to the following:

- (1) Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energizing or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing maintenance or repair.
- (2) Hot tap operations involving transmission and distribution systems when they are performed on pressurized pipelines, provided that it has been demonstrated that [1] continuity of service is essential; [2] shutdown of the system is impractical; [3] documented procedures are followed, and [4] special equipment is used which will provide proven effective protection for employees.

### **Definitions**

Affected employee: An employee who operates or uses a machine or equipment on which employee lockout/tagout systems are installed, or who works in areas affected by lockout/tagout procedures.

Authorized employee: A person who locks out and tags out machines or equipment to perform servicing or maintenance. An authorized employee is also someone who has received lockout/tagout training.

Energy source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, stored or other energy.

Hot tap: A procedure used in repair and maintenance activities which involves welding on a piece of equipment (pipelines, vessels or tanks) 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 and steam distribution systems. Other methods of attachment can also be used.

Isolation: A process to ensure that a machine is removed from service and completely protected from inadvertent start-up via any power source. A mechanical device is used (a disconnect switch, line valve, block, blank off plate) that physically prevents the transmission or release of an energy source to machinery or equipment.

Lockout: To physically neutralize all energy sources in machinery or equipment, usually by applying locks, before beginning any maintenance or repair work. The primary purpose of lockout is to prevent all energy isolation devices (switch, circuit breaker or valve) from accidentally or inadvertently being operated while workers are working on equipment.

Lockout device: A device that uses a positive means (such as a lock) to hold an energy isolation device (see "Isolation") in a safe position and prevent the energizing of a machine or a piece of equipment. Each lockout device must always be accompanied by a tagout device. All lockout devices, must:

- be unique, distinctive, easily recognizable, and clearly visible
- be the only devices used for controlling potentially hazardous energy
- not be used for any other purpose
- be capable of withstanding the environment to which they are exposed
- be substantial enough to prevent operation of the energy isolating device without the use of excessive force

**Locks, by themselves, do not de-energize equipment.  
They are attached only after the machinery has been  
isolated from its energy sources.**

Maintenance and repair: Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining machines or equipment. These activities include but are not limited to lubrication, cleaning or un-jamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected start-up of the equipment or release of hazardous energy.

Tagout device: A tag or sign, which must be attached to the lockout device, which is used to communicate vital information about the lockout, including the identity of the authorized employee who applied the device, the reason for locking out, and the date and time. It also warns workers not to operate that equipment. The tag must be substantial enough to withstand the environment, be secured to prevent inadvertent or accidental removal, and it must remain legible for the duration of the job. It must be made of non-conducting material and be placed in a conspicuous location.

Zero energy state: The mechanical potential energy in all elements of a machine is dissipated so that operation of any control will not produce a movement that could cause injury.

## **Policy**

(1) Departments of Tyndale (e.g. Campus Operations, ITS) shall establish and implement their own written lockout/tagout programs for electrical equipment, shop equipment, machinery and pressure systems.

(2) Constructors, contractors, and subcontractors shall be required to document and implement their lockout/tagout procedures for Tyndale as employer (see Contractor Constructor Policy concerning contracting work).

(3) Supervisors shall implement lockout/tagout systems appropriate for their workplaces, and shall provide training for employees as necessary. Records shall be maintained concerning the names of the employees, the date trained, and the details of the lockout/tagout systems and procedures.

(4) Device-specific (e.g. boilers, heating ventilating and air conditioning equipment) lockout/tagout procedures shall be prepared as necessary by competent personnel and maintained on file by the Department.

(5) Shift change coordination: Supervisors shall ensure the continuity of lockout-tagout protection during shift or personnel changes. Each worker shall be responsible for removing his own padlock and tag at the completion of his shift. If work is to stop until the following day the supervisor will place their personal lock and tag on the equipment and the workers shall remove their locks and tags. When work resumes the workers shall affix their personal lock and tag to the equipment and the supervisor shall remove their lock and tag.

(6) Departments shall document their general and specific lockout/tagout systems and procedures and shall review this documentation at least annually by the supervisor and those employees involved.

(7) Job-specific written standard operating procedures shall be developed when work must be performed on equipment that must be left energized or cannot be locked out.

(8) Conditions for lock removal by someone other than the owner: Lockout-tagout devices shall be removed only by the owner of the device except in the following situations:

[1] Owner incapacitated by illness, etc.

[2] Owner no longer works for Tyndale

[3] Owner is on flex or leave and cannot be reached by telephone. If the owner is reached and the situation warrants then he/she will be required to come to work and remove the padlock.

If the Facilities Manager determines that circumstances warrant the removal of a lockout-tagout device, every effort must be made to contact the owner of the device. After the above conditions have been met, an authorized employee may remove the device in the presence of the Manager.

### **Requirements for Lockout/Tagout Procedures**

Written lockout/tagout procedures specific to a particular machine or equipment, or to a similar grouping of machines or equipment, must outline the situations in which they are to be used, and the sequence in which they are to be used. Lockout/tagout procedures shall clearly define the specific actions and responsibilities required during each of the following energy control sequences:

(1) Preparation for shutdown

(2) Equipment shutdown

(3) Equipment isolation from the energy source

- (4) Application of lockout/tagout devices
- (5) Release of stored energy, de-energization
- (6) Verification of isolation
- (7) Release from lockout/tagout control once work is completed, including removal of lockout/tagout devices and restoration of energy to machinery/equipment.

**General Lockout Procedure**

(1) Preparation for shutdown - the supervisor or authorized employee shall:

- Identify the types and magnitude of energy to be controlled
- Identify all hazards (including stored energy)
- Identify the method or means of controlling the energy
- Identify the location of switches, energy sources, controls, interlocks or other such devices necessary to isolate the system.
- Assess the consequences of shutdown
- Notify all affected persons that the equipment will be shutdown and locked/tagged out

(2) Equipment shutdown - the equipment will be shutdown following established procedures; ensure that all points of operation are considered, including remote control points.

(3) Equipment isolation - the equipment shall be isolated by following established isolation procedures which specify the use of disconnect switches, line valves, blocks, blanks, etc., as required.

(4) Application of lockout devices - locks shall be applied to each of the isolation devices. Each employee working on the equipment is responsible for attaching his/her personal lock and keeping the key, without exception. Tags must be attached to each lockout device and should state the name, the reason for locking out, the date and time.

(5) Release of stored energy (de-energization) - all potentially hazardous stored or residual energy must be relieved, blocked, bled, restrained, grounded or rendered safe by authorized employees. Additional measures may be necessary to prevent the re-accumulation of energy. Each worker must ensure that this has been done.

<b>Energy Form</b>	<b>Energy Source</b>	<b>General Lockout Guideline</b>
Electricity	<ul style="list-style-type: none"> <li>- Power transmission lines</li> <li>- Machine power cords</li> <li>- Motors</li> <li>- Solenoids</li> <li>- Capacitors</li> <li>- Generators</li> <li>- Batteries</li> </ul>	<ul style="list-style-type: none"> <li>- Turn off power at machine first (point of operation switch) and then at main disconnect switch for machine; lock and tag main disconnect switch (or remove fuses from box, and then lock and tag box).</li> <li>- Fully discharge all capacitive systems (e.g. cycle machine to drain power from capacitors) according to manufacturer's instructions.</li> <li>- Install grounds where necessary.</li> </ul>
Fluid Pressure	<ul style="list-style-type: none"> <li>- Hydraulic systems (rams, presses, cylinders)</li> </ul>	<ul style="list-style-type: none"> <li>- Shut off, lock (with chains, built-in lockout devices, or lockout attachments) and tag valves; bleed off and blank lines</li> </ul>

		as necessary. - Block any possible movement of machinery.
Air Pressure	- Pneumatic systems (lines, air surge tanks, pressure reservoirs, accumulators, cylinders)	- Shut off, lock (with chains, built-in lockout devices, or lockout attachments) and tag valves; bleed off excess air. If pressure cannot be relieved, block any possible movement of machinery.
Kinetic Energy (moving objects that are powered or coasting)	- Blades - Flywheels - Materials in supply lines of bins or silos	- Stop and block machine parts, and ensure that they do not recycle. Review entire cycle of mechanical motion; ensure that all motions are stopped. - Block material from moving into area of work and blank as required.
Potential Energy (objects with the potential for release of energy due to position)	- Springs - Actuators - Counterweights - Raised loads - Top or movable part of a press or lifting device	- If possible, lower all suspended parts and loads to the lowest (rest) position, block parts that might move due to gravity; release or block stored spring energy.
Pressurized liquids & gases	- Steam/chemical supply lines - Storage tanks & vessels	- Shut off, lock (with chains, built-in lockout devices, or lockout attachments) and tag valves; bleed off excess liquids or gases; blank lines as necessary.

(6) Verification of isolation - Prior to starting the work, and after isolation and de-energization, the authorized employee should perform a test of all start buttons and other activating controls on the equipment, check potential of the electrical supplies to ensure the equipment has been de-energized. Return all of the controls to the off or neutral position after trying to start. Note: Each person who has placed a personal lock on the equipment should be assured of his/her right to verify individually that the potentially hazardous energy has been isolated and/or de-energized before the repair or maintenance work begins.

#### PERFORM THE REPAIR OR MAINTENANCE WORK NOW

(7) Release from lockout control - Prior to restoring energy to the equipment, the authorized employee will perform an assessment of the work area to determine that:

- the machine or equipment is operationally intact
- all necessary guards have been re-installed
- all tools and materials used during the repair or maintenance work have been removed
- all temporary de-energization measures and devices have been removed by those who placed them
- all other workers and affected individuals have been informed that the energy is about to be restored and are clear of the equipment

The last lock to be removed should be that of the person supervising the lockout. This responsibility should not be delegated to another person. Follow the required steps to re-energize the system.

#### Exceptions

It is not necessary to document the required procedure for a particular machine or equipment, when **ALL** of the following elements exist:

- (1) The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;
- (2) The machine or equipment has a single energy source which will completely de-energize and deactivate the machine or equipment and can be readily identified and isolated by a single lockout device;
- (3) The machine or equipment is isolated from that energy source, locked out during servicing or maintenance and the lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;
- (4) The servicing or maintenance does not create hazards for other employees;
- (5) Utilizing this exception, has had no accidents involving the unexpected activation or start-up of the machine or equipment during maintenance or repair activities.