| CONESTOGA Connect Life and Learning | Approved by: **Academic Coordinating Committee** |
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| | Authorizer: **Director, Safety and Security** |
| | Effective Date: **September 8, 2010** |
| Procedure Title: **Lockout-Tagout Procedure** | |

Conestoga College Institute of Technology and Advanced Learning (Conestoga) recognizes the necessity of establishing and maintaining an effective Lockout–Tagout Procedure. It is recognized that improper Lockout-Tagout of equipment/machinery prior to the performance of maintenance work can cause an unexpected release of energy from a hazardous energy source. This has the potential to result in a serious injury or fatality.

## 1.0 PURPOSE

The purpose of the Lockout–Tagout Procedure is to prevent injury to workers or damage to equipment through the unexpected release of energy from a hazardous energy source.

## 2.0 SCOPE

This procedure applies to all persons who perform work on Conestoga equipment/machinery, their supervisors and outside contractors. This procedure applies to, but is not limited to activities such as: erecting, installing, constructing, repairing, adjusting, inspecting, unjamming, setting-up, troubleshooting, testing, cleaning, dismantling, servicing and maintaining machines, equipment or processes.

## 3.0 LEGISLATION

Legislative references for this procedure are contained in the Ontario Occupational Health and Safety Act, Regulation 851 (Industrial Establishments)

Sections

s. 42 – power source
s. 50 – silos, bins, hoppers
s. 75 – 76 – machinery
s. 78 – drums, tanks, pipelines
s. 119.13 – confined space
CSA Z460 – Control of hazardous energy – lockout and other methods

## 3.0 DEFINITIONS

a) **Affected Workers**
Those individuals whose duties require them to operate equipment/machinery subject to Lockout–Tagout.

b) **Authorized Workers**
Those individuals, including outside contractors, who physically Lockout-Tagout equipment/ machinery in order to perform maintenance work. These workers receive formal training to ensure they can perform Lockout-Tagout safely.

c) **Blankout**

An action taken, using a device called a 'blank,' to prevent hazardous material or energy from flowing in a pipe.

d) **Blockout**
An action taken, using a device called a 'block,' to prevent the movement of equipment/ machinery if stored energy is released (e.g., hydraulic, pneumatic, gravitational, etc.)

e) **Competent Person –** means a person who;
- is qualified because of knowledge, training and experience to organize the work and its performance
- is familiar with the Occupational Health and Safety Act and the Regulations that apply to the work, and
- has knowledge of any potential or actual danger to health or safety in the workplace

f) **Energy-Isolating Device**
A device used to de-energize a particular piece of equipment/machinery. This device usually allows a padlock to be placed on it to ensure the equipment/machinery cannot be re-energized. Where there is no provision for placement of a padlock, a lockout device is used between the energy-isolating device and the padlock.

g) **Hazardous Energy Source**
Any energy source which,, when uncontrolled, provides a risk of injury. These include, but are not limited to: electrical, pneumatic (air under pressure), hydraulic (fluid under pressure), mechanical/gravitational (rams/guillotines), stored (capacitors/accumulators), chemical/gas/ thermal (hazardous pipeline contents) or any combination of these sources.

h) **Lockout**
The act of preventing equipment/machinery from being operated or inadvertently started after it has been shut-down and isolated from all hazardous energy sources. This is accomplished by placing a padlock (and other lockout devices where necessary) on the equipment/machinery's energy-isolating device(s).

i) **Lockout Device**
A device which allows a padlock to be placed on the energy-isolating device for a piece of equipment/machinery when the latter has no provision for this. Examples include plug, switch, circuit breaker and gate/ball valve covers.

j) **Maintenance Work**
Work on equipment/machinery that could expose the person performing it to a hazardous energy source (e.g., clearing jams, cleaning, adjusting, inspecting, servicing, repairing, etc.).

k) **Multiple Lockout Device**
A hasp which contains spaces for multiple padlocks and thereby allows more than one authorized worker to lockout a piece of equipment/machinery.

l) **Tagout**
The act of placing a warning tag on a padlock used for lockout, to communicate that the hazardous energy source should not be re-energized.

## 4.0 RESPONSIBILITIES

### 4.1 Employer (Conestoga)

a) Provide information, instruction and supervision to a worker to protect the health and safety of the worker;
b) When appointing a supervisor, appoint a competent person;
c) Ensure that outside contractors are prequalified prior to performing maintenance work

on Conestoga premises;

d) Ensure new authorized workers are trained regarding the provisions and requirements of this procedure, and that this training is updated at least every three years;
e) Review the provisions and requirements of this procedure at least every three years;
f) Identify potential sources of hazard identification and provide written rules and procedures to prevent accidents and injuries.

### 4.2 Supervisor

a) Periodically check, and effectively enforce, compliance with this procedure, including the use of corrective disciplinary measures where necessary;
b) Ensure the padlocks, tags, and other lockout devices required for compliance with this procedure are provided, or accessible, to each authorized worker reporting to the supervisor;
c) Ensure outside contractors who will be performing maintenance work on Conestoga premises are aware of their responsibility to comply with this program;
d) Follow the provisions in Section 13 if there is urgent reason to remove a padlock and tag assigned to an authorized worker reporting to him/her;
e) Ensure that lockout procedures are understood and followed by all workers as required.

### 4.3 Affected Worker

a) Ensure equipment/machinery deemed unsafe cannot be operated, by immediately contacting an authorized worker to lockout-tagout the machinery/equipment;
b) Where he/she is unavailable, de-energize the machinery/equipment using its energy-isolating device and placing one of the authorized worker's padlocks on it;
c) Never attempt to remove a padlock used for lockout, or start equipment/machinery that has been locked out by an authorized worker;
d) When assigned to operate equipment that has been locked out, pre-startup checks must be completed to verify that all guards are in place and equipment is ready to begin operations.

### 4.4 Authorized Worker

a) Participate in lockout-tagout training as required;
b) Tollow the provisions and requirements of this procedure;
c) Report to their supervisor whenever they are aware that a provision or requirement of this procedure is not being, or cannot be, followed for any reason.

### 4.5 Outside Contractors

Outside contractors performing maintenance work on Conestoga premises must:
a) comply with this procedure;
b) supply their own padlocks, tags and lockout devices.

### 4.6 Facilities Management

a) Order lockout padlocks for all trained Conestoga employees.

### 4.7 Occupational Safety Office

a) Maintain and track all training documents and records;
b) Update procedure as needed.

## 5.0 EXEMPTIONS

### 5.1 Minor Servicing Tasks

Minor servicing tasks that **do not** have the potential to cause injury to a person or damage to equipment through the release of energy from a hazardous energy source are not covered by this procedure.

### 5.2 Testing/Troubleshooting

This procedure does not apply to electrical testing or troubleshooting, or work performed above 750 volts. This work should only be conducted by competent persons.

## 6.0 PADLOCKS/KEYS

a) Each authorized worker shall be issued one or more padlocks to be used for lockout purposes only. The Facilities Management Department will order the locks and the Occupational Safety Office will issue the padlocks, and maintain associated records.
b) Each authorized worker issued with one or more padlocks will be provided with one copy of the corresponding key.
c) An affected worker may have access to an authorized worker's lockout-tagout padlocks (see Section 9a) but never to their key.
d) Under no circumstances shall any authorized worker work under another worker's padlock. Their individual padlock and tag must be installed on the equipment/machinery's energy isolating device and the corresponding key shall remain in their possession at all times. See Section 12 for instructions when more than one authorized worker needs to perform maintenance work on the same equipment/machinery.

## 7.0 TAGS

A Conestoga approved tag shall be installed with all padlocks used for lockout. The installation of a tag alone, without a padlock, is not a permitted method of controlling a hazardous energy source.

All tags shall:

- be substantial, including their means of attachment, to prevent inadvertent removal;
- be made of non-conducting material, durable, and capable of withstanding the environment to which they are exposed (for the maximum period of time that exposure is expected);
- be legible and understandable; and
- bear the name of the authorized worker who installed it, the date, and the reason for the lockout.

## 8.0 LOCKOUT–TAGOUT CENTRES

### 8.1 Program Lockout-Tagout Centres

Program Lockout-Tagout Centres shall be located in a central area, accessible to:

- authorized workers who perform maintenance work for one or more programs; and
- affected workers who need to place an authorized worker's lockout-tagout padlock on equipment/machinery that has been deemed unsafe (see Section 4c) until this employee can perform required maintenance work.

Program Lockout-Tagout Centres shall contain:

- open padlocks assigned to the authorized worker responsible for program maintenance work (keys to these padlocks shall remain in the possession of the authorized worker at all times and shall not be kept in the Program Lockout-Tagout Centre);
- tags, and assorted lockout devices, appropriate for program equipment/machinery; and
- a logbook to be completed by affected workers who place an authorized worker's padlock on equipment/machinery that has been deemed unsafe. The authorized

worker will check the logbook regularly and tagout this equipment/machinery as soon as possible.

### 8.2 Facilities Management Lockout-Tagout Centres

Facilities Management Lockout-Tagout Centres shall be:

- located in Facilities Management areas at the Doon, Waterloo and Guelph campuses;
- accessible only to Facilities Management employees.

Facilities Management Lockout-Tagout Centres shall contain:

- tags, and assorted lockout devices, appropriate for Facilities Management equipment/machinery.

## 9.0 LOCKOUT-TAGOUT OF EQUIPMENT/MACHINERY

a) **Prepare For Shut Down**

Notify appropriate affected workers, and/or the supervisor in the area, of the shut down and the reason for it. All authorized workers shall ensure they know the type and magnitude of hazardous energy sources utilized by the equipment/machinery and the associated hazards.

b) **Shut Down**

Use the normal stopping procedure for the equipment/machinery. This may involve placing a switch in the "off" position, pressing a stop button, or a more complex operation.

c) **Isolate**

Carefully isolate the equipment/machinery from every hazardous energy source supplying it. Pull electrical disconnect switch or shut off circuit breaker, close valves, disconnect/cap any auxiliary power sources such as secondary electrical, steam, hydraulic or pneumatic systems, etc.

**WARNING:**
**Never pull a disconnect switch without first shutting down the equipment/machinery (as per section b above), as it could cause arcing and an explosion. It is extremely important to practice the "Left Hand Rule" when de-energizing and (particularly) energizing an electrical disconnect switch. Stand to the right side of the switch and face away from it while pulling the handle with your left hand (to ensure your body is out of the direct line of hazard if a flash explosion occurs).**

d) **Apply Padlock and Tag**

- Lockout and tagout all energy–isolating device(s) to prevent anyone from restoring the flow of energy.
- Where there are no means for placement of a padlock, an intermediate lockout device (i.e., ball valve, circuit breaker, light switch or plug covers) shall be installed.
- The key to the padlock shall remain in possession of the authorized worker to whom it is assigned.
- The padlock shall only be removed by this employee.
- **Note:** Removal of fuses does not constitute a lockout, it is no guarantee the circuit is dead or another worker could inadvertently replace the fuse.

e) **Control Stored Energy**

Relieve, disconnect or restrain any residual hazardous energy source that could be present, check that all moving parts have stopped turning, relieve trapped pressure, blankout pipe flanges, discharge any electrical capacitors/accumulators, and blockout or support elevated equipment.

f) **Verify Isolation**
Ensure that all persons are clear of the area. Test to make sure the right hazardous energy sources have been locked out. Press all start buttons or other activating controls, and then return them to the **"**off**"** position – this will prevent the equipment from being started by itself when energy is restored.

g) **Lockout/Tagout Interruption**
If a machine is locked/tagged and there is a need for testing or positioning of the equipment/process, the following steps should be followed:
- Clear the area of the tools and materials
- Ensure workers are a safe distance from potential hazards
- Remove locks/tags according to this procedure
- Proceed with test
- De-energize all systems and re-lock/tag the controls before resuming work.

## 10.0 SHIFT CHANGE PROCEDURE

a) When there is a shift change and the work has not been completed it is important to ensure the continuity of the lockout.
b) When the work has not been completed on the first shift, the next authorized worker will install their lock and tag before the first authorized worker removes the original lock and tag.
c) If there is a delay between the first authorized worker completing his/her shift and the next authorized worker arriving, an "open" padlock from the applicable lockout centre must be placed on the equipment before the first authorized worker removes his/her lock (see Section 8.0 for information on lockout centres).

## 11.0 RE-COMMISSIONING EQUIPMENT/MACHINERY

When maintenance work has been completed:
- verify all switches are in the "off" position
- ensure the equipment/machinery is operationally intact and all guards are replaced, tools and other non-essential items are removed, and all persons are clear of the area;
- remove all padlocks, tags and lockout devices (each authorized employee must remove his or her own padlock);
- re-energize equipment/machinery and follow the appropriate start–up procedure. Perform a test run to ensure it operates safely, and as planned;
- notify appropriate affected workers, and/or the supervisor of the area, that the equipment/ machinery is ready for operation;
- only workers knowledgeable in the operation of the specific equipment should perform shutdown or re-start procedures.

## 12.0 GUARDING AND LOCKOUT FOR SPECIAL CIRCUMSTANCES

The primary method of energy control is guarding and lockout procedures; however, when traditional methods of barriers and energy control are not possible or practical under the circumstances for troubleshooting, testing, machine installation, or set-up the following measures must be in place as per the CSA Standard Z460 – The Control of Hazardous Energy Lockout and Other Methods:

a) Comprehensive Risk Assessment
- Identify hazardous situations

- Other methods of energy control
- Protective measures

b) Written Procedures
   - Detailed work instructions

## 13.0 GROUP LOCKOUT-TAGOUT

a) A group lockout-tagout is necessary when more than one authorized worker needs to perform maintenance work on equipment/machinery. These employees are not considered to be protected unless all individuals have placed their own padlock and tag on the appropriate energy-isolating device(s).
b) The first authorized worker to arrive on the job shall install a multiple lockout device (hasp) as well as their personal padlock and tag. This authorized worker shall be the "person-in-charge" of the job.
c) Each additional authorized worker shall attach their own padlock and tag to the multiple lockout device (hasp) and retain the key to their padlock.
d) When work is completed, each authorized worker shall report this fact to the person-in-charge, and remove their padlock and tag. The padlock and tag belonging to the person-in-charge shall be the last to be removed, after he/she has verified that all maintenance work is completed.

## 14.0 PADLOCK AND TAG REMOVAL BY SUPERVISOR (OR DELEGATE)

a) The removal of a padlock used for lockout by anyone other than the authorized worker to whom it is assigned is a serious circumstance and should never be done by anyone other than this employee's supervisor (or delegate).

b) If there is an urgent reason that an authorized worker's padlock and tag must be removed and he/she is no longer on the premises, the supervisor (or delegate) shall:
   - make every effort to contact the authorized worker to determine whether he/she can return to the premises to remove their padlock and tag;
   - if the authorized worker is contacted, but is unable to return to the premises, discuss the reason for the lockout-tagout, the status of the maintenance work, and the conditions under which it would be safe for the supervisor to remove the padlock and tag;
   - if the authorized worker cannot be contacted, ensure a thorough inspection of the equipment/machinery is conducted by a competent person, in conjunction with any other available employees who were involved in the lockout-tagout, to determine whether it is safe to remove the padlock and tag;
   - if it is determined that it is safe to remove the padlock and tag, complete the Lockout-Lock Removal Report and remove lock.
   - remove the padlock and tag in the presence of a witness and secure them until they can be returned to the authorized worker;
   - notify the authorized worker to inform him/her that their padlock and tag have been removed and to report to their Supervisor immediately upon their return.

## 15.0 RELATED DOCUMENTS

a) Policy Statement – Health & Safety-Employees, Students, Contractors and Visitors
b) Statement of Responsibilities – Health & Safety
c) Lockout Lock Removal Report

## 16.0 REVISION HISTORY

| Revision Date | Summary of Changes |
|---|---|
| 7 April 2010 | Revised into new procedure format. Complete revision of information. |
| 26 August 2010 | Policies and Procedures Committee - Approved |
| 8 September 2010 | Academic Coordinating Committee |