

LOCKOUT/TAGOUT

Preventing Machine Surprises

When it's time for maintenance, repairs or machine setup, simply unplugging the machine that you're working on is not enough. Many serious accidents have happened when someone thought a machine or the electricity was safely off. "Lockout/tagout" is a way to protect yourself and others.

Guaranteeing Machines Stay Off

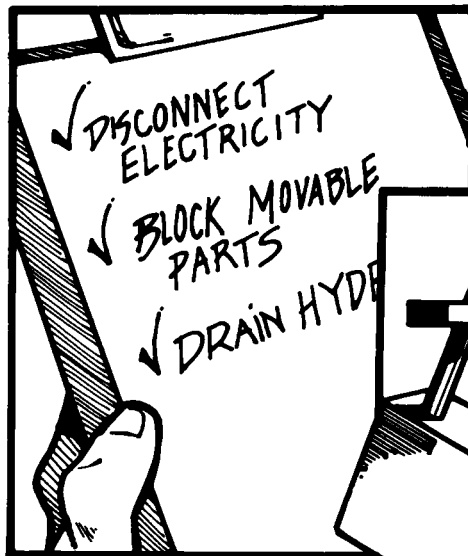
Lockout/tagout ensures that machines and electricity remain temporarily off. Without a lockout/tagout system, there is the possibility that a machine will suddenly start up. Then someone could be cut, hit or crushed. There is also a serious danger of electrocution or the release of hazardous materials.

To prevent startups, you need to identify a machine's power sources: an electrical current, stored electricity (such as in a capacitor), stored pressure (such as compressed air), stored mechanical energy (such as in a coiled spring) or gravity.

Take Seven Steps for Lockout/Tagout

1. *Think, plan and check.* If you are in charge, think through the entire procedure. Identify all parts of any systems that need to be shut down. Determine what switches, equipment and people will be involved. Carefully plan how restarting will take place.

2. *Communicate.* Notify all those



Neutralize all appropriate power at the source.

who need to know that a lockout/tagout procedure is taking place.

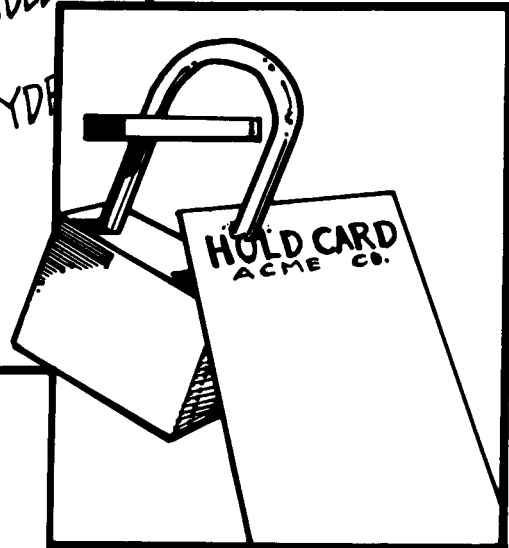
3. *Identify all appropriate power sources,* whether near or far from the job site. Include electrical circuits, hydraulic and pneumatic systems, spring energy and gravity systems.

4. *Neutralize all appropriate power at the source.* Disconnect electricity. Block movable parts. Release or block spring energy. Drain or bleed hydraulic and pneumatic lines. Lower suspended parts to rest positions.

5. *Lock out all power sources.* Use a lock designed only for this purpose. Each worker should have a personal lock.

6. *Tag out all power sources and*


Lockout/tagout ensures that machines and electricity remain temporarily "off."



machines. Tag machine controls, pressure lines, starter switches and suspended parts. Tags should include your name, department, how to reach you, the date and time of tagging and the reason for the lockout.

7. *Do a complete test.* Double-check all the steps above. Do a personal check. Push start buttons, test circuits and operate valves to test the system.

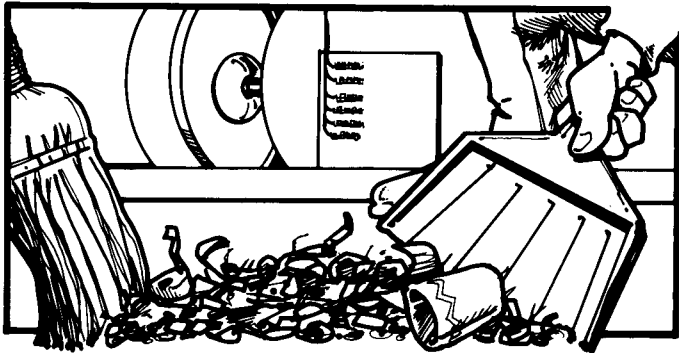
When It's Time To Restart

After the job is completed, follow the safety procedures you have set up for restart, removing only your own locks and tags. With all workers safe and equipment ready, it's time to turn on the power. 

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ELECTRICITY

On The Job Safety



Keep electrical equipment, machinery and work areas clean to prevent electric fire hazards.

Each day electricity lights the office, runs the machinery, and heats the plant. It's easy but dangerous to take electricity for granted. To protect your coworkers, your family and yourself, practice electrical safety.

Electrical Hazards

Electric wiring, fixtures, equipment and machinery can be hazardous. First, they can cause fires and explosions. Wood, paper, and some chemicals can catch fire from just a spark. Second, electricity can burn, shock or even kill you, depending on the strength of the shock.

Third, when you are shocked, your muscles can contract violently, causing serious falls or other accidents.

Fourth, when electric equipment is not turned off after use, the next person to use it may not know the power is on. That person can be shocked or injured.

Understand Electricity Facts

Electricity travels over "conductors:" anything that allows electricity to flow. Electricity always tries

to reach the ground. Excellent conductors include people, water, damp floors or metal. An "insulator" is the opposite of a conductor. Electricity cannot flow easily through insulators like plastic, rubber boots, dry wood or glass.

Practice Electric Safety At Work

Protect yourself by following these important rules for electric safety.

1. Don't use any appliance or machinery while you are touching metal or anything wet.
2. Unplug machinery and appliances before cleaning, inspecting, repairing or removing anything from them.
3. Keep electrical equipment, machinery and work areas clean. Oil, dust, waste and water can be fire hazards around electricity.
4. Keep access to panels and junction boxes clear.
5. Move flammable materials away from electric heat sources and lights.
6. Know the location of fuses and circuit breakers.

7. If you are not trained to work in high voltage areas, do not enter them, even in an emergency.

8. Make sure all electrical equipment is properly grounded.

9. Plug power tools into grounded outlets installed with Ground Fault Circuit Interrupters (GFCIs).

10. Check with your local utility before you dig or work near suspended power lines. A "live" line is very dangerous.

11. If someone has been shocked, separate the victim from the current *before* doing first aid. If you can't turn off electricity easily, use rope, wood or other insulator to pull the victim away.

12. Use "C" rated extinguishers for electrical fires. Never use water.

Report Unsafe Conditions

Report unsafe conditions such as the following to your supervisor:

- shocking, sparking, overheating or smoking machinery;
- corroded outlets, switches and junction boxes;
- extension cords in permanent use;
- exposed wiring; broken plugs, outlets, or walls; missing box covers or faceplates;
- outlets in damp areas without GFCIs.

Electric Productivity

To stay productive and safe, follow these important rules for electrical safety. If you have questions, contact your supervisor or Safety Director.



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