MONTCLAIR STATE UNIVERSITY

Document Description:	UF-SAF-108: Control of Hazardous Energy (LOTO)		
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Approved by:

The University is responsible for maintaining a Health and Safety Program which includes establishing, implementing and maintaining policies and procedures designed to protect the health and safety of the Montclair State University community.

It is the primary duty of all faculty and employees who are deemed managers and supervisors to ensure that any persons under their direction are made aware of, and comply with all applicable health and safety policies and procedures; to ensure that all aspects of work or teaching under their care is safe; to confirm that those under their care have received appropriate safety training; and that any risks, hazards, and safety violations brought to their attention are investigated and corrected promptly.

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MONTCLAIR STATE UNIVERSITY

Policy # **UF-SAF-108**

Policy Title: **Control of Hazardous Energy (LOTO)**

Policy Steward: UF Environmental, Health, & Safety

Purpose: The purpose of this standard is to provide guidance and to establish requirements for de-energization of equipment to enable periodic servicing or maintenance activities to be performed safely.

Applicability: This standard agrees with OSHA Standard 1910.147, Control of Hazardous Energy (Lockout/Tagout), and applies to all Montclair State University's owned equipment for which periodic servicing or maintenance activities are performed.

Definitions:

Affected Employee (E): An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized Employee (AE): Any employee who has been trained by the principal, primary or another authorized employee to affix a lock or tag on machines or equipment to perform the servicing or maintenance on that machine or equipment. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine or equipment, which must be locked, or a tagout system implemented.

Blanking or Blinding: The absolute closure of a pipe, line, or duct by fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Bleed: Release stored hydraulic or pneumatic energy.

Blockout: Prevent movement of machinery or equipment.

Capable of being locked out. An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are 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.

Block and Bleed: The closure of a line, duct, or pipe by closing and locking and tagging two line valves and by opening and locking and tagging a drain or vent valve in the line between the two closed valves.

Energized: Machines and equipment are energized when they are connected to an energy source, or they contain residual or stored energy. An example of stored energy could be a steam line. Even though you may have isolated a section of steam line by closing valves, pressure will remain in the line until it is properly bled-off.

Energy-isolating device: A mechanical device that physically prevents the transmission or release of energy. Examples of energy-isolating devices include: 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, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy. Energy sources are what makes the piece of equipment or machinery run, move or operate. Equipment may have a single energy source, or may have many different sources of energy.

Enforcement: The Control of Hazardous Energy Program is part of the MSU Safety Rules and Procedures. Failure to follow these procedures shall lead to disciplinary action per the MSU Progressive Disciplinary Action procedure for violation of MSU Rules. Any violation of the provisions of this program is cause for disciplinary action up to and including termination.

Lock-out. The placement of a lockout device on an energy-isolating device which ensures that equipment being controlled cannot be operated until the lockout device is removed.

Lock-out device: Examples include locks, chains, blank flanges and bolted slip blinds. Lock out devices are used to hold an energy-isolating device in a safe position and to prevent the start-up of machinery or equipment. Whenever possible a lockout device must be used along with a tag-out device.

Lockout/Tagout: The placement of a lock and tag on the energy isolating device in accordance with an established procedure, indicating that the energy isolating device shall not be operated until removal of the lock/tag in accordance with an established procedure. (The term "lockout/ tagout requires the combination of a lockout device and a tagout device).

Servicing and/or maintenance. Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Try and Verify. The act of turning "on" and "off' machinery to see if it has been isolated.

Primary Authorized Employees. Maintenance and department supervision; primarily first line supervisors on the first, second and third shifts

Principal Authorized Employee. Manager, Environmental, Health & Safety Dept. or his/her designee.

Qualified employee (person). Person who is familiar with the construction and operation of the equipment or machinery and the hazards involved.

Policy:

The University policy outlines lockout/tagout requirements as per OSHA's "Control of Hazardous Energy Sources" standard (29 CFR 1910.147) for identifying hazardous energy sources, safe shutdown and startup, and isolation and dissipation of hazardous energy. Lockout/tagout covers repair and maintenance of all machines and equipment in which unexpected start-up or release of stored energy could cause injury. This policy will insure that machinery or equipment are isolated from all potentially hazardous energy and locked/tagged out before employees perform any servicing or maintenance activities where the unexpected energization, startup, or release of stored energy could cause injury. For the purpose of this policy, "energy source" is defined as, "any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other type of energy."

Discipline

Any violation of this program will result in a formal incident report, employee and supervisor re-training, and if necessary disciplinary action up to and including termination of employment or contract services, for gross negligence by any contractor, manager, supervisor or employee.

Roles/ Responsibilities:

Employees are responsible for complying with all applicable sections of this standard. Facilities management and supervisors are responsible for ensuring that their employees are knowledgeable and follow applicable sections of these standards. Noncompliance with this standard—particularly failure to complete proper de-energization and lock-out device or removal of locks or tags without proper authorization—is considered a serious violation of company safety rules and will be addressed accordingly.

AUTHORIZED EMPLOYEES (AE)

a. Shall lock and tag all equipment that they are working with to protect from incidental start up.

b. Shall attend training classes for this level of compliance with the LOTO program.

c. Shall familiarize themselves with the specific lockout/tagout procedures for the equipment that they are working with.

d. Shall stop and ask prior to performing the task; whenever a question arises as to proper lockout/tagout procedures.

e. Shall be responsible for knowing:

f. The type and magnitude of energy.

g. The hazards of the energy to be controlled.

h. The method or means of controlling the energy.

- Shall lock and tag all equipment that they are working with to protect from incidental start up.

AFFECTED EMPLOYEES (E)

a. Is not allow perform maintenance activities on equipment or machine(s) if the employee is not authorized to do so

b. Do not attempt to start up equipment that has been isolated, locked, blocked and/or tagged.

c. Is not allow to perform or apply LOTO procedures (e.g., apply locks/tags to equipment) if the employee is not authorized to do so.

d. Shall not remove or damage locks and tags. Removal may place you and/or your fellow employees in serious danger.

e. Shall attend training classes for their level of compliance with the lockout/tagout program.

OTHER EMPLOYEES

a. Shall be aware of the University's Lockout/Tagout procedures that are in effect.

DEPARTMENT MANAGERS, PROJECT MANAGERS AND SUPERVISORS

a. Shall complete assessment for new projects to ensure proper lock out is possible.

b. Shall determine which specific applications require the use of a lockout/tagout procedure.

c. Shall provide support in the areas of safety and health as they relate to control of hazardous energy.

d. Shall ensure that all employees and contractors are trained as detailed in the training section of this procedure.

e. Shall ensure that there is an adequate supply of equipment necessary to execute hazardous energy control procedures.

f. Maintains awareness of all aspects of the University's lockout/tagout policy.

g. Ensures that all employees under their supervision understand the requirements for compliance with this policy and are made aware of the lockout/tagout procedure and are issued appropriate locks/tags.

h. Shall ensure that all authorized employees are performing proper lockout/tagout where required.

i. Conducts a periodic inspection of the energy control procedure at least quarterly to ensure that the procedure and the requirements of this policy are being followed.

j. Certifies that the periodic inspections have been performed.

k. Shall provide employees with the information (training) needed to meet the requirements of the lockout/tagout Program.

l. Shall provide on-the-training on specific equipment procedures in their areas.

m. Shall make copies of this procedure readily available to employees.

n. Shall promptly investigate and immediately report to EH&S any violations of this policy and any near misses or accidents related to LOTO.

ENVIRONMENTAL, HEALTH, AND SAFETY DEPARTMENT

a. Shall provide an effective written program to the facility, which includes procedures, training, and follow up.

b. Shall be authorized to halt any operation where there is danger of personal injury.

c. Shall assist in the development of specific procedures for individual departments.

d. Shall audit the equipment lockout/tagout procedures and this program at least annually.

e. Shall conduct routine audits of lockout/tagout procedures.

f. Shall assist with training and other information as it relates to lockout/tagout procedures.

g. Shall assist in the development of specific equipment lockout/tagout procedures.

Procedure: **PREPARATION FOR LOCKOUT AND/OR TAGOUT**

1. Prior to performing maintenance work on energized equipment the equipment shall be de-energized and locked out/tagged out.

2. Before a piece of equipment is turned off, the authorized person shall be properly trained. The authorized employees shall review the specific procedure for that piece of equipment if they are unclear as to the proper procedure.

3. LOTO shall be performed in accordance with the equipment-specific written procedures and only by authorized employees.

4. Notify appropriate affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment shall be shut down and locked out If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).

5. De-activate the energy isolating device(s) (such as switches, valves, circuit breakers, etc.) so that the machine or equipment is isolated from the energy source(s).

6. Lock or tag out the energy isolating device(s) with assigned individual lockout/tag out device(s). Always check for secondary energy source, making certain that they have been controlled.

7. Dissipate or restrain stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) by methods such as grounding, repositioning, blocking, bleeding down, etc.

8. Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment shall not operate.

9. **Caution:** Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

   Note: A qualified person (see Definitions) shall verify that all electrical circuit parts to which employees shall be exposed during service or maintenance are de-energized through the use of test equipment. This test shall also determine if any energized condition exist due to inadvertently induced voltage or unrelated voltage feedback even in circuits that have been de-energized and presumed safe. If the circuit to be tested is over **50 volts**, the test equipment shall be checked for proper operation before and immediately after the test.

ENERGY CONTROL PROCEDURE EXCEPTIONS

Once a facility evaluation has been accomplished, documented procedures need not to be developed when the following conditions 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 can be readily identified and isolated.

3. The isolation and locking out of that energy source shall completely de-energize and deactivate the machine or equipment.

4. The machine or equipment is isolated from that energy source and locked out during servicing or maintenance.

5. A single lockout device shall achieve a locked-out condition.

6. The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance.

7. The servicing or maintenance does not create hazards for other employees.

8. This employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance. In the event of such occurrences, energy control procedures shall be developed.

SEQUENCE OF LOCKOUT AND/OR TAGOUT SYSTEM

1. Notify all affected employees that a lockout or tagout system is going to be utilized and the reason therefore. Notification must be in such a manner as to ensure that each affected employee has actual notice of the implementation of lockout or tagout (e.g., in person or telephone notification).

2. The authorized employee(s) shall identify the type and magnitude of energy that the machinery or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.

3. The authorized employee(s) shall document the type and magnitude of energy, its hazards, and the methods of control.

4. If the machinery or equipment is operating, the authorized employee shall shut it down by the normal stopping procedures by depressing the stop button, opening the toggle switch, etc.

5. The authorized employee(s) shall operate the switch, valve or other energy isolating device(s) so that the machinery or equipment is blocked or isolated from its energy sources.

6. Lockout or tagout the energy isolating device(s) with assigned individual locks or tags. If the machinery or equipment cannot be locked out, use a tag only. The identity of the employee applying the lockout device shall be indicated on the device.

7. Stored or residual energy that may be contained in springs, elevator machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc. must also be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

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

9. Document the method of verifying the isolation of the equipment from the energy source(s).

   CAUTION - RETURN THE OPERATING CONTROLS TO THE NEUTRAL OR OFF POSITION AFTER THE TEST.

10. The equipment is now locked out or tagged out.

PERSONAL LOCKOUT REQUIREMENTS

1. When any person is working on a machine, system, etc., and so is at risk of injury, that person will place a lock and tag to prevent operation of the machine or equipment. The Owner Field Representative must place a lock and tag, and a plant representative may place one before any person can attach their personal lock and tag. The person placing the lock will retain the key in his or her possession and will remove the lock and tag at the completion of the work, or whenever he or she leaves the site.

2. Where a lock cannot secure the machine or system against unexpected operation, some other suitable means, such as blanks, chains, wedges, or blocks will be used. Such devices must render the machine or equipment inoperable and will be tagged.

3. If the person is a contractor or vendor employee, that person can request confirmation of the effectiveness of the lockout by testing the operation or witnessing any tests performed by others.

4. The tag shall identify the person, his or her employer, the date and time the tag was placed, and the machine or equipment being locked out.

TESTING OF EQUIPMENT ("LOCK, TAG, AND TRY")

1. After any machine or system has been locked out and tagged, and before any other work is done by any person, the machine or system must be tested to verify the effectiveness of the lockout.

2. Where applicable, the test can be an attempt to start operation; a visual inspection of blanks, locks, parts which have been removed, or blocks or clamps which have been installed; atmospheric testing; the taking of pressure readings from existing gauges or instruments; or voltage checks.

3. On more complex systems, such as manifolds or conveyor grids, or where any attempt to operate could result in damage to the system, an appropriate testing procedure will be planned in advance, recorded on the attached form, and a copy placed in the field office files; and, upon execution of the test, a record kept of the test and the results. If the facility has a written procedure for locking and testing specific equipment or systems, a copy of that procedure shall be used for the testing required by this bulletin, if not, a procedure listing the requirements for the particular lockout shall be developed. This procedure shall list items such as switches, valves, breakers etc. to be locked. A copy of the appropriate procedure shall be located near the primary lock and tag. The copy shall be turned into the task or project owner(s) upon completion of the work.

GROUP LOCKOUT

A group lockout may be used when one or more authorized LOTO authorized employee(s) must lockout multiple points:

1. An authorized employee(s) applies his /her lockouts on each required lockout point.

2. The authorized employee(s) then places his/her keys from the lockouts inside a group lockout box, closes the lockout box cover and applies a lockout on the cover of the group lockout box.

3. Additional authorized LOTO authorized employee(s) applies his/her individual lockout to the group lockout box cover.

RESTORING MACHINERY OR EQUIPMENT TO NORMAL OPERATIONS

1. When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

2. Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.

3. Check the work area to ensure that all employees have been safely positioned or removed from the area.

4. Verify that the controls are in neutral.

5. Remove the lockout devices and reenergize the machine or equipment.

   Note: The removal of some forms of blocking may require re-energization of the machine or equipment before safe removal.

6. Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

TRAINING AND INSPECTIONS

1. Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

2. Any changes, additions, or modifications to equipment that necessitate changes to equipment de-energization and isolation procedures must be made known to authorized employees before servicing or maintenance activities begin. Lockout written procedures must be updated and the Environmental, Health & Safety Department must be notified.

3. At least annually, an authorized employee other than the one(s) utilizing the energy control procedure being inspected shall perform the periodic inspection. This periodic inspection shall include:

   a. Deviations and/or inadequacies are identified, reviewed, corrected and communicated to all authorized and affected employees;
   b. Lockout Tagout procedures are adequate;
   c. Authorized and affected employees know their procedure responsibilities;
   d. Procedures are being followed.
   e. The periodic inspection results must be documented and shared with authorized employees, who in turn will share them with their subordinate authorized employees. Affected employees must also be made aware of the periodic inspection results.

4. The inspection findings can be the subject of a periodic safety meeting. Any deficiencies noted during the audit will be assigned to area or maintenance supervision for prompt corrective actions.

5. Control of hazardous energy training, including discussions of audit results, must be documented by department managers or supervisors.

EMPLOYEE RETRAINING

1. Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignment, or a change in equipment or processes that present a new hazard, or when there is a change in LOTO procedures.

2. Additional retraining shall also be conducted whenever a periodic inspection, near miss or accident reveals that there are deviations from or inadequacies in the employee's knowledge or use of the LOTO procedures.

CONTRACTOR ACTIVITIES/GROUP LOCKOUT

1. Contractors must have lockout and tagout procedures written with university facilities' concurrence. The procedure must comply with either OSHA 29 CFR 1926.417 or with 29 CFR 1910.147 as a minimum. If the work to be done will affect existing operations, the task or project owner (s) will confirm in the minutes of the coordination meeting that the University Facilities Management and the contractor understand each other's procedures.

2. When more than one employee works on the same equipment, each employee shall attach his personal lock and tag to the lockout device for that equipment.

3. Exceptions shall be made when a crew is working in an area where there are multiple energy sources to be controlled. The procedure is as follows:

4. University Facilities Management shall designate employees authorized to lockout and tag all equipment worked on.

5. After locking and tagging all affected equipment, management shall place the key or keys to these locks in a lockable box or cabinet (LOCKBOX) and then place their personal lock and tag on the lockbox.

6. Each employee working on that equipment shall place their personal lock or in combination with department locks on the lockbox until they have completed their work, or been relieved. (The use of multiple lock hasps shall be used if necessary).

7. When the work is finished and the last employee has removed his lock and tag, Management shall then remove their lock and tag to retrieve the key or keys to the locks and tags on the equipment isolation devices.

8. Each employee is held responsible for the prompt removal of his lock and tag when his work has been completed, or they have been relieved.

9. In no case shall anyone be assigned to remove another employee's lock and tag except the supervisor, or his designee. They shall have the lock and tag removed only after following the procedures outlined in section of this program.

SHIFT OR PERSONNEL CHANGES

1. This procedure shall be used during shift or personnel changes to ensure the continuity of lockout/tag out protection, for individual and group lockout/tag out.

2. When a job is to be extended from one shift to another, the relieving employee or the supervisor shall attach his lock/tag to the lockout device before the employee going off shift removes his lock/tag. If the supervisor places his lock/tag on the device instead of the oncoming employee, the oncoming employee places his/her lock/tag on the device before starting.

Note: Personal LOTO devices are not allowed to pass from shift to shift. At the end of the shift, the LOTO device must be completely removed and the on-coming shift will implement their own LOTO devices.

3. Re-testing shall be done to ensure the de-energized state of the equipment.

4. Employees shall discuss the status of maintenance or servicing and any notification of start-up or testing to be performed.

EMERGENCY REMOVAL OF PERSONAL LOCKOUT/TAGOUT (LOTO) DEVICE(S)

1. If a personal lockout/tagout (LOTO) device(s) is to be removed from a locked out or tagged out machine(s) or equipment(s) and the authorized employee(s) is not on site, this procedure is to be followed.

2. The MSU Supervisor and Crew Leader or Lead Worker must agree that the removal is required. The potential consequences of operating the equipment, both to personnel and the equipment shall be considered in the decision.

3. If it is decided the LOTO device(s) must be removed, the Supervisor or his/her designee, shall attempt to make contact with the authorized employee(s) to have the LOTO device(s) removed. If practical, the employee(s) shall return to the site and personally remove his/her LOTO device(s).

4. If the authorized employee(s) whose LOTO device(s) is to be removed cannot be contacted or cannot return to the site, it is imperative that every effort be made to assure no one will be put in danger by removing or cutting off the LOTO device(s) off.

5. The decision to remove or cut the LOTO device(s) must be made by the employee's Supervisor or higher ranking member of the Department.

6. An "**EMERGENCY LOCKOUT/TAGOUT (LOTO) DEVICE(S) REMOVAL FORM**" (See Appendix B) must be completed and signed by the Supervisor. The form serves to document the incident and also serves as a checklist for the LOTO device(s) removal procedure. A copy of the form will be forwarded to the employee's(s') Department head and to the Safety and Workers' Compensation Office for review and retention.

7. The employee(s) whose LOTO device(s) was removed shall be immediately notified by their Supervisor of the emergency LOTO device(s) removal upon his/her return to work.

CONTRACTORS

1. Contractors must be required to identify their lockout/tagout devices. The device shall include a Danger Tag containing the name of the company, the individual applying the device and a 24-hour phone number where the company representative can be reached.

2. The department manager or project managers responsible for the outside contractor shall require a copy of the contractor's Lockout - Tagout procedures and LOTO training certificates of all employees maintaining or servicing our machinery or equipment. The project manager(s) or department manager(s) shall make the contractor's procedures available to MSU employees and/or to other outside contractors who shall have a need to know.

3. All contractors and vendors must provide their own LOTO energy isolation and safety devices, including lock boxes, and confined space rescue equipment and training, unless a contractual arrangement between the contractor and the University states differently, and therefore, must be authorized, with EHS concurrence and via a written record, by the Vice President of University Facilities.

DISTRIBUTION

1. Distribution of documents outside of MSU is restricted. The Environmental, Health, and Safety Department can authorize specific distribution as needed.

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APPENDIX I
PROCEDURES FOR SECURING POWERED EQUIPMENT

Equipment powered by an energy source other than electricity, (i.e., steam, compressed air, hydraulic oil, etc.) that are valve controlled shall be locked, chained or otherwise restrained and locked out to prevent accidental opening that would present a hazard. “DANGER” tags shall be place on all mechanical levers and switches to indicate work is being performed on the machine and the levers and switches shall not be tampered with. These devices shall be treated as lockouts with regard to their removal.

To prevent a machine’s operating parts and certain mechanical equipment from slipping accidentally when the energy source is shut off, movement shall be made impossible by: blocking gears, dies, or other mechanism; releasing springs, spring-loaded devices, and securing cams; and putting blocks under raised dies or any equipment that shall accidentally fall, slide or otherwise move.

Written Lockout procedures shall be available for each piece of equipment. If the employee is unsure of the correct disconnect switch, valve, control valve or lock-out procedure, the employee shall contact the supervisor. The responsibility for maintaining proper lockout or tagout procedure and keeping them available in the Grey Boxes (or other known location) located in the department, is the responsibility of the Unit Safety Coordinator. These Boxes shall be inspected monthly by the Audits and Inspections Team.

Locks and tags attached to equipment shall not be tampered with or removed by other than the “Authorized” employee who applied the lock or tag. If the “**Authorized**” employee who applied the lock or tag is not available to remove it, the device shall be removed under the direction of the supervisor. The supervisor shall carefully analyze the situation and verify that “Authorized” employee that the applied device has been removed, and ensure the ”Authorized” employee is aware the device has been removed before the employee resumes work. The supervisor shall further verify no one’s safety would be jeopardized by removing the device.
Lockout and/or tagout devices shall not be left on repaired or clean equipment without notifying the immediate supervisor.

When equipment shall be powered to perform repairs, cleaning, or test, the work shall be done with caution and only with management approved instructions. If the equipment shall then be de-energized to continue service or maintenance, the procedures for applying lockout or tagout devices shall be followed.

Any violation of this signed instruction shall subject the violator to disciplinary action, up to and including discharge.

APPENDIX II -

GENERAL PROCEDURES FOR CONDUCTING LOCKOUT/TAGOUT OF ELECTRICAL ENERGY SOURCES AT MOTOR CONTROL CENTERS, (MCC) FOR MACHINE SPECIFIC LOCKOUT

To isolate equipment in preparation for shut down the following steps are to be followed in sequence:

2. Notify all affected employees that lockout/tagout is going to be implemented and the reasons why.

3. Shut down the equipment to be worked on.

4. Identify the motor number for the equipment. This number is identified on the label attached to the motor. The number shall also be found on the equipment lockout procedure for the specific equipment.

5. Identify the motor control center, or MCC, for the motor in question. This number shall also be on the label attached to the motor.

6. At the MCC locate the electrical disconnect for the motor involved. The number shall be the same as the number on the label.

7. Place the disconnect switch in the off position.

8. With the electrical in the off position place an approved adapter on the switch in the "Off" or "Lock" position.

9. Attached your lock and tag on the adapter. Be sure that you name and the date are written on the tag.

10. Before starting to work on the equipment be sure to attempt to start the equipment. This step is necessary to assure that the right motor has been locked out.

11. Identify the local disconnect switch for the motor in question. This number shall also be on the label attached to the motor.

12. At the local disconnect for the motor involved, verify that the identification number is the same as the number on the label.

13. Place the disconnect switch in the off position.

14. With the disconnect switch in the off position place an approved adapter on the switch in the "Off" or "Lock" position.

15. Attached your lock and tag on the adapter. Be sure that you name and the date are written on the tag.

16. Before starting to work on the equipment be sure to attempt to start the equipment. This step is necessary to assure that the right motor has been locked out.

APPENDIX III -

GENERAL PROCEDURES FOR CONDUCTING LOCKOUT/TAGOUT OF PNEUMATIC OR HYDRAULIC ENERGY SOURCES USING A QUARTER TURN BALL VALVE LOCKOUT FOR MACHINE SPECIFIC LOCKOUT

To isolate equipment in preparation for shut down the following steps are to be followed in sequence:

1. Shut down the equipment to be worked on.

2. Identify the number for the control valve for the equipment. The number shall be found in the equipment lockout procedure for the specific equipment.

3. Identify the location of the ball valve for the equipment in question. This location shall be on the label attached to the equipment.

4. At the ball valve for the equipment involved, verify that the identification number is the same as the number on the equipment label.

5. Place the ball valve in the closed position.

6. With the ball valve in the closed position place an approved adapter on the valve handle.

7. Attached your lock and tag on the adapter. Be sure that you name and the date are written on the tag.

8. Before starting to work on the equipment be sure to attempt to start the equipment. This step is necessary to assure that the right ball valve has been locked out.

APPENDIX IV

GENERAL PROCEDURES FOR LOCKOUT/TAGOUT OF PNEUMATIC OR HYDRAULIC ENERGY SOURCES USING A HAND VALVE LOCKOUT

To isolate equipment in preparation for shut down the following steps are to be followed in sequence:

1. Shut down the equipment to be worked on.

2. Identify the number for the control valve for the equipment. The number shall be found in the equipment lockout procedure for the specific equipment.

3. Identify the location of the hand valve for the equipment in question. The location shall be on the label attached to the equipment.

4. At the hand valve for the equipment involved, verify that the identification number is the same as the number on the equipment label.

5. Place the hand valve in the closed position.

6. With the hand valve in the closed position place an approved adapter on the handle.

7. Attached your lock and tag on the adapter. Be sure that you name and the date are written on the tag.

8. Before starting to work on the equipment be sure to attempt to start the equipment. This step is necessary to assure that the right hand valve has been locked out.

APPENDIX V

PROCEDURES FOR SECURING POWERED EQUIPMENT – ELECTRICAL

To ensure machinery or equipment cannot be started or set in motion when maintenance, construction, servicing or sanitation are in progress, the following procedures are to be followed:

1. "Affected" employees working with moving equipment shall be notified by the "Authorized" employee or supervisor of the application of lockout/tagout procedure including de-energization of equipment before the lockout device is applied.

2. "Authorized" employees shall have knowledge of the type and magnitude of energy, hazards of the energy to be controlled, and the method to control the energy. If the "Authorized" employee is unsure of any of these items, the employee shall contact the supervisor. The supervisor is responsible for identifying and verifying the proper lockout/tagout procedure is followed in such cases. Only "Authorized" employees shall implement the lockout/tagout procedure.

3. Each "Authorized" employee working on the equipment is required to lockout the power disconnect with his/her own lock. The lockout device shall be attached to hold the power disconnect in the **lockout** or **OFF** position. Locking out push buttons or key switches does not satisfy this requirement, if electrically driven equipment cannot be locked out, "**DANGER**" tags (tagout) shall be attached to each switch and/or main disconnect switch for the applicable equipment after the appropriate disconnect switch within an electrical panel is de-energized. If available, the main panel door shall be locked with the lockout device tagged to identify the person whose lock is on the door. If the main panel cannot be locked out, corrective action to modify the panel shall be taken immediately.

4. Following the application of the lockout/tagout devices to energy control devices, ALL potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and the equipment qualified as safe. Verification of de-energization shall continue until all possibility of accumulated energy is eliminated.

5. After the lockout/tagout devices are in place, the start switch shall be activated to assure the preventive measures do not allow the equipment to operate. After the lockout is tested and considered effective, blockout devices, if required, shall be installed.

6. Release of LOTO: Inspection of the work area and the equipment shall be done prior to restarting the equipment to ensure that all people, parts, tools etc. have been cleared from the area.

7. "Affected" Employees in the work area shall be safely positioned for the equipment restart.
8. "Affected" employees shall be notified the lockout/tagout devices have been removed. The devices shall be removed by the "Authorized" employee who applied the device.

9. If an "Authorized" employee has not completed his/her job by the end of the shift, the person following shall place his/her lock on the lockout device prior to removing the prior shift's lock. Employees leaving their lock or tag on equipment shall not leave the campus without informing their supervisor.

10. In the event a LOTO is installed and the "authorized" employee is not available, the following guideline shall be followed for its removal:

    a) Only a member of supervision shall implement this procedure.
    b) The supervisor shall verify that the "authorized" employee is not available at the facility and make a reasonable attempt to reach the employee regarding the job and removal of the LOTO device.
    c) The "authorized" employee's immediate supervisor, together with the applicable maintenance supervisor, shall personally inspect both the work performed and the job site to determine repair status.
    d) If equipment and work area are judged safe by both supervisors, the LOTO device can be removed, utilizing proper LOTO procedure, in lieu of the "authorized employee.
    e) The immediate supervisor shall notify the "authorized" employee, before resuming work, that the LOTO device has been removed. The "authorized" employee shall be counseled on proper LOTO procedures.

11. To facilitate shift changes, a group lockout or tagout device shall be installed. The supervisor is responsible to coordinate the change and ensure continuity of protection. Each "Authorized " employee shall attach his/her own lockout or tagout device to the group lockout or tagout when starting work on the equipment and remove when the employee stops work on the equipment.

12. Any individual who notices a condition where an electrical hazard exits shall avoid contact with such an area and contact a person qualified in electrical work practices to safely eliminate the hazard before any work begins.

APPENDIX VI - EMERGENCY LOCKOUT/TAGOUT (LOTO) DEVICE(S) REMOVAL FORM

If a personal lockout/tagout (LOTO) device(s) is to be removed from a locked out or tagged out machine(s) or equipment(s) and the authorized employee is not on site, this form is to be completed by the employee's Supervisor.

Authorized Employee: _____ Type of Device: _____

Department: _____ Device Location: _____

Check off items as completed

_____ 1. The Supervisor and Crew Leader or Lead Worker have agreed the removal is required. The potential consequences of operating the equipment, both to personnel and the equipment were considered in the decision.

_____ 2. The Supervisor or his/her designee, has attempted to make contact with the authorized employee to have the LOTO device(s) removed. Circle manner in which contact was attempted: telephone, pager, search of site, other (specify): _____

_____ 2.1. The employee was contacted but it was not practical for him/her to return to site. Reason: _____

_____ 2.2. The employee could not be contacted.

_____ 3. Every effort has been made to assure no one will be put in danger by removing or cutting off the LOTO device. The decision to remove or cut the LOTO device was made by the employee's Supervisor or higher ranking member of the Department.

_____ 4. The employee designated to remove or cut the LOTO device, (print name) _____, has been appropriately trained in lockout and tagout procedures.

****IF ITEMS 1, 2, 3 & 4 HAVE BEEN CHECKED OFF, ****
**** THE LOTO DEVICE(S) MAY BE REMOVED OR CUT OFF****

Signature: _____
Authorized Employee Date

Signature: _____
Authorized Employee's Supervisor Date

A copy of this completed form shall be forwarded to the employee's Department head and to the Facilities Office for review and retention.

Signature: _____
Authorized Employee's Department Head Date

Signature: _____
Environmental, Health, and Safety Director Date

APPENDIX VII

"DANGER -- DO NOT OPERATE" TAG

"DANGER – Equipment Locked Out" TAG

"NOTICE -- TEMPORARILY OUT OF USE" TAG

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APPENDIX VIII

LOCK, TAG AND TRY SIGNATURE LOG

DEPARTMENT LOCK NUMBER USED	EQUIPMENT	DATE LOCKED OUT	OWNING DEPARTMENT REPRESENTATIVE	ENGINEERING OR MAINTENANCE DEPARTMENT REPRESENTATIVE	CONTRACTOR REPRESENTATIVE (IF APPLICABLE)	DATE LOCK REMOVED

APPENDIX IX

Lockout Isolation and Safety Devices Inventory

1. Locks with Non-Removable Tag with Bldg. or Area # I.D.
2. Valve Covers -- assorted sizes
3. Chains for large valve lockout
4. Circuit breaker blocks
5. Electrical cord -- plug blocks
6. Authorized Tags - Danger & Notice/Caution
7. Plastic Straps
8. Hasps for Multiple Lock Acceptances

No supplies to be ordered without prior approval of Environmental, Health & Safety Department.

APPENDIX X

LOTO procedures distributed by Maintenance work order system

	Lockout point	Lock out device to be used	Maintenance check off	Supervisor check off	Does not apply
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

No lock out sequencing is required. On completion of job return equipment to operation personnel.

Operator Signature: _____Date: _____

Maintenance Signature: _____Date: _____

APPENDIX XI

Machine/Equipment Inventory