

Lockout/Tagout Program



**CITY OF
BANGOR**

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1. Purpose & Scope

The City of Bangor recognizes that preventing the unexpected start-up or release of stored energy from equipment during servicing or maintenance is key to protecting employees from injury. To address this issue and to comply with the Occupational Safety and Health Administration's (OSHA) Lockout/Tagout Standard (29 CFR 1910.147), the Department of Safety and Environmental Management (SEM) has developed the City of Bangor Lockout/Tagout Program. This document outlines the procedures for conducting a safe lockout and/or tagout of equipment when maintenance is necessary.

Lockout/tagout (LOTO) is accomplished by placing a lockout and/or a tagout device on a switch, valve, breaker, etc. to prevent reactivation of the equipment and to warn that maintenance activities are in progress. Equipment is considered “locked out” when the potential hazardous energy has been blocked and operation of the equipment is prevented until the lockout device is removed. Equipment is considered “tagged out” when a warning tag is placed on the equipment warning others that the equipment is being serviced and must not be operated. These safety measures should be used together to provide the maximum level of protection for those performing the service.

Before City personnel perform service/maintenance activities, they must understand the proper procedures for energy control as outlined in this document to ensure that:

- Personnel can identify machinery requiring LOTO;
- Effective LOTO procedures are used to isolate and control all hazardous energy;
- Proper employee training is provided to both Authorized and Affected employees; and
- Periodic review of LOTO procedures are performed to verify their effectiveness.

2. Definitions

Affected Employee - The employee whose job requires the operation or use of a machine or equipment on which servicing or maintenance is being performed under LOTO.

Authorized Employee - An employee who has received the proper training and has been “authorized” by their department to apply LOTO devices when necessary to LOTO hazardous energy sources to perform service or maintenance.

Capable of being Locked Out - An energy-isolating device that is designed with a hasp or other means of attachment to which or through which a lock can be affixed, or has a locking mechanism built into it. Other energy-isolating devices also will be considered to be capable of

being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.

Energized – Connected to an energy source or containing residual or stored energy.

Energy-Isolating Device - A mechanical device that physically prevents the transmission or release of energy, including but not limited to a manually operated electrical circuit breaker, a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and no pole can be operated independently; a line valve; a block; any similar device used to block or isolate energy. The term does not include push button, selector switch, or other control type devices.

Energy Source – Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Lockout - The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, to ensure that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device - A device that utilizes an affirmative means such as tags, locks, hasps, chains, and other hardware to secure an energy-isolating device in a safe position and prevent the operation or energizing of hazardous energy sources.

Servicing/Maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining machines or equipment. These activities include lubricating, cleaning, or un-jamming machines or equipment and making adjustments to tools where the employee may be exposed to the unexpected energizing or release of hazardous energy.

Setting Up – Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout – The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

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 in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the device is removed

3. Program Administration and Responsibilities

3.1 Safety and Environmental Management (SEM)

- Update and revise the written Lockout/Tagout Program as needed.
- Provide program training, oversight and resources to other departments performing LOTO.

3.2 Directors and Supervisors

- Maintain a list of authorized employees who may perform LOTO while servicing or maintaining equipment.
- Ensure authorized employees have been properly trained on the specifics of the City's LOTO program.
 - Ensure affected employees are trained as needed.
- Ensure LOTO devices are available to all Authorized employees.
- Develop and maintain a list of equipment specific LOTO procedures.
- Conduct periodic inspections of all authorized employees performing LOTO.
- Overseeing the transfer of control over the existing LOTO device(s) or the attachment of a separate device(s) during a shift change.
- Ensure the procedure to remove another employee's LOTO device is properly followed.

3.3 Authorized Employees

- Responsible for observing all practices and procedures contained in the City of Bangor LOTO Program.
- Attend LOTO training.
- Follow specific LOTO procedures when performing maintenance or servicing equipment.

3.4 Affected Employees

- Able to identify LOTO devices.
- Do not attempt to operate or energize any energy-isolating devices that is locked and tagged out.
- Do not tamper with any lockout device.

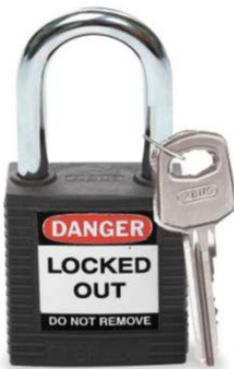
4. Lockout / Tagout Devices

4.1 Lockout Devices

Lockout / Tagout equipment consists of locks, tags, hasps, chains and other hardware to prevent the operation of equipment while City personnel are performing servicing or maintenance of equipment. Lockout devices must be used whenever possible to ensure a positive means of energy control by holding equipment in a safe or off position. Tags should only be used in conjunction with lockout devices to warn against operation and to identify the employee who installed the LOTO device. Regardless of the device used, all LOTO devices must meet the following minimum criteria:

- Be of durable construction and capable of withstanding the conditions in which it is placed;
- Be identified as a LOTO device and only be used for the control of hazardous energy sources. **All other uses are prohibited;**
- Identify the individual who installed the device;
- Must not be bypassed, ignored or otherwise defeated; and
- Standardized within each department in color, size, shape and format.

The follow pictures are examples of typical LOTO devices found in the workplace:



Lockout Padlock



Lockout Hasp



Corded Plug Lockout Device



Valve Lockout Device



Circuit Breaker Lockout Device



Cable Lockout Device



Wall Switch Lockout Device



Group Lockout Box



Gas Cylinder Lockout Device

4.2 Tagout Devices

Use of tags alone is only allowed when equipment cannot be physically altered to accept a lockout device. In this case, all other procedures consistent with the lockout program must be followed. The tags must be affixed as closely as possible to the isolation devices, immediately obvious to anyone attempting to restart the equipment/machine. Whenever possible, additional control measures must be taken to reinforce the tagout device (such as opening an extra disconnecting device, removal of a valve handle, or additional training).

Tags must be legible and understandable by all employees and must contain warnings against energizing the equipment such as DO NOT START, DO NOT OPEN, DO NOT CLOSE, DO NOT ENERGIZE, or DO NOT OPERATE. Tags must be in plain view, at the same location as the energy isolation devices and must be securely attached to prevent accidental removal. The follow pictures are examples of typical LOTO devices found in the workplace:



Lockout/Tagout Tags

5. Exemptions

5.1 Partial Exemption

Departments are exempt from creating a written, equipment-specific LOTO procedure when **all** of the elements listed below exist. Equipment or machines that are covered by this partial exemption must still be locked and tagged out following the procedure outlined in Section 6. Lockout/Tagout Procedure

- The equipment/machine has a single energy source that can be readily identified and isolated;

- The equipment/machine has no potential for stored or residual energy;
- Isolation and locking out of energy source completely de-energizes and deactivates the machine or equipment;
- A single lockout device will achieve a lockout condition;
- The lockout device is under the control of a single individual doing the service/maintenance;
- The equipment/machine is isolated from the energy source and locked out during the course of service or maintenance activities;
- The servicing or maintenance does not create hazards for other employees; and
- The City Department has not had any accidents involving the unexpected activation or start-up of the machine or equipment during servicing or maintenance.

5.2 Full Exemption

None of the requirements of the City of Bangor's Lockout/Tagout Program apply if all conditions of the exemption are met. Full exemptions include:

- **Equipment that is completely de-energized by unplugging the power cord.** The unplugged power cord must be under the exclusive control of the employee conducting the service or maintenance activities. Corded plug lockout devices are recommend as an added level of protection.
- **Minor tool changes or adjustments.** Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations and not covered by the LOTO standard if they are routine, repetitive and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.
- **Hot tap operations involving gas, steam, water or petroleum products.** The Department Director must show that continuity of service is essential, shutdown is impractical and proper protection of the employees has been provided. Any alternative approach used must be fully documented by the department choosing those methods.

6. Lockout/Tagout Procedure

When equipment of machinery requires servicing or maintenance, but does meet the exemptions listed under Section 5.0, the Department is required to create an "Equipment-Specific Lockout/Tagout procedure" using the Equipment-Specific Lockout/Tagout Procedure template.

The steps listed below must be included in the Equipment-Specific LOTO Procedure and followed in order when locking and tagging out equipment.

1. Prepare for Shutdown

The Authorized Employee will evaluate the equipment to be serviced and identify all sources of hazardous energies and the methods necessary to control them. This information will be used to complete the “Equipment-specific LOTO Procedure” for that particular piece of equipment.

2. Notify all Affected Employees

Before turning off the power, the Authorized Employee will notify Affected Employees in the work area that power will be shut off, the reason for the shutdown, and that the equipment will be locked/tagged out.

3. Shutdown Equipment

The equipment/machine will be shut down by the normal stopping procedure. When appropriate, a “DO NOT OPERATE” tag will be affixed to the power switch.

4. Isolate Equipment

The equipment/machine will be de-energized, secured and isolated from hazardous energy sources. An orderly shutdown must be utilized to avoid any increase of additional hazard(s) to employees.

5. Lockout/Tagout

The Authorized Employee will place locks and/or tags in the appropriate energy isolating locations.

6. Release Stored Energy

After lockout devices have been placed on the equipment, all stored electrical, gravitational, mechanical, and/or thermal energy must be disconnected and drained to a zero-energy or otherwise made safe by blocking or repositioning of equipment. This can be accomplished by:

- Releasing pressure lines such as hydraulic, air, steam, gas, and water;
- Release spring-loaded equipment;
- Blocking mechanical equipment with moving, rotating, or elevated parts; or
- Discharge the electrical energy from a capacitor.

7. Verify Isolation

Before performing maintenance on the machine, the Authorized Employee verifies the system is isolated. This is generally accomplished by first establishing that no personnel are exposed and then turning the machine switch to the ON position using normal operating controls. Verification of isolation must be continued if there is a chance of the re-accumulation of stored energy during the service/maintenance activity. Return the operating controls to the “neutral” or “off” position after verifying isolation.

8. Perform the Service/maintenance Activity

Using the steps listed in Section 8., LOTO devices should be removed promptly following completion of service/maintenance activities.

7. Troubleshooting Procedure

If the authorized employee must re-energize the equipment or machine that is being serviced for testing, repositioning or troubleshooting, Lockout/Tagout devices may be temporarily removed in order to perform these tasks, but the authorized employee must:

1. Ensure all personnel and tools have been removed from the equipment or area;
2. Notify all affected employees of the impending re-energization of the equipment;
3. The lockout device must then be removed by the authorized person who originally affixed it to the equipment. However, the tag must remain on the equipment at the point of isolation;
4. Energize the equipment ensuring no part of one’s body is in harm’s way during start-up or while observing operation of the equipment; and
5. When the task is complete, de-energize the equipment using normal stopping procedures, and either restore equipment to use or reapply the lockout devices following the procedures above.

8. Removal of Lockout/Tagout Devices

Once the specific maintenance or service work has been completed, the person who attached the lock and/or tag is responsible for promptly removing all devices. Removal of the devices will be accomplished by the steps below:

1. Inspect the work area

Ensure that the equipment or machine is fully assembled, all tools or non-essential items are removed, and all safety guards have been reinstalled.

2. Ensure that all employees are clear of the equipment or machine

3. Remove the LOTO device(s)

Each device must be removed by the person who attached it unless the conditions listed in the section “Removal of Another Employee’s LOTO Device” are met.

4. Re-energize the equipment or machine

5. Notify Affected Employees that the servicing or maintenance is complete and the equipment or machine is ready for use.

9. Group Lockout/Tagout

A group LOTO is necessary when more than one individual performs service/maintenance on the same piece of equipment or machine. A procedure must be developed that outlines how group LOTO will occur. Group LOTO can be accomplished through the use of a lockout device that accepts multiple locks or a group lock box. One person from the group should be selected to oversee the LOTO procedure. The group representative will be responsible for the following:

- Affixing the group lockout device or maintaining control of the lock box.
- Ensuring that Lockout/Tagout procedures are followed, including verifying that equipment is de-energized.
- Continually monitoring the crew to ensure that employees on the crew are not exposed to lockout/tagout hazards.
- Verify that all procedures for returning the equipment back into service are completed before lockout/tagout devices are removed.

10. Shift Changes

When equipment/machine maintenance extends beyond one shift, a procedure must be in place to transfer control of the equipment/machine to the arriving shift. This transfer is the responsibility of the department or division supervisor involved with the maintenance project. Responsibilities include:

- Overseeing the transfer of control over the existing LOTO device(s) or the attachment of a separate device(s); and
- Ensuring that the continuity of the energy control procedures is maintained until the oncoming shift arrives and takes control of the job.

11. Removal of Another Employee's Lockout/Tagout Device

Before removing a lock or tag that has been affixed or installed by another employee, the supervisor must ensure:

- That the employee who attached the device is no longer at work and is unavailable to remove the lockout/tagout device;
- That all reasonable efforts to notify the employee that their device will be removed has been made; and
- The Authorized Employee who affixed the LOTO device has been notified that the LOTO device has been removed before they are able to start their next shift.

12. Exchange of Information with Contractors

When some or all of the maintenance work is to be performed by contractors, information exchange must take place between the Department and the contractor(s) to ensure that all personnel involved with the project know how to properly lock and tag out the piece of equipment or machine. The department or division supervisor is responsible for ensuring that the Department and the contractor inform each other of their respective LOTO procedures or any restrictions or prohibitions that may be included in either LOTO written program.

13. Employee Training

13.1 Authorized Employees

All employees who are anticipated to be involved in with the servicing or maintenance of equipment or machines are required to complete training on the purpose, content and implementation of the City of Bangor's Lockout/Tagout Program. Safety and Environmental Management will provide training to ensure that the purpose and function of the energy control program is understood by employees and that the knowledge and skills required for the safe application, usage and removal of the energy controls are acquired by employees.

This training will help employees to recognize applicable hazardous energy sources, the type and magnitude of the energy in the workplace, and the methods for energy isolation and control.

13.2 Retraining

Lockout/Tagout retraining will be provided for all employees whenever there is a change in job assignments, change in machines, when a new hazard is presented or when there is a change in energy control procedures. Retraining may also be conducted when the employer has a reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

13.3 Affected Employees

Affected employees are those employees affected by the shut down and de-energization of the machine or equipment that is being serviced or maintained. Training for affected employees will include:

- Purpose and use of Lockout/Tagout Procedures;
- How to recognize Lockout and Tagout devices;
- Prohibition on tampering or attempting to remove Lockout/Tagout devices; and
- Prohibition of attempting to start equipment or machinery that is Locked and Tagged out.

14. Periodic Inspections

City Departments will conduct a periodic inspection of the equipment-specific Lockout/Tagout procedures to ensure that the procedure is effective and the requirements of the written program are being followed by the authorized employee. The inspection will be performed by another authorized employee who is not involved in the LOTO. Inspections will be done annually using the "Lockout/Tagout Periodic Evaluation and Certification" form to document the review.