

SOURCES OF ENERGY

- Electrical
- Mechanic
- Pneumatic
- Fluid and Gases
- Hydraulic
- Thermal
- Water Under Pressure
- Gravity



MULTIPLE OR TEAM OPERATIONS

If several people are needed to repair a piece of equipment, each must apply his or her own locking device or tag. Check with your supervisor regarding specific departmental procedures.

DEFINITIONS

Authorized Employee - One who can physically lock or tag out a machine to do service or maintenance work. This person must be trained in recognition of hazardous energy sources and how to apply lockout and/or tagout procedures.

Affected Employee - One who either operates equipment that can be locked out or works in an area where lockout/tagout is used. This person must be trained in the purpose and use of lockout/tagout.

Lockout - The process of blocking and/or physically restraining the flow of energy from a power source to a piece of equipment and keeping it blocked out.

Tagout - Is accomplished by placing a tag on the power source. The tag acts as a warning not to restore energy - it is not a physical restraint. Tags must be clearly marked "Do Not operate" or the like and must identify who, what, where, why and when.

Zero Energy State - The release of all stored energy from a power source.



Control Of Hazardous Energy Lockout/Tagout



This brochure was designed as a supplement to the Lockout/Tagout Training Program. For more information, contact the Manager of Environmental Health and Safety, (330) 672-1950, dbaden@kent.edu, (330) 672-9565 or dehead@kent.edu

**Environmental Health
and Safety**

PURPOSE

The Occupational Safety and Health Administration (OSHA) published the Control of Hazardous Energy (Lockout/Tagout) Standard 29 CFR 1910.147 to control hazardous energy and prevent unexpected energization or start up of mechanical and electrical equipment.

The standard covers servicing and maintenance of equipment and systems in general industry. This includes: electric, pneumatic, hydraulic, chemical, gas/steam, and flowable solids.

Activities covered include repair and replacement work, renovation work and modifications or other adjustments to power equipment.

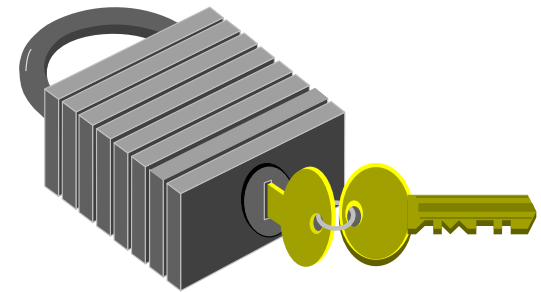
Conveyers must be locked out prior to performing certain maintenance or servicing operations.

PROCEDURES TO SHUTDOWN & ISOLATE EQUIPMENT

- Review the written procedures for the equipment or system you are about to service/repair.
- Notify your supervisor if written procedures are not available.
- Notify all affected employees.
- Locate all energy sources related to the equipment.
- Determine the potential for the unexpected release of energy (such as stored energy). Isolate and de-energize as required.
- Shutoff the equipment by following normal methods.
- Deactivate all energy at its main source (whenever possible).
- Turn the equipment's switch back on to confirm that the power source has been deactivated. Return the switch to the "off" position.
- Using your own lock(s), lock out all possible sources of energy.
- With locks in place, test to assure that the equipment cannot be energized.

RE-ENERGIZING EQUIPMENT

- Remove all tools and repair equipment - always double check
- Replace all guards
- Remove your tag
- Remove your lock
- Re-energize equipment using normal procedures



RELEASING STORED ENERGY

All residual energy must be released to assure a zero energy state. This can be done by:

- Bleeding off air
- Draining hydraulic valves
- Grounding circuits
- Discharging capacitors
- Other methods