



<b>DEPARTMENT OF SAFETY AND RISK MANAGEMENT</b>	<b>NUMBER: SRM 10- REV: A</b>
<b>SUBJECT: CONTROL OF HAZARDOUS ENERGY</b>	<b>REVISED: 15 MARCH 2004</b>
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## CONTROL OF HAZARDOUS ENERGY

### (LOCKOUT/TAGOUT)

#### OBJECTIVES

To complete this lesson, you must:

1. Describe the purpose of the OSHA standard 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*.
2. List and explain the major components of *The University of Toledo Control of Hazardous Energy (Lockout/Tagout)* procedure.

#### INTRODUCTION

Each year, thousands of industrial workers are injured or killed on the job due to the accidental release of energy or hazardous material while servicing or repairing equipment.

The Occupational Safety and Health Administration has developed 29 CFR 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*, to prevent the injury of maintenance workers by such unexpected or unintended releases of energy or material.

To comply with this OSHA standard, The University of Toledo has developed *The Control of Hazardous Energy (Lockout/Tagout)* procedure to prevent these injuries. This procedure takes precautions to include not only hazardous electrical energy, but other sources of energy.

During this lesson, you will learn how each part of the Control of Hazardous Energy procedure works to prevent the injury of maintenance workers who must work on potentially hazardous equipment.

## WHEN TO USE LOCKOUT/TAGOUT

The Equipment Isolation, or Lockout/Tagout procedure should be followed whenever maintenance or service work is being performed where the person doing the work may be exposed to the **unexpected** or **unintended** motion or start-up of the equipment, or to the release of energy or material.

### EXAMPLE:

An electrician is working on the electric motor of a pump. This worker is exposed to potential activation of the motor that may cause physical injury from rotating parts, and to electrical shock.

### EXCEPTIONS

The procedure does not apply to:

- ° Normal production operations **unless** the person must remove a guard or bypass some other safety device, or must place some part of his body in a danger zone that exists during normal operation.
- ° Minor tool changes and adjustments that are routine and part of normal operation, provided that some other form of protection is provided.
- ° Certain Hot Tap operations.





indicating that the isolation device(s) is in place.

- The Authorized Employee then informs area personnel that the equipment is isolated.

**PROCEDURE STEPS**

**LOCKOUT/  
TAGOUT**

- Every isolation point must be tagged. If an isolation device can be locked, **it must be locked** as well as tagged.
- All tags must be legible. Maintenance tags must indicate the name and department of the tag installer, the system being isolated, and the date the tag was hung.
- Tags must be attached with a **self-locking, non-releasable**, nylon electrical cable ties. String or wire may not be used to attach tags to isolation points.
- Equipment Isolation tags and locks must **not** be used for any other purpose.
- All locks must function independently. Your lock must not depend on someone else's lock staying secured.

**VERIFICATION**

- All personnel who will work on the equipment must review:
  - ✓ The type, limits (magnitude) and hazards of the energy that has been isolated to make the job safe,
  - ✓ The locations and types of isolations installed, and how the energy has been isolated,
  - ✓ Any special precautions needed to safely

perform the work.

- The Authorized Employee responsible for reviewing this information, with all maintenance personnel, at the work site.
- The Authorized Employee and maintenance personnel will verify that the equipment is at zero energy state by trying to activate or cycle the equipment.

**PROCEDURE STEPS**

**RELEASE FROM  
LOCKOUT/  
TAGOUT**

- Each maintenance person will then sign the Isolation Certification indicating that this verification has taken place.
- The equipment can be released **only** after all maintenance lockouts have been removed.
- Removal of lockouts/tagouts and isolation devices must be controlled and safe (according to procedure).
- **All tags must be removed.**
- Authorized Employee or Supervisor must:
  - ✓ Inspect the work area,
  - ✓ Insure the equipment is intact,
  - ✓ Inform others that the equipment is being placed back in service.

**SPECIAL CIRCUMSTANCES****TESTING/  
POSITIONING**

- Clear the equipment of all tools and materials.
- Insure the equipment is operationally intact.
- Insure that all personnel are free and clear.
- Remove, in the following order:
  1. Maintenance lockout
  2. Isolation devices
- Energize and proceed with test or positioning.
- If needed, re-apply isolations and lockouts.
- **Re-verify that the equipment is isolated properly, and that it is at zero energy state.**

**GROUP**

- When a number of crews, crafts, contractors, **LOCKOUT/** or other groups are involved in large scale **TAGOUT** maintenance, the Group Lockout Procedure may be used.
- The procedure requires the designation of a Lead Person for each group, and a system of Job and Group Lockout Devices or Boxes.
- The group lockout **must provide all of the personnel involved with protection equal to the use of personal locks and tags attached at each isolation device.**
- The diagrams on the next two pages illustrate how the simple, and group lockout procedures work.

**SIMPLE LOCKOUT/TAGOUT**

**GROUP LOCKOUT/TAGOUT**

**FEEDBACK EXERCISES**

1. Describe the purpose of the OSHA standard 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*.
2. List and explain the major components of the University of Toledo *Control of Hazardous Energy (Lockout/Tagout)* procedure.

**SUMMARY**

In this lesson, you have learned that the Occupational Safety and Health Administration has developed 29 CFR 1910.147. *The Control of Hazardous Energy (Lockout/Tagout)* to prevent the injury of maintenance workers by unexpected or unintended releases or energy or material.

To comply with this OSHA standard, The University of Toledo has developed the *Control of Hazardous Energy (Lockout/Tagout)* procedure.

You have learned how each part of the Equipment Isolation procedure works to prevent the injury of maintenance workers who must work on potentially hazardous equipment.

