



# **LOCK OUT / TAG OUT PROGRAM**

Pursuant to 29 CFR § 1910.147  
(Control of Hazardous Energy)

**NEW MEXICO STATE  
UNIVERSITY**

Las Cruces, New Mexico

**ENVIRONMENTAL,  
HEALTH & SAFETY**

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# TABLE OF CONTENTS

<b>1.0 PURPOSE.....</b>	<b>3</b>
<b>2.0 SCOPE .....</b>	<b>3</b>
<b>3.0 DEFINITIONS .....</b>	<b>4</b>
<b>4.0 APPLICATION.....</b>	<b>6</b>
<b>5.0 ENERGY CONTROL PROGRAM.....</b>	<b>6</b>
<b>6.0 RESPONSIBILITIES .....</b>	<b>7</b>
<b>7.0 EMPLOYEE TRAINING AND RETRAINING.....</b>	<b>7</b>
<b>8.0 PROCEDURE for ISOLATING ENERGY SYSTEMS.....</b>	<b>8</b>
<b>9.0 PROCEDURE for LOCKING OUT ENERGY SOURCES .....</b>	<b>8</b>
<b>10.0 PROCEDURE for TAGGING OUT ENERGY SOURCES .....</b>	<b>10</b>
<b>11.0 TAGOUT LIMITATIONS.....</b>	<b>10</b>
<b>12.0 PROCEDURE for LOCKOUT INTERRUPTION.....</b>	<b>10</b>
<b>13.0 RELEASE FROM LOCKOUT OR TAGOUT.....</b>	<b>11</b>
<b>14.0 LOCKOUT OR TAGOUT DEVICES REMOVAL .....</b>	<b>11</b>
<b>15.0 PERIODIC INSPECTIONS .....</b>	<b>12</b>
<b>16.0 PROCEDURE for GROUP LOCKOUT OR TAGOUT.....</b>	<b>13</b>
<b>17.0 SHIFT OR PERSONNEL CHANGES .....</b>	<b>13</b>
<b>18.0 SPECIFIC ENERGY CONTROL PROCEDURES .....</b>	<b>14</b>
<b>ATTACHMENT - Distribution Letter and List (February 11, 2009) .....</b>	<b>15</b>



# **New Mexico State University**

## **LOCKOUT/TAGOUT PROGRAM (Control of Hazardous Energy)**

### **1.0 PURPOSE**

1.1 This program contains requirements for the control of energy during servicing and/or maintenance of machines and equipment. The safety of all employees is the foremost objective of the program as set forth by New Mexico State University and as defined by OSHA in 29 CFR 1910.147.

### **2.0 SCOPE**

2.1 This program covers the servicing and maintenance of machines and equipment in which the "unexpected" activation or start up of the machines, equipment or release of stored energy could cause injury to employees. These are the minimum performance requirements for the control of such hazardous energy. This procedure applies to all employees or contractors who work or plan to work on NMSU facilities.

2.2 Each employee who may be required to work on machines or equipment as defined in Section 2.1, shall be instructed in the safety significance of the lockout/tagout procedures. Each new or transferred employee and other employees whose work operations are or may be in the area shall be instructed in the purpose and use of the lockout or tagout procedures.

2.3 Each authorized employee shall be issued or have access to a padlock or padlocks for lockout use. This padlock will only be used for lockout conditions and shall only be removed by the employee that uses it to lock out a machine, equipment or stored energy. The basis for this program is one person, one lock, one key. No person may release another's lock, use another's key, or work under another's lock. The only exception permitted is where the employee installing the lockout becomes unable or unavailable to remove it. In this event the supervisor has the right to override the lockout by first placing their lock on the device, then removing the non-responsive employee's lock and, after verifying the safety of the situation, removing their lock (refer to Section 6.0).

2.4 Employees shall also affix a tag when locking and/or tagging out a system or source. The tag shall meet OSHA's requirements for tags, as stated in Section 3.

### 3.0 DEFINITIONS

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

3.2 **Authorized Employee** - A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

3.3 **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 built in locking mechanism. 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.

3.4 **Contractor** - A person or company hired by NMSU for a job or purpose of completing work for a specified job on NMSU equipment or facility. When any outside servicing personnel are engaged in activities covered by the scope and application of this standard, NMSU and the outside contractor shall inform each other of their respective lockout and tagout procedures.

3.5 **EH&S** - Environmental Health & Safety

3.6 **Energized** - Connected to an energy source or containing residual or stored energy.

3.7 **Energy-isolating Device** - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

- (a) A manually operated electrical circuit breaker,
- (b) A disconnect switch,
- (c) 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;
- (d) A line valve;
- (c) A block; or
- (d) Any similar device used to block or isolate energy.

**NOTE:** Push buttons, selector switches and other control circuit type devices are not energy-isolating devices.

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

3.9 **Hot Tap** - A procedure used in the repair maintenance and services activities which involves welding on a piece of equipment (pipeline, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam and petrochemical distribution systems.

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

3.11 **Lockout Device** - A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy-isolating device in the safe position and prevent the energizing of a machine or equipment. The device shall be singularly, positively identified, shall be used ONLY for controlling hazardous energy devices; shall be durable and capable of withstanding all environments; printed and constructed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible. Included are blank flanges and bolted slip blinds.

3.12 **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 un-jamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energizing or startup of the equipment or release of hazardous energy.

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

3.14 **Supervisor** - The person responsible for the action, starting the process or directing any and all activities particular to the maintenance, production, set-up, or clean up processes.

3.15 **Tag** - The information tag that authorized employees use to identify the lockout operation and provide secondary notification of inactivity of an energy device. Tags should be of durable material, not able to deteriorate so the information becomes illegible, standardized as far as color, shape, and size, have minimum unlocking strength of 50 pounds.

3.16 **Tagout** - The placement of a tag 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.

3.17 **Tagout Application** - tags shall be affixed to the authorized employee's lock and shall provide identification per 3.15. If an energy-isolating device is not able to be locked out, tags must be affixed using nylon cable ties able to withstand at least 50 pounds of separation force.

3.18 **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 tagout device is removed. The legend shall include one (1) or more of the following: "DO NOT START," "DO NOT OPEN," "DO NOT CLOSE," "DO NOT ENERGIZE," and/or "DO NOT OPERATE."

#### 4.0 APPLICATION

4.1 Normal operations are not covered by this procedure. Routine servicing and/or maintenance (i.e., adjusting, lubricating, un-jamming) which takes place during normal production operations is covered by this procedure only if:

4.1.1 An employee is required to remove or bypass a guard or safety device;  
-OR-

4.1.2 An employee is required to place any part of his/her body into an area or machine, or piece of equipment where work is actually performed upon the material being processed (point of operation), or where an associated danger zone exists during a machine operating cycle.

4.2 This program does not apply to the following:

4.2.1 Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energizing or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

4.2.2 Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that the employer demonstrated that:

4.2.2.1 Continuity of service is essential;

4.2.2.2 Shutdown of the system is impractical; and

4.2.2.3 Documented procedures are followed, and special equipment is used which will provide proven, effective protection for employees.

#### 5.0 ENERGY CONTROL PROGRAM

5.1 This program consists of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative.

5.2 If an energy-isolating device is not capable of being locked out, continue to Section 10.0, Procedures for Tagging Out Energy Sources, and Section 11.0, Tagout Limitations.

## **6.0 RESPONSIBILITIES**

6.1 Supervisor - It shall be the responsibility of all supervisors of employees performing such operations to ensure that formal training is provided on the program and to further inform their employees on the application this program to specific conditions and equipment under their control. Further, the supervisor shall periodically follow up to ensure compliance correct and/or report any deficiencies in equipment, devices or training that would prevent implementation of this program.

6.2 EH&S is responsible for program development, evaluation and formal employee training on the program. If it is determined that the requirements of this program are not being followed, personnel from EH&S shall initiate corrective action. Wherever possible, instructions will be issued through the regular supervisor of the person violating the rules, but in cases of a serious hazard, immediate corrective action shall be taken, followed by contact with the direct supervisor or higher level of management of the department involved.

6.3 Management is responsible for ensuring that sufficient equipment, devices, and employee training are provided at all NMSU facilities to safely implement this program.

## **7.0 EMPLOYEE TRAINING AND RETRAINING**

7.1 NMSU will provide training to ensure that the purpose and function of the energy control program are 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. The training shall include the following:

7.1.1 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.

7.1.2 Each affected employee shall be instructed in the purpose and use of the energy control program.

7.1.3 All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure and about the dangers relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out.

7.1.4 All authorized and affected employees shall be formally trained on the Lockout/Tagout Program. The documentation of the training shall contain the

employee's name, a unique identification number, designated work type (or shop) and training date(s).

7.1.4.1 Retraining shall be provided for all authorized and affected employees on an annual basis or whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.

7.1.4.2 Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

7.1.4.3 Retraining shall re-establish employee proficiency and introduce new or revised control methods and procedures as necessary.

7.1.4.4 The employer shall certify that employee training has been accomplished and is being kept up to date.

## **8.0 PROCEDURE for ISOLATING ENERGY SYSTEMS**

8.1 Whenever major equipment or a machine is repaired, renovated, replaced, modified and whenever new machines or equipment are installed, energy-isolating devices for such machines or equipment shall be designed to accept a lockout device.

## **9.0 PROCEDURE for LOCKING OUT ENERGY SOURCES**

9.1 Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.

9.2 All authorized employees before servicing or maintaining equipment covered under this policy, shall locate and lockout the main power sources of that equipment as follows:

9.2.1 Notify all directly affected employees before lockout/tagout controls are applied. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.

9.2.2 Authorized employees shall affix lockout devices to each energy-isolating device and other affected equipment. If any controls are blocked or fuses removed, the authorized employee must ensure that system cannot be readily put back into service by someone else. Each person directly involved in the service or maintenance shall attach their own lock (special multi-type lock clamps will be made available) and maintain their key to their lock. In order to lock out the energy source, any equipment not provided with a lockout device shall be modified to accept a lock.

9.2.3 Attach "DANGER- DO NOT OPERATE" tags to all open devices. Annotated with employee name, date, phone number, area, and stating reason for the discon

9.2.4 When a tag cannot be affixed directly to the energy-isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

9.2.4.1 Switches that open only the control circuit, i.e., the start-stop stations, are not positive disconnects and shall not be used for lock out protection.

9.2.5 Once locked out and after ensuring that no affected employees are exposed, the equipment shall be tested to verify that it has been de-energized. This includes pushing control buttons and other pertinent equipment to ensure no pressure build up, no energized circuits are present, and to inspect for any moving equipment that should be de-energized. All switches shall be returned to the neutral or the "off" position after testing.

9.2.6 Following the application of lockout or tagout devices to energy-isolating devices, all potentially hazardous residual energy must be relieved, disconnected, restrained, blocked or otherwise rendered safe (i.e., hydraulic pressure, spring tension, air pressure, and/or residual voltage).

9.2.7 If there is a possibility of re-accumulation of stored energy to a hazardous level, repeated verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

9.2.8 All mishaps, unlocked conditions, unsafe conditions and/or any faulty connections are to be reported to area or shop supervisor immediately.

9.2.9 Open disconnect are not to be closed unless the authorized employee is certain that it is safe to do so.

9.2.10 Contractors will furnish and use their own locks. Contractors shall be familiar with and use the same lockout/tagout procedures or procedures similar to the one used by University employees.

9.2.11 When two (2) different crafts persons are working on the same equipment, every person or crew member shall lockout and tag the isolation device. Upon completion of their part of the project, each person shall remove their lock and informs the supervisor. When the project is completed, each person shall remove and give their tag to their supervisor for documentation of the completion.

9.2.12 If any locks are left on the completed project, the authorized employee shall not remove the tag; but inform the supervisor immediately. Refer to the procedures

in Section 14.0, Lockout or Tagout Devices Removal, to address the removal of locks if an employee who placed the lock is not available to remove it.

## **10.0 PROCEDURE for TAGGING OUT ENERGY SOURCES**

10.1 Under certain conditions, tagging out an energy source may be an acceptable alternative to a lockout device. However, when absolutely necessary to use only a tagout device, the following will apply:

10.2 Specific written procedures, approved by the supervisor and EH&S, will be developed for each piece of equipment requiring a tagout device in lieu of a lockout lock.

10.3 Tags shall be placed at the start control panel and where possible at the isolating device where the lock would have been placed.

10.4 Where possible, an additional means of protection shall be employed, i.e., the physical blocking of a control switch, removal of a valve handle, the removal of a circuit element, etc.

## **11.0 TAGOUT LIMITATIONS**

11.1 Tags are essentially warning devices affixed to energy-isolating devices and do not provide the physical restraint on those devices that are provided by a lock. Employees shall also be trained in the following limitations of tags.

11.2 When a tag is attached to an energy-isolating device means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored or otherwise defeated.

11.3 Tags must be legible and understandable by all authorized employees, affected employees and all other employees whose work operations are or may be in the area in order to be effective.

11.4 Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

11.5 Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

11.6 Tags must be securely attached to energy-isolating devices so that they cannot be inadvertently or accidentally detached during use.

## **12.0 PROCEDURE for LOCKOUT INTERRUPTION**

12.1 In situations where lockout and/or tagout devices must be temporarily removed from the energy-isolating device and the equipment energized to test or position the equipment or components, the following sequence shall be followed:

12.1.1 Clear the equipment of tools, materials and personnel.

12.1.2 Clear the controls of locks and/or tags.

12.1.3 Visually ensure all personnel are clear.

12.1.4 Energize the equipment for testing or positioning.

12.1.5 De-energize all systems and reapply energy control measures in accordance to Section 9.0, Procedures for Locking Out Energy Sources, to continue servicing and/or maintenance.

### **13.0 RELEASE FROM LOCKOUT OR TAGOUT**

13.1 Before lockout or tagout devices are removed and energy is restored to the machine or equipment, the following actions shall be taken by the authorized employee(s) to ensure the following:

13.1.1 The work area shall be inspected to ensure that non-essential items have been removed and to ensure that machine or equipment components are operationally intact.

13.1.2 Before lockout and/or tagout devices are removed, affected employees shall be notified that the lockout or tagout devices are to be removed.

13.1.3 The work area shall be visually checked to ensure that all employees have been safely positioned or removed before lockout or tagout devices are removed.

13.1.4 Each lockout or tagout device shall be removed from each energy-isolating device by the authorized employee who installed the lock and tag.

13.1.5 After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout device(s) have been removed.

### **14.0 LOCKOUT OR TAGOUT DEVICES REMOVAL**

14.1 When the authorized employee who applied the lockout or tagout device is not available or able to remove it, that device may be removed only under the direction of the supervisor, provided that specific procedures and training for such removal have been developed, documented and incorporated into the energy control program. The procedure shall include the following elements and sequence:

14.1.1 The supervisor or his representative shall verify that the authorized employee who applied the device is not at the facility or is unable to remove the device because of injury or other condition.

14.1.2 If the authorized employee that applied the lockout or tagout device is absent, the supervisor shall make all reasonable efforts to contact and inform the employee of the need to remove the device (documentation should include time and date of the effort and if any one is contacted).

14.1.3 The supervisor or an authorized person shall place their lock on the lockout device. After placement of their lock, the supervisor or an authorized person under the supervisor's direction shall remove the lock of concern. After removing the lock and "before release from lockout", the authorized person shall follow the procedures in Section 13.0, Release From Lockout or Tagout.

14.1.4 The supervisor shall ensure that the authorized employee who applied the device is informed of the removal before the employee resumes work.

## **15.0 PERIODIC INSPECTIONS**

15.1 The supervisor shall conduct or arrange a periodic inspection of the energy control program at least annually to ensure that the procedures and the requirements are being followed.

15.2 This periodic inspection shall be performed by an authorized employee other than the one(s) utilizing the energy control procedure being inspected.

15.3 The results of the periodic inspection shall be used to correct any identified safety deficiencies, deviations or inadequacies.

15.4 Where energy control can be achieved by lockout procedures, the periodic inspection shall include a review, between the supervisor and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.

15.5 Where energy control can only be achieved by tagout procedures, the periodic inspection shall include a review, between the supervisor and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected and the elements set forth in this program.

15.6 The supervisor shall document that the periodic inspections have been performed. The documentation shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection and the person performing the inspection.

## **16.0 PROCEDURE for GROUP LOCKOUT OR TAGOUT**

16.1 When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

16.2 Group lockout or tagout devices shall be used in accordance with the procedures required by this program, but not necessarily limited to, the following specific requirements:

16.2.1 Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or a tagout device (such as an operations lock).

16.2.2 The authorized employee shall be provided with sufficient information to determine the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment.

16.2.3 When more than one (1) crew, craft, department, etc., is involved, assignment of the group program is directed by one (1) authorized employee. The job associated lockout or tagout control responsibility given to an authorized employee is designated to coordinate all affected work forces and ensure continuity of protection.

16.2.4 Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox or comparable mechanism when beginning work. He/she shall remove those devices when he/she stops working on the machine or equipment being serviced or maintained.

## **17.0 SHIFT OR PERSONNEL CHANGES**

17.1 Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection. Provisions for the orderly transfer of lockout or tagout device protection between off-going and on-coming employees shall be included. The program is intended to minimize exposures to hazard(s) from the unexpected activation or start-up of the machine or equipment or from the release of stored energy and shall include at least the following elements and sequence:

17.1.1 If the job has not been completed prior to shift change or a personnel change, the supervisor or an authorized employee shall affix their lock(s) to ensure lockout and tagout of the machine or equipment. After this, the departing shift personnel shall remove their lock(s)

17.1.2 Departing personnel shall provide complete and understandable information about work and any encountered problem(s) to the personnel beginning their shift.

17.1.3 The personnel beginning their shift shall place their locks on the lockout device and proceed as per Section 9, Procedures for Locking Out Energy Sources, or Section 16, Procedures for Group Lockout, as appropriate. At this point the supervisor or authorized person may remove their lock.

## 18.0 **SPECIFIC ENERGY CONTROL PROCEDURES**

18.1 Equipment-specific written procedures shall be developed, documented and utilized for the control of potentially hazardous energy when any of the following elements exist with the equipment to be controlled:

18.1.1 The equipment or machine has the potential for stored or residual energy, or the re-accumulation of stored energy after shut down, that may injure employees.

18.1.2 The equipment or machine has more than a single energy source that is required to completely de-energize the unit (steam, electrical, pneumatic, etc.).

18.2 The specific written procedures shall clearly outline the scope, purpose, authorization, rules and techniques to be utilized for the control of the equipment's hazardous energy and shall include:

18.2.1 A specific statement of the intended use of the procedure.

18.2.2 Specific steps to shut down, isolate, block and secure the equipment or machine to control the hazardous energy.

18.2.3 Steps for the placement, removal and transfer of the lockout devices and the responsibility for the devices.

18.2.4 Specific requirements for testing the equipment or machine to ensure the effectiveness of the lockout devices and other energy control devices.

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