

OUTLINE OF MAJOR PROGRAM POINTS

The following outline summarizes the major points of information presented in the program. The outline can be used to review the program before conducting a classroom session, as well as in preparing to lead a class discussion about the program.

- **Machines and equipment benefit us all.**
 - They make jobs easier.
 - They also make us more productive.
- **Each of the machines we use is run by some form of energy.**
 - Energy helps us because of its power.
 - But energy can also be dangerous.
 - We need to be careful working around energy.
- **One type of "energy related" injury occurs frequently.**
 - Someone is working on equipment.
 - Someone else inadvertently turns the equipment on.
- **Because of these situations, in the fall of 1989 OSHA enacted new "Lock-Out/Tag-Out" regulations.**
 - They are meant to protect people working on set-up, repair or maintenance of machinery.
 - OSHA estimates that the regulations will save 100 lives and prevent 60,000 injuries annually.
- **Lock-out/tag-out is really a fairly simple concept.**
 - The object is to disable the machine being serviced.
 - This is accomplished by "isolating" the machine from its energy source.
 - Locks, tags and other mechanisms are used for this "isolation".

- We are exposed to situations calling for lock-out/tag-out more often than we realize.
 - Repairing circuits.
 - Cleaning and oiling machinery.
 - Clearing jammed mechanisms.
 - Rebuilding equipment.
 - Machine "set-up".
- The Lock-Out/Tag-Out regulations apply to most industrial and commercial situations.
- The purpose of the regulations is to have facilities set up lock-out/tag-out programs.
 - They are aimed at preventing employee injury.
- Essential to the regulations is establishing an "Energy Control Plan".
 - It includes lock-out/tag-out procedures.
 - Employee training is also required.
- Typically we come into contact with five different types of energy.
 - Electrical.
 - Hydraulic.
 - Pneumatic.
 - Chemical.
 - Thermal.
- All of these types of energy can exist in two "states".
 - Active.
 - Stored.
- Any types of energy, in any form, can be hazardous.
 - Lock-out/tag-out procedures should be used with all types of energy.
- Lock-out/tag-out involves using common sense.
 - This objective is to isolate a machine from its source of energy.

- **There are a number of types of lock-out devices.**
 - Padlocks.
 - Chains.
 - Valve Clamps.
 - Wedges.
 - Key Blocks.
 - Pins.

- **Tag-out devices provide visual warnings. They can:**
 - Indicate reasons equipment is "out-of-service".
 - Designate the person(s) servicing the machine.

- **Tags should only be used to provide information!**
 - Not as a substitute for locks.

- **Your employer will provide lock-out/tag-out devices.**
 - These must be designated as being for lock-out/tag-out use only.
 - You should never use "non-designated" devices for lock-out/tag-out.

- **Lock-out/tag-out devices must also be:**
 - Easy to identify.
 - Durable.
 - Difficult to remove.

- **Only certain employees are "authorized" to install lock-out/tag-out devices. They:**
 - Must be able to recognize hazardous energy sources.
 - Must know the type and magnitude of energy in their work areas.
 - Must be aware of methods that can control this energy.

- **Employees working around locked out machines can also be affected. They:**
 - Must know the facility's energy control procedures.
 - Must be informed whenever lock-out/tag-out work is performed.
 - Are prohibited from restarting locked-out machines.

- **Before beginning lock-out/tag-out procedures, a number of people must be notified.**
 - Employees working directly with the equipment.
 - Employees in surrounding areas.

- **You should always use lock-out/tag-out mechanisms that are appropriate for the situation you are working with.**
 - They are indicated by the "energy isolation devices" you are working with.

- **There are a number of types of "energy isolation devices".**
 - Electrical panels.
 - Circuit breakers.
 - Valves.

- **When performing lock-out/tag-out follow your facility's energy control plan.**
 - Also be aware of company policy.

- **Once initial lock-out/tag-out procedures are completed, you may need to "dissipate" stored energy. You should:**
 - Use "grounds" on electrical systems.
 - Adjust valves in hydraulic/pneumatic systems.
 - Use "blanks" in piping systems.
 - "Bleed" or drain appropriate systems.
 - Release spring tension.
 - Dissipate extreme cold or heat.

- **After dissipating residual energy, additional lock-out/tag-out mechanisms may need to be installed.**

- Once "energy dissipation" and additional lock-out/tag-out is completed, "verification" should be performed.
 - Clear personnel from the surrounding area.
 - Make sure switches, valves and other mechanisms can not be turned on.
 - Check electrical systems with a volt meter.
 - Press all "start" buttons.
 - Throw all switches and levers that would activate equipment.
 - Return switches and buttons to "off" position.

- There are a number of special situations requiring additional lock-out/tag-out procedures.
 - Shift changes.
 - Functionally "linked" equipment.
 - When multiple people are servicing a machine.
 - "Contractor" involvement.

- Shift or personnel changes call for specific procedures.
 - Maintaining continuity is key.
 - Departing personnel must remove their lock-out/tag-out devices.
 - Incoming personnel should install their own devices.

- In certain situations supervisors should be contacted regarding appropriate procedures.
 - This often involves "linked" equipment.

- Some situations require using a "buddy system."
 - This usually occurs when the power source is not in sight of operating controls.
 - One person locks out power.
 - The "buddy" observes and tests machinery.

- Other situations involve multiple people or groups.
 - These need special lock-out/tag-out devices accommodating multiple locks.
 - Each employee installs their own lock and tag.
 - For multiple groups, each group should have one authorized employee.

- **"Contractor" situations are also important.**
 - Outside contractors must inform facility representatives of their lock-out/tag-out operations.
 - Facility representatives must inform contractor personnel of internal lock-out/tag-out activities.

- **After equipment servicing has been complete, proper lock-out/tag-out release procedures must be followed.**
 - Remove all non-essential items and tools from the surrounding area.
 - Clear personnel.
 - Check to make sure the machine is ready to operate.

- **A key step in the release procedures is having employees remove lock-out/tag-out devices.**
 - They must be removed by the employee(s) who installed them.
 - Management can remove them, but only in emergency situations.

- **Once lock-out/tag-out devices are removed, equipment should be test run.**
 - You may need to use the "buddy system".

- **Some facilities have special return procedures for lock-out/tag-out devices.**
 - The devices are returned to designated locations.
 - The returned device(s) are then "signed in".

- **Sometimes machines must undergo "temporary restart" while they are locked out.**
 - This should be handled exactly as normal release and restart.
 - First remove lock-out/tag-out devices.
 - Follow standard release procedures.
 - Restart the machine.
 - Once the restart is over, reinstall the original locks/tags.

- **When working with electrically powered equipment additional rules must be followed.**
 - Follow general lock-out/tag-out principles.
 - Identify all sources of electrical power.
 - Shut off equipment at its point of operation (before disconnecting it).
 - Locate the "on/off" switch on the switch box or panel.
 - Stand away from the panel, to the side on which the switch is located.
 - Move the switch to the "off" position.
 - Use the appropriate lock and tag to lock out the energy source.

- **There are also some "special" situations you may encounter with electrical machinery.**
 - If there is more than one source of energy, locking out the main panel may be best.
 - Older or specialized machinery may require you to remove fuses.

- **If "capacitors" are present, special care should be taken.**
 - Capacitors can store electrical charges.
 - They can present serious hazards.
 - The capacitors must be "grounded" before starting work.

- **Hydraulic and pneumatic systems have their own characteristics.**
 - They must be treated differently from electrical systems.
 - The situations typically involve pipes and valves.
 - Hazards are usually "pressure releases" (steam, hydraulic fluid, etc.).

- **Lock-out devices specifically made for these systems should be used. They include:**
 - Padlocks and chains.
 - Valve-clamps.
 - Normally, standard tags are sufficient.

- **Other steps should also be taken when working with hydraulic/pneumatic systems.**
 - Bleed any pressurized lines.
 - Test the systems, using "downstream" valves.
 - Install "blinds" in piping when appropriate.

- **Additional precautions should also be taken with the major moving parts in these systems.**
 - You need to avoid slippage.
 - Use blocks, brackets or pins to secure the parts.
 - Isolate equipment from vibrations of nearby traffic and other machines.
 - Shut down adjacent machines if necessary.

- **Lock-out/tag-out is essential when working on most equipment and machinery.**
 - Use common sense.
 - Remember lock-out/tag-out procedures.

*** * * SUMMARY * * ***

- **When working on powered equipment you must identify all energy sources.**

- **Each person must attach their own lock-out/tag-out device(s) to the machinery they are working on.**

- **Equipment must be tested after locks/tags are in place.**

- **The person removing the last lock-out device must make sure work is completed and the equipment is safe to operate.**

- **Communication and working together are the keys to good lock-out/tag-out procedures.**

SHEEDY CRANE. Safety Quiz - Lockout Tagout

Name _____ Date _____

Directions: Read each question carefully and choose the most correct answer by completely filling in the box next to the answer

1. Before starting a Lockout-Tagout you should
 - A. Gather all your tools
 - B. Clean the equipment
 - C. Know all the isolation points
 - D. Brief security personnel

2. Where should locks and tags NOT be placed for isolation
 - A. Breakers
 - B. Control Switches
 - C. Valves
 - D. Levers

3. Who can have the key to the locks for a Lockout Tagout
 - A. Any maintenance person
 - B. Equipment operator
 - C. Management
 - D. Only the person placing the locks

4. Potential energy is energy that is
 - A. Stored as pressure or springs
 - B. Energy in motion
 - C. Heat energy
 - D. Electrical energy

5. Kinetic energy is
 - A. Stored in batteries
 - B. Energy in motion
 - C. Chemical energy
 - D. Pneumatic energy

6. The first step in Lockout Tagout is
 - A. Put a lock on the main power source
 - B. Bleed off all pressure
 - C. Sign all tags
 - D. Inform the equipment operator

7. The last step in Lockout Tagout is
- A. Attempt to start the equipment
 - B. Tell the equipment operator
 - C. Inform management
 - D. Open the equipment
8. Who can remove locks and tags
- A. Equipment operator
 - B. Person who placed the locks and tags
 - C. Management
 - D. All of the above
9. If more than one person is performing maintenance, who should lock and tag the equipment
- A. Everyone performing maintenance
 - B. Management
 - C. The lead maintenance person
 - D. Equipment operator
10. The multi-person lockout procedure is called
- A. Quality lock procedure
 - B. Safety Tag procedure
 - C. Engineering lockout procedure
 - D. Group lockout procedure
11. After locking and tagging electrical circuits for maintenance you should
- A. Have a safety observer
 - B. Check for live circuits
 - C. Wear a face shield
 - D. Use only air-driven tools
12. After locking and tagging a fluid system the fluid in the system work boundary should be
- A. Kept in the system
 - B. Pressurized
 - C. Vented and drained
 - D. None of the above

