

 <b>THE UNIVERSITY OF BRITISH COLUMBIA</b> <b>Facilities</b>	<b>Policy No.:</b> <b>I-B-02</b>	<b>Updated By:</b> BOPS and E&W Lockout Committee  <b>Last Revision:</b> May 9, 2018
	<b>Responsible Executive:</b> Approved by: John Metras	
<b>Title:</b> <p style="text-align: center;"><b>ISOLATION AND LOCKOUT</b></p>		

## 1. Purpose

This document establishes minimum and uniform requirements for the isolation, securing, locking and tagging of machinery and equipment so that work can be carried out without the unexpected energization or startup of machinery or equipment or the unexpected release of an energy source. This document applies to all situations where a device must be secured in a safe position so that work can be carried out safely.

All employees are expected to work in a safe and professional manner. Failure to abide by this document and related procedures will result in appropriate corrective actions up to and including discharge.

## 2. References

Occupational Health and Safety (OHS) Regulation and Guidelines:  
 Part 10 – De-energization and Lockout  
 Part 19 – Electrical Safety  
 Part 16 – Mobile Equipment

WorkSafeBC Publication BK21 - Lockout

## 3. Definitions

**Energized:** connected to an energy source, which has not been isolated

**Energy Source:** means any electrical, kinetic, chemical, potential, thermal, radiation or other source of energy of potential harm to workers

**Isolation:** to separate an energy source from the machinery or equipment by means of a gap, barrier, blind, blank, or similar means

**Lockout:** means the use of a lock or locks to render machinery or equipment inoperable or to isolate an energy source in accordance with a written procedure

**Personal Lock:** means a lock provided by the employer for use by a worker to ensure personal lockout protection such that each lock when applied is operable only by a key in the worker's possession, and by a key under the control of the supervisor or manager in charge

**Personal Lockout:** to place a personal lock on energy isolating devices only to prevent hazardous energy from being released and to ensure personal lockout protection. The personal lock must be marked to identify the worker who placed the lock, and the shop of that worker. Personal locks are to be used only for personal protection and are not to be used as a Shop lock

**Personal Tag:** a tag placed in conjunction with a personal lock and personal ID tag to signify that work is being carried out on machinery or equipment that is associated with the personal lock. This tag will be white with black lettering, with a distinctive hatched red border

**Personal ID Tag:** an identification (ID) tag placed in conjunction with a personal lock and personal tag to identify the worker applying the personal lock. This tag will be a brass disc, stainless tag or similar means

**Shop Lock:** a lock provided by the qualified supervisor for the removal from service of equipment for seasonal shutdowns, temporary shutdowns, shift or personnel changes or similar purposes. A Shop lock **does not** constitute effective lockout and no one is to work behind a Shop lock

**Shop Lock Logbook:** a logbook where the relevant information must be recorded when a Shop Lock is applied

**Status Tag:** a tag used in conjunction with a Shop lock when a worker is not working on the machinery or equipment to indicate the status of the machinery or equipment and the reason for the Shop lock being placed on the energy isolating device. It must be indicated on the tag that the Shop lock does not constitute effective lockout. This tag will be yellow with black lettering

**Group Locks:** locks dedicated to group lockouts, sufficient in number to lockout isolation points in a group lockout procedure. Keys are available only to the 2 qualified workers applying the group lockout and the qualified supervisor

**Group Lockout:** the procedure used where there are more than 3 isolation points to be locked out, and/or a large number of workers will be working on the equipment and/or where the isolation points are a considerable distance apart

**Group Lockout Tag:** a tag that must be placed on all devices that have been locked out as part of a group lockout procedure, identifying the machinery or equipment locked out, and the names of the persons who applied the lock. This tag will be white with black lettering

**Group Lockout Procedure:** a procedure that states site-specific requirements for a project requiring group lockout

**Lock Box:** a sturdy container used to secure keys for group locks used in group lockout, capable of being secured and sealed

**Positive Sealing Device:** a uniquely numbered one time use only device acceptable to WorkSafeBC that has a seal that will show if it has been tampered with

**Qualified Worker:** a worker who is knowledgeable of the work, the hazards involved and the means to control the hazard by reason of education, training, experience or a combination thereof

**Lead Hand (LH):** a qualified worker that takes on a lead role to ensure all work is done in a safe manner and that policies and procedures are followed

**Qualified Supervisor:** a supervisor who is technically competent and has specialized knowledge of building systems and of the current work being carried out on those systems

## **4. Application**

Hazards include:

- a) Inadvertent re-energization of machinery or equipment.
- b) Unexpected release of energy source.
- c) Unexpected movement of machinery or equipment.

Three specific procedures identified in “I-B-02 Isolation and Lockout Program and Procedures”:

- Personal Lockout
- Group Lockout
- Use of Shop Locks

## **5. Training**

- 5.1** All employees applying and working under lockout and/or involved in the work procedures must attend Isolation and Lockout training prior to performing work involving isolation and lockout, and must re-attend Isolation and Lockout training no later than every 3 years.
- 5.2** Isolation and Lockout training is also required for supervisors of those workers. A supervisor is a person who instructs, directs and controls workers in the performance of their duties. A supervisor can be any worker who meets this definition, whether or not they have a supervisor title.

## **6. Work Procedure**

### **6.1 Personal Lockout Equipment**

- Each worker required to apply a personal lock must be assigned a set of personal locks keyed alike complete with a key, personal tags, personal ID tags, status tags and lockout scissors
- If the assigned work requires more than three lockout points, then the group lockout procedure must be used.

## 6.2 Energy Isolating Device Identification and Isolation

- The worker who has been assigned a project or task is responsible for the identification, isolation and lockout of the energy isolating devices and remains responsible until they remove their personal lock.
- Identification of the energy isolating devices that require lockout must be done through a review of drawings, identification data, testing or similar means.
- When the correct device has been identified and isolated, all stored energy must be drained or bled off, pressure released and any potential for movement removed or positively blocked against movement.
- To confirm effective lockout, an attempt must be made to operate the machinery or equipment to confirm that it will not start up or operate.

## 6.3 Application of Personal Locks

- These locks are to be used only in personal lockout procedures.
- The worker who has been assigned to carry out the work must place a lockout scissor, personal lock, personal tag and personal ID tag on the energy-isolating device after it has been switched off or otherwise placed in the safe position.
- The following information must be identified on the personal tag: name, crew/shop, contact phone number, reason for applying the personal lock.
- Any additional worker who is required to work on that machinery or equipment must place his or her own personal lock, personal tag and personal ID tag on the lockout scissors. Once that worker's job is complete he/she alone is responsible to remove his/her personal lock.
- A personal lock must not be placed in the last hole of a lockout scissors. Instead, another lockout scissor must be applied and the personal lock placed on the additional lockout scissors.
- This personal lock will remain in place at all times while there is a hazard to the worker.
- When the person who placed the lock is no longer working on the equipment, and the work is incomplete, the worker must remove their personal lock and tags and replace with a Shop lock and status tag. A Shop lock does not constitute effective lockout. No one is to work behind a Shop lock without establishing effective lockout in accordance with this procedure.

## 6.4 Removal of Personal Locks

- A personal lock may only be removed by the owner of the lock.
- In situations where a personal lock has been left on a device, and it is necessary to remove that lock and the worker is not available, a Lock Removal Form must be filled out and the following procedure must be adhered to and documented (See Appendix A for a Lock Removal Form).

The immediate qualified Supervisor must:

- a) Make every reasonable effort to contact the worker who placed the personal lock.
- b) Attempt to determine the reason for the lockout.
- c) Ensure it is safe to remove the lock and energize system.

- d) Contact the Manager when system is made safe to energize to receive manager's permission for the lock removal and arrange for the Manager to remove the lock.
- e) Ensure the Lock Removal Form is completed before lock is removed.
- f) Provide a qualified worker to witness the lock removal.

The Manager must:

- a) Review, approve and sign the Lock Removal Form
- b) Remove lock in the presence of the qualified worker once the above steps are complete.
- c) Inform the worker at the start of their next shift that their lock has been removed.
- d) Initiate a formal incident investigation. The completed Lock Removal Form must be submitted with the Incident Investigation report.

### **6.5 Application and Removal of Shop Locks**

- Shop locks will be made available in each shop, and must be numbered and identifiable by shop.
- The locks and keys are under the control of the shop supervisor or designate and will be issued as required for specific use.
- The use of these locks is for the securing of equipment or machinery, seasonal shutdowns, temporary shutdowns, shift or personnel changes or similar purposes. A Shop lock does not constitute effective lockout.
- No one is to work behind a Shop lock without establishing effective lockout in accordance with this procedure.
- A status tag must be used in conjunction with a Shop lock and must record the following information on the tag:
  - a) Worker's name and department
  - b) The date
  - c) Reason for applying Shop Lock
  - d) Signature.
- Shop Locks can only be removed by a qualified and authorized worker provided they have been directed by the shop supervisor or designate:
  - a) Review all pertinent information recorded in the logbook
  - b) Are aware of the scope of the work involved and
  - c) Contact their immediate supervisor if any of the information identified in (a) and (b) is not available or is not understood.
- A Shop Lock Logbook will be made available in each shop. Any time a Shop Lock is left on at the end of a shift the following details must be recorded in the logbook by the person who applies the lock:
  - a) Date the Shop lock was applied
  - b) Shop lock number
  - c) Equipment and device
  - d) Location
  - e) Reason for applying Shop Lock
  - f) Who applied the lock.

**6.6 Application of Group Lockout**

- The group lockout procedure is applicable in situations where any machinery/equipment requires more than 3 isolation points to be locked out and/or where the isolation points are a considerable distance apart.
- Group locks, with keys available only to the two qualified workers applying the procedure and the supervisor in charge, must be used for this procedure.
- To initiate the application of Group Lockout, two qualified workers must take responsibility to:
  - a) Ensure a site specific Group Lockout Procedure is developed by a qualified supervisor or designate (See Appendix B for a sample of a Group Lockout Procedure).
  - b) Ensure there is an established Group Lockout Checklist that lists all the necessary energy isolating devices that require lockout (See Appendix C for a Group Lockout Checklist).
  - c) Personally lock out using group locks and attach group lockout tags to all energy isolating devices identified on the Group Lockout Checklist.
  - d) Clearly print their names and contact phone numbers on the checklist, and sign the checklist.
  - e) Locate a lockbox in a prominent location as near as possible to the machinery or equipment shut down by the lockout.
  - f) Post the signed Group Lockout Checklist by the lock-box.
  - g) Post the site specific Group Lockout Procedure by the lockbox.
  - h) Place all the keys for the locks used in the group lockout in the lock-box and secure lock-box with a positive sealing device acceptable to WorkSafeBC.
  - i) Record the identification number of the positive sealing device on the checklist.
- Qualified Supervisor or designate to hold a pre-job meeting with all workers who will be applying personal locks and working on the machinery. During the pre-job meeting, the Lead Hand (LH) will be identified, who will be responsible for verifying that all work has been completed and that removal of Group Lockout can proceed. Name of LH is to be documented on the Group Lockout Checklist.
- When the correct devices have been identified and isolated, all stored energy must be drained or bled off, pressure released and any potential for movement removed or positively blocked against movement.
- As a last confirmation of safe condition, an attempt must be made to operate the machinery or equipment to confirm that it will not start up or operate.
- Before commencing work each employee working behind the group lockout must apply a personal lock, personal tag and personal ID tag to the lock box and any additional equipment requiring personal lockout. Each worker must make sure the serial number of the positive sealing device matches the serial number recorded on the Group Lockout Checklist. Any additional workers assigned to the project must understand the parameters of the work and review the Group Lockout Checklist and Group Lockout Procedure before adding their personal locks.

**6.7 Removal of Group Lockout**

- On completion of their work, workers must remove their personal lock and tags from the lock box.
- Once all workers have removed their personal locks as per 6.7.1, the LH is to confirm that all work has been complete and the LH will then sign the Group Lockout Checklist, and notify the 2 qualified workers that it is safe to end the group lockout.

## **I-B-02 Isolation & Lockout**

- a) Once the 2 qualified workers receive signed notification from the LH that work is complete, 2 qualified workers will verify that no locks are on the lockbox. The 2 qualified workers are then responsible for removing the positive sealing device.
  - b) If the 2 qualified workers removing the positive sealing device are different than the 2 qualified workers who applied the positive sealing device, they must also clearly print their names and contact phone numbers on the Group Lockout checklist, and sign the Group Lockout Checklist.
- Once the positive sealing device has been removed from the group lock box, the group lockout is no longer in effect.
  - The 2 qualified workers are to remove all group locks and tags.
  - The 2 qualified workers are to give the completed Group Lockout Checklist to the Qualified Supervisor for record keeping.

### **6.8 Alternate Procedures**

If lockout of energy isolating devices as required by OHS Regulation Section 10.3 is not practicable:

- For power systems as defined in OHS Regulation Part 19 – Electrical Safety, the requirements of that Part must be followed.
  - a) For power systems as defined in Part 19 BC OH&S Regulations, also refer to UBC Procedures:
    - i. IB-7 - Clearances –High voltage Equipment;
    - ii. IB-8 - Overhead High Voltage Electrical Equipment;
    - iii. IB-30 - Testing Low Voltage Equipment;
    - iv. IB-31 - Working with Low Voltage Equipment;
    - v. IB-32 - High Voltage Switching; and
    - vi. IB-33 - Test and Work Permits
- For mobile equipment as defined in OHS Regulation Part 16 – Mobile Equipment, the requirements of that Part must be followed. An example of a procedure would be:
  - a) If a worker believes a piece of equipment is unsafe for use, the worker fastens a “Do not operate” tag on the controls of the machine. The worker is to sign and date the tag and describe briefly what the concern is on the tag. The worker must report the problem to their supervisor.
  - b) Worker(s) performing maintenance or repair on mobile equipment will position and secure the equipment as required by the equipment manufacturer’s manual.
  - c) If a “Do not operate” tag was installed by a worker, each worker performing maintenance or repair will not remove or alter the tag until all necessary repair work is complete.
  - d) Prior to starting maintenance or repair work, each worker involved in the maintenance or repair will install their own personal “Do not operate” tag at all locations from which the equipment can be started. Each tag placed by the maintenance worker will be signed and dated by that maintenance worker.
  - e) Each maintenance worker will remove his or her personal tag(s) when that worker has completed his or her work.
  - f) The “Do not operate” tag that was originally installed to identify the unsafe concern will be removed by the maintenance worker making the decision the necessary maintenance work has been completed and it is safe for the machine to go back into service.

- In an emergency where lockout cannot be immediately applied, the energy isolating devices or control system devices must be effectively controlled to prevent inadvertent start up or hazardous energy release. As soon as the emergency is controlled, lockout must be applied as per this procedure to complete repairs.

### **6.9 Locks Not Required**

- On a tool, machine or piece of equipment which receives power through a readily disconnected supply, such as an electrical cord, quick release air or hydraulic line, or similar device, is disconnected from its energy supply and the connection point is kept under the immediate control of the worker at all times while work is being done.
- On electrical distribution panels where a qualified electrical worker disconnects the wires from the breaker, appropriately insulates the wire ends and places a personal tag on the wires.

## **7. Responsibilities**

### **7.1 Managing Director**

- Ensure the lockout system is established and implemented within the workplace,
- Ensure Isolation and Lockout training is provided to workers,
- Assign responsibilities for implementation and monitoring to ensure the lockout program runs effectively, and
- Ensure adequate resources are made available for the implementation and continued operation of the Isolation and Lockout Program.

### **7.2 Directors / Superintendents**

- Assign responsibilities to ensure this lockout policy is implemented and to ensure lockout procedures, training and supervision are in place, and
- Monitor lockout procedures and ensure that it is operating effectively.

### **7.3 Managers**

- Ensure that the lockout policy and procedures are implemented,
- Ensure that all workers are trained in all aspects of this policy,
- Ensure lockout procedures are written and reviewed,
- Ensure adequate supervision is given to those working under lockout,
- Monitor the procedure for its compliance and effectiveness and make recommendations as may be appropriate for its improvement,
- Approve the removal of personal locks by signing the Lock Removal Form, which is to be filled out by the Head and/or Sub-Head, and
- When it is necessary to remove a personal lock and the worker is not available to remove, Manager to review, approve and sign the Lock Removal Form, which is to be filled out by qualified Supervisor (Head and/or Sub-Head). In the presence of a qualified worker, Manager to then remove the lock and inform the worker that their lock has been removed.
- Complete an incident investigation report if a personal lock is to be removed and attach the corresponding Lock Removal Form to the incident investigation report.

**7.4 Heads and Sub-Heads**

- Ensure workers attend Isolation and Lockout training,
- Ensure workers are provided and have access to this lockout policy and lockout procedures,
- Ensure workers are provided personal lockout equipment,
- Ensure workers are provided group lockout equipment, when needed,
- Provide adequate direction and supervision to workers so that work can be carried out safely,
- Complete Group Lockout Procedures when required,
- Ensure Group Lockout Checklist used for group lockouts are accurate and complete and that group lockouts are carried out in accordance with the Group Lockout Procedure,
- Keep completed Group Lockout Checklists for the purpose of record keeping, and
- Review the need to remove personal locks and once the system is made safe to energize, complete the Lock Removal Form and obtain approval from Manager who will sign the Lock Removal Form. The Manager will remove the lock in the presence of a qualified worker.

**7.5 Workers**

- Attend Isolation and Lockout training,
- Lockout according to training and established written work procedures,
- Remove their personal locks on the completion of their work,
- Keep control of the keys to personal locks throughout the duration of the work, and
- Carry out work in a safe manner and in compliance with this policy and established procedures.



## UBC Facilities I-B-02 Isolation and Lockout Lock Removal Form

## APPENDIX A

When it is deemed necessary to have a lock removed by a person other than the owner of the lock, this form must be filled out by the immediate qualified supervisor, BEFORE THE LOCK IS REMOVED and a form incident investigation report must be completed, as per section 6.4 of I-B-02 Isolation and Lockout Policy. A copy of this completed form signed by the manager must be attached to the incident investigation report.

Date of Removal (MM/DD/YY):	Time of Removal: <span style="float: right;">AM/PM</span>
Lock Applied By:	
Location of Lock:	
Work Order Number:	
Reason for Lock Removal:	

EMERGENCY LOCK REMOVAL PROCEDURE (Please check <input checked="" type="checkbox"/> )			
1	Immediate qualified supervisor in charge makes every reasonable effort to contact the worker who installed the lock. Successful?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2	Immediate qualified supervisor in charge determines reason for the lockout. Determined?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3	Immediate qualified supervisor in charge determines if the machinery/equipment/system is safe to energize before removing the lock. Safe?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4	Immediate qualified supervisor in charge contacts manager for approval to remove the lock. Approval received?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
5	Immediate qualified supervisor in charge takes necessary steps to ensure it is made safe to remove the lock. Safe?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
6	Immediate qualified supervisor provides a qualified worker to witness the lock removal. Provided?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
7	Manager to remove lock in the presence of the qualified worker once the above steps are complete. Removed?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
8	Manager notifies the owner of the lock that the lock has been removed, at the start of their next work shift. Notified?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

_____ Qualified Supervisor Name	_____ Qualified Supervisor Signature	_____ Date (MM/DD/YY)
_____ Qualified Worker Name	_____ Qualified Worker Signature	_____ Date (MM/DD/YY)
_____ Manager Name	_____ Manager Signature	_____ Date (MM/DD/YY)

**LOCK REMOVED BY:**

_____ Manager Name	_____ Manager Signature	_____ Date (MM/DD/YY)
Date and Time Owner of Lock was notified:	_____ Date (MM/DD/YY)	_____ AM/PM TIME



<b>The University of British Columbia Facilities</b>		<b>GROUP LOCKOUT PROCEDURE</b>	
<b>SAMPLE</b>			
<b>Prepared by:</b>	<b>Approved by:</b>	<b>Issue Date: Replaces:</b>	

### 1. Application

Lockout is the use of a lock or locks to render machinery or equipment inoperable or to isolate an energy source. If machinery could unexpectedly activate or if the unexpected release of an energy source could cause injury, the energy source must be isolated and controls through a lockout procedure.

This group lockout procedure applies to work where there are more than 3 isolation points to be locked out, and/or a large number of workers will be working on the equipment and/or where the isolation points are a considerable distance apart.

All employees are expected to work in a safe and professional manner. Failure to abide by this policy and related procedures will result in appropriate corrective actions up to and including discharge.

### 2. References

Occupational Health and Safety Regulation:  
Part 10 – De-energization and Lockout

WorkSafeBC Publication BK21 – Lockout

Facilities I-B-02 Isolation and Lockout Policy

### 3. Work Procedure

#### 3.1 Application of Group Lockout

3.1.1 The group lockout procedure is applicable in situations where any machinery/equipment requires more than 3 isolation points to be locked out and/or where the isolation points are a considerable distance apart.



## UBC Facilities I-B-02 Isolation and Lockout

## APPENDIX B

- 3.1.2 Group locks, with keys available only to the two qualified workers applying the procedure and the supervisor in charge, must be used for this procedure.
- 3.1.3 To initiate the application of Group Lockout, two qualified workers must take responsibility to:
  - a) Ensure this site specific Group Lockout Procedure is developed by a qualified supervisor or designate.
  - b) Ensure there is an established Group Lockout Checklist that lists all the necessary energy isolating devices that require lockout (See I-B-02 Isolation and Lockout Procedure Appendix C for a Group Lockout Checklist).
  - c) Personally lock out using group locks and attach group lockout tags to all energy isolating devices identified on the Group Lockout Checklist.
  - d) Clearly print their names and contact phone numbers on the Group Lockout Checklist, and sign the Group Lockout Checklist.
  - e) Locate a lockbox in a prominent location as near as possible to the machinery or equipment shut down by the lockout.
  - f) Post the signed Group Lockout Checklist by the lock-box.
  - g) Post this site specific Group Lockout Procedure by the lockbox
  - h) Place all the keys for the locks used in the group lockout in the lock-box and secure lock-box with a positive sealing device acceptable to WorkSafeBC.
  - i) Record the identification number of the positive sealing device on the Group Lockout Checklist.
- 3.1.4 Qualified Supervisor or designate to hold a pre-job meeting with all workers who will be applying personal locks and working on the machinery. During the pre-job meeting, the Lead Hand (LH) will be identified, who will be responsible for verifying that all work has been completed and that removal of Group Lockout can proceed. Name of LH is to be documented on the Group Lockout Checklist.
- 3.1.5 When the correct devices have been identified and isolated, all stored energy must be drained or bled off, pressure released and any potential for movement removed or positively blocked against movement.
- 3.1.6 As a last confirmation of safe condition, an attempt must be made to operate the machinery or equipment to confirm that it will not start up or operate.
- 3.1.7 Before commencing work each employee working behind the group lockout must apply a personal lock and tag to the lock box and any additional equipment requiring personal lockout. Each worker must make sure the serial number of the positive sealing device matches the serial number recorded on the Group Lockout Checklist.
- 3.1.8 Any additional workers assigned to the project must understand the parameters of the work and review the Group Lockout Checklist and Group Lockout Procedure before adding their personal locks.



### 3.2 Removal of Group Lockout

- 3.2.1 On completion of their work, workers must remove their personal lock from the lock box.
- 3.2.2 Once all workers have removed their personal locks as per 3.2.1, the LH is to confirm that all work has been complete and the LH will then sign the Group Lockout Checklist, and notify the 2 qualified workers that it is safe to end the group lockout.
  - c) Once the 2 qualified workers receive signed notification from the LH that work is complete, 2 qualified workers will verify that no locks are on the lockbox. The 2 qualified workers are then responsible for removing the positive sealing device.
  - d) If the 2 qualified workers removing the positive sealing device are different than the 2 qualified workers who applied the positive sealing device, they must also clearly print their names and contact phone numbers on the Group Lockout Checklist, and sign the Group Lockout Checklist.
- 3.2.3 Once the positive sealing device has been removed from the group lock box, the group lockout is no longer in effect.
- 3.2.4 The 2 qualified workers are to remove all group locks and tags.
- 3.2.5 The 2 qualified workers are to give the completed Group Lockout Checklist to the Qualified Supervisor for record keeping.

