

Lockout/Tagout: Controlling Hazardous Energy

What is hazardous energy?

Hazardous energy is any energy source that, if not isolated or controlled, could create a hazard. Common energy sources are electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other sources in machines and equipment that can be hazardous to workers. During the servicing and maintenance of machines and equipment, the unexpected startup or release of stored energy can result in serious injury or death to workers.

How can you protect workers from hazardous energy?

Failure to control hazardous energy accounts for nearly 10 percent of the serious accidents in many industries. Proper lockout/tagout (LOTO) practices and procedures safeguard workers from hazardous energy releases. *OSHA's Lockout/Tagout Fact Sheet** found at [osha.gov/sites/default/files/publications/OSHA-FS-3529.pdf](https://www.osha.gov/sites/default/files/publications/OSHA-FS-3529.pdf) describes the practices and procedures necessary to disable machinery or to prevent hazardous energy release. The *OSHA Standard The Control of Hazardous Energy (Lockout/Tagout)* ([29 CFR 1910.147](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.147)) found at [osha.gov/laws-regs/regulations/standardnumber/1910/1910.147](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.147) for general industry outlines measures for controlling different types of hazardous energy. The *LOTO standard* establishes the employer's responsibility to protect workers from hazardous energy. Employers are also required to train each worker to ensure that they know, understand, and are able to follow the applicable provisions of the hazardous energy control procedures:



- Proper lockout/tagout (LOTO) practices and procedures safeguard workers from the release of hazardous energy. The *OSHA standard for The Control of Hazardous Energy (Lockout/Tagout)* ([29 CFR 1910.147](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.147)) found at [osha.gov/laws-regs/regulations/standardnumber/1910/1910.147](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.147) for general industry, outlines specific action and procedures for addressing and controlling hazardous energy during servicing and maintenance of machines and equipment. Employers are also required to train each worker to ensure that they know, understand, and are able to follow the applicable provisions of the hazardous energy control procedures. Workers must be trained in the purpose and function of the energy control program, and have the knowledge and skills required for the safe application, usage, and removal of the energy control devices.
- All employees who work in an area where energy control procedure(s) are utilized need to be instructed in the purpose and use of the energy control procedure(s), especially prohibition against attempting to restart or reenergize machines or other equipment that are locked or tagged out.
- All employees who are authorized to lockout machines or equipment and perform the service and maintenance operations need to be trained in recognition of applicable hazardous energy sources in the workplace, the type and magnitude of energy found in the workplace, and the means and methods of isolating and/or controlling the energy. Employees also need to be trained on how to comply with additional energy control provisions in the OSHA standards when machines or equipment must be tested or repositioned, when outside contractors work at the site, in group lockout situations, and during shift or personnel changes.
- Specific procedures and limitations relating to tagout systems where they are allowed.
- Retraining of all employees to maintain proficiency or introduce new or changed control methods.

The control of hazardous energy is also addressed in a number of other OSHA standards, including *General Industry - Electrical (1910 Subpart S)*, *Special Industries (1910 Subpart R)*, and *Electric Power Generation, Transmission, and Distribution (1910.269)*; *Construction - Electrical (1926 Subpart K)*, *Electric Power Transmission and Distribution (1926 Subpart V)*, and *Concrete and Masonry Construction (1926 Subpart Q)*; *Marine Terminals (1917 Subpart C)*; and *Longshoring (1918 Subpart G)*.

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