



# SAFETY Risks In THE FOOD Industry

## *Controlling HAZARDOUS Energy*

About 1000 workers die each year in the United States due to the unexpected operation of the equipment and/ or release of stored energy. The OSHA regulation contained in 29 CFR 1910.147 sets out the requirements on how to control hazardous energy before performing maintenance, adjustments and / or repairs to equipment or machinery. The goal is to perform the task while preventing an unexpected discharge of energy, which can cause serious injury or even death.

### IMPORTANT TERMS

- **Energy source** > any source of electric, mechanical, chemical, water (fluids), pneumatic (air), thermal (temperature) or other energy that is used to put an equipment into operation. Example a conveyor uses electric and mechanical energy to set in motion the belt that moves the food on it.
- **Energized** > equipment or machinery that is connected to an energy source or has residual or stored energy in it. Conductors and parts of electric equipment that have been de-energized, but have not been locked and tagged out in accordance with §1910.333(b), must be treated as energized parts. Likewise, conductors and parts of electric equipment that have been de-energized under procedures other than those required by §§ 1910.269(d) or (m) and (n), as applicable, must be treated as energized.
- **Affected employee** > employees whose job requires them to use or operate machinery on which service or maintenance is being done under lockout/ tagout. It also applies to employees working in the areas where such servicing or maintenance is being performed.
- **Authorized employee** > a person that locks put or tags out an equipment or machinery in order to perform service or maintenance to such equipment. An affected employee becomes an authorized employee when his duties include performing service or maintenance covered under the standard..





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Furthermore, any employee who implements a lockout and/or tagout system procedural element on machines or equipment (for servicing and/or maintenance purposes) is considered an authorized employee. This includes employees who: 1) perform energy source isolation; 2) implement lockout and/or tagout on machines or equipment; 3) dissipate potential (stored) energy; 4) verify energy isolation; 5) implement actions to release LOTO; or 6) test or position machines or equipment.



Electrical Switch



Valve for controlling liquids



Valve for controlling gas

**Isolating device** > A mechanical device that physically prevents the transmission or discharge of energy, including but not limited to the following:

- a manually operated electrical circuit breaker,
- a disconnect switch,
- a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and in addition no pole can be operated independently;
- a line valve, a block or any other device used to isolate energy.

Push buttons, selector switches and other control circuit type devices **are not** energy isolating devices.

**NOTE:** Programmable logic controllers (PLCs) are used in many machine applications, and these control circuit devices are not considered energy isolating devices for purposes of the LOTO standard. Safety functions, such as stopping or preventing hazardous energy (motion), can fail due to component failure, program errors, magnetic field interference, electrical surges, improper use or maintenance, etc





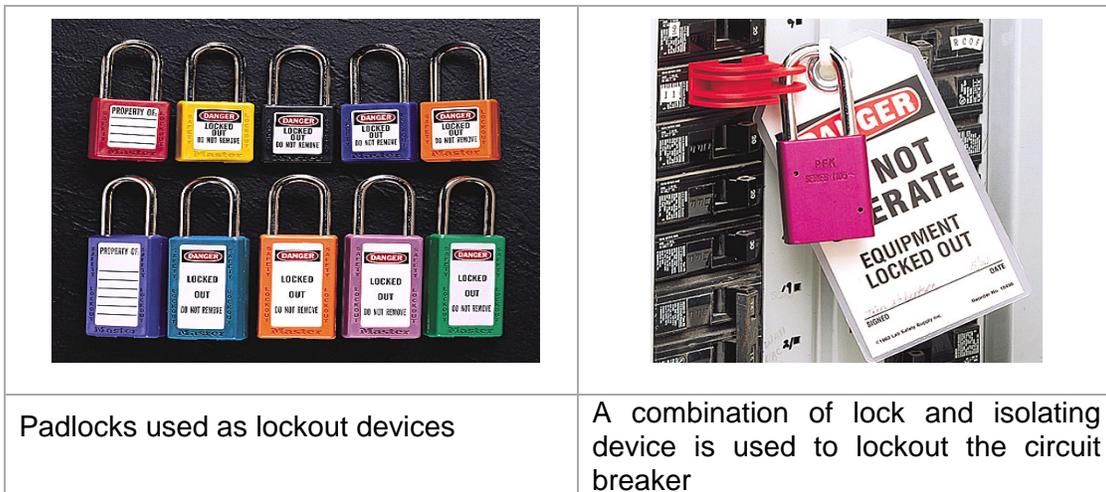
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- **Tagout device (Tag)** >. A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device, in accordance with an established procedure to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.



**Lockout device**>. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.





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**Capable of being locked out >.** An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability. Equipment that accepts bolted blank flanges and bolted slip blinds are considered to be capable of being locked out.

### ISOLATING AND LOCKING DEVICES

<p>A Electrical disconnect</p>	<p>B- Bulb valve</p>	<p>C- Hand valve</p>	<p>D- Gas cylinder</p>
<p>The electrical circuit (A) has its own mechanism to place the lockout device, meanwhile the valves (B , C) as well as the cylinder valve (D) require a special attachment to place the lockout device.</p>			





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### OTHER REQUIREMENTS.

- 1) The employer is responsible of developing and implementing an energy control procedure for each machine and equipment that falls under 1910.147. All equipment must have an individual Lockout/tagout procedure establishing responsibilities, proper shutdown, and isolation and blocking sequence, and testing requirements for the effectiveness of the locking devices.
- 2) The employer will perform periodic inspections to ensure procedures are properly followed and that responsibilities under this procedure are understood by employees.
- 3) The employer shall provide training to ensure the purpose and function of the control energy program is understood by employees. Training program must ensure employees acquire the knowledge and skills need for the safe application, use, and removal of energy controls..

Training should address three categories of employees

Affected employees – instructed on the purpose and use of energy control procedures.

Authorized employees – instructed on the recognition of hazardous energy sources, type and magnitude of energy and means of controlling such energy.

Other employees – working in the area where such procedures are or might be applied need to be instructed on the general procedure and on the prohibition of trying to start equipment that has been locked or tagged out.

4) Retraining shall be given to affected and authorized employees when there is a change in procedure, or in job assignment, machines, equipment, or process that presents a new hazard. Retraining will also be given if periodic inspections indicate such training is necessary for proper procedure application. Training shall be kept up to date, certified by employer and documented with dates and employees names.

6) Any contractors or outside personnel performing service or maintenance to equipments need to discuss their lockout / tagout procedures with the on-site employer. This will ensure that both the employer and contractor procedures are in agreement of each other.





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7) Whenever a group lockout/ tagout is done, each authorized employee is required to affix his own locking/ tag device before work begins and remove it after completing his part. Special procedures shall be used when shift/ personnel changes occur before work is completed, to ensure protection to employees.

### WHEN ARE YOU REQUIRED TO APPLY THE PROCEDURE?

When a service, repair or maintenance job, outside of normal operations, is done to equipment or machinery.

Normal operations are covered only if:

- The employee is required to place any part of his body near the point of operation of a machine
- An employee is required to bypass or remove a guard or safety device.

### OPERATIONS WHICH REQUIRE THE USE OF LOCKOUT/ TAGOUT PROCEDURE

		To adjust the belt of this conveyor some guards must be removed. The main electrical switch for the motor is located at a distance from where the machine is located
		The blades on this orange squeezer need to be changed, and safety covers must be removed to properly access them. The main electrical switch controlling the machine motor is located outside the processing area

Service and maintenance includes activities such as constructing, installing, setting up, adjusting, inspecting, lubricating, cleaning, and unjamming of machines where the employee is at risk of unexpected energization of the machine or unexpected release of hazardous energy





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### **WHEN IS THE PROCEDURE NOT REQUIRED?**

1) When working with cord and plug connected electric equipment for which the exposure to the hazards of unexpected energization is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance. Usually small kitchen devices fall under this category.

Equipments in which the energy source is under the control of the employee performing the service

**The equipments shown in figures A, B, C and D use a cord and plug connector which when disconnected remains in the control of the employee.**



A- Electrical coffee machine



B- Electric slicer



C- Electric meat grinder



D- Fryer





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### LOCKOUT/ TAGOUT GENERAL PROCEDURE

The employer is responsible to develop and establish a Lockout/ tagout procedure that complies with the requirements of the standard, when applicable. The procedure should cover the actions as described below:

#### **1. Shutdown Preparation**

The equipment must be shutdown using the established procedure for the equipment. The authorized employee must know the type of energy, associated hazards and means to control that energy. If the machine was shut down on a previous shift, the authorized employee must be made aware of these elements before beginning work.

#### **2. Machine shutdown**

The machine or equipment must be shutdown in an orderly manner, using the established procedure for the machine, making sure no new hazards are created during shutdown.. This might include cooling down or tempering equipment.

#### **3. Notification**

Before proceeding to shutdown or servicing equipment the affected employees must be notified of such work, to ensure no attempts are made to start machine while in service.

#### **4. Isolation**

The authorized employee places isolation devices on equipment necessary to isolate it from all possible energy sources

#### **5. Stored Energy**

Authorized employee will place the lockout devices (padlocks) and proper tags to identify that the equipment is safe and ready to be serviced. After applying lockout and tagout devices make sure all stored energy is relieved, disconnected or otherwise rendered safe before working on equipment. Types of stored energy include equipment with electrical capacitors, air trapped within pipes, pressure from hydraulic fluids, etc.

#### **6. Verify**

Before starting to work on the machine, the authorized employee will verify the isolation and deenergization of the machine has been accomplished. In other words, Lock, Tag and Try to operate the machine, and if the machine is still capable of operating check the energy sources again.





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### PROCEDURE FOR THE REMOVAL OF LOCKOUT/ TAGOUT.

Before removing lockout and/ or tagout devices the authorized employee must make sure of the following actions:

#### **1. Work area**

The work area will be inspected to ensure to ensure the machine is operational and that any tools, parts or non essential items are removed before restarting the machine.

#### **2. Notifying employees**

The authorized employee will make sure that all affected employees are notified of lockout removal and are safely positioned or removed from area

#### **3. Removing lockout/ tagout devices**

Energy isolation devices will be removed only by the employee who placed it. The procedure allows for an exception to this rule provided the removal of the device is done under the direction of the employer and following strict procedures that provide the same degree of safety as if the original employee was removing the device.

***This document is only a general guide to the provisions included in the standard. For specific details on how to establish a complete program for the Control of hazardous energy please refer to 29CFR 1910.147***

