

LOTO: Lock Out Tag Out

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What is LOTO?

The Simple Definition

LOTO (Lockout/Tagout) is basically a very strict safety rule.

- ✓ It makes sure dangerous machines are properly shut off.
- ✓ It guarantees the machine **cannot** accidentally restart while someone is fixing it.



When and Why do we need it?

When? (The Trigger)

Anytime you need to bypass a safety guard, or put your hands in the "danger zone" to clean, fix, or maintain the equipment. If you have to step inside the machine's workspace, LOTO must happen first.

Why? (The Danger)

Machines hold massive amounts of "stored energy"—like trapped pressure, hidden electricity, or intense heat. LOTO stops this energy from suddenly bursting out and causing a terrible accident.

Lockout vs. Tagout

Lockout (The Best Way)

Using a physical, heavy-duty padlock to lock the switch in the "off" position. It physically stops someone from turning the machine back on. This is what you always want to use.

Tagout (Just a Warning)

Hanging a warning tag that basically says "Please don't touch." It doesn't actually stop anyone from turning the switch. It's easily ignored, so it's much less safe than a lock.

Hazardous Energy Sources

- 1) **Electrical:** The most common danger. Accidental contact can lead to severe shocks or fatal electrocution.
- 2) **Mechanical:** Moving physical parts, like a spinning wheel, can easily catch a hand or cause a crushing injury.
- 3) **Water:** If pressurized water in a pipeline is suddenly released while someone is working, the sheer force can cause severe physical trauma.
- 4) **Chemical or coolant:** Similar to opening a boiling car radiator, working on active machines containing chemicals can cause them to splash into the eyes or on the skin violently.

HAZARDOUS ENERGY CONTROL



Mechanical



Electrical



Pneumatic



Thermal



Hydraulic



Chemical

Hazardous Energy Sources

- 5) **Pneumatic:** Highly pressurized air used to run machinery can act like a physical blow and cause serious injury if discharged unexpectedly.
- 6) **Hydraulic:** Pressurized fluids used to move heavy machine parts hold massive amounts of trapped energy that must be safely depressurized.
- 7) **Thermal (Steam):** High-pressure steam inside pipelines can cause instant, severe burns if it leaks during maintenance.
- 8) **Natural Gas:** Any gas leakage while working can turn a tiny spark into a massive fire or explosion.

Hazardous Energy Control

AF Form 983, Danger – Equipment Lockout Tag.

⚠ DANGER

DO NOT OPERATE

EQUIPMENT LOCK OUT



THIS TAG AND LOCK ONLY TO BE REMOVED BY AUTHORIZED PERSONNEL

SEE REVERSE

AF Form 983, 20120904

⚠ DANGER

Installation/Facility: _____

Equipment: _____

Reason for Lockout: _____

Expected Completion Date: _____

Individual Placing Tag: _____

Individual Removing Tag: _____

(Name/Org/Phone)

The Main Goal

0

Zero Energy State

The whole point of the process!

Achieving a "Zero Energy State" means you have completely drained, blocked, and locked away all power. The machine is totally "dead" and is absolutely safe for you to put your hands on.

The First 3 Steps



1. Prepare

Don't just jump in. Figure out exactly what powers the machine (electricity, air pressure?) and know how to shut it down safely.



2. Shutdown

Turn the machine off normally.



3. Isolate

Disconnect it entirely from the power source (pull the plug, flip the breaker).

The Final 3 Steps



4. Lock & Tag

Put your physical padlock and a warning tag on the power switch so nobody else can turn it on.



5. Stored Energy

Bleed off any leftover pressure, heat, or trapped power..



6. Verify

The ultimate test: Try to turn the machine on using the normal controls. If it stays completely dead, you are safe to work! This is called the "Zero Energy State"

Key Takeaways

- The ultimate goal of the entire process is achieving a "Zero Energy State" where the equipment is completely dead and safe.
- Lockout provides a physical barrier that stops restarts, whereas Tagout is merely a warning that can be ignored.
- The most crucial final action is step 6: always verify the isolation by attempting to operate the normal controls.

“No deadline or project milestone is worth risking a life. Always Lock Out and Tag Out”

THANK YOU!

*Any Doubts? Feel free to
message me directly on this
platform*