



*"Safety Comes First"*

# Case Western Reserve University Environmental Health and Safety

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## *Most Frequently Cited OSHA Standards*

The following were the top 10 most frequently cited standards in fiscal year 2013 (October 1, 2012 through September 30, 2013):

1. Fall protection, construction ([29 CFR 1926.501](#)) [[related OSHA Safety and Health Topics page](#)]
2. Hazard communication standard, general industry ([29 CFR 1910.1200](#)) [[related OSHA Safety and Health Topics page](#)]
3. Scaffolding, general requirements, construction ([29 CFR 1926.451](#)) [[related OSHA Safety and Health Topics page](#)]
4. Respiratory protection, general industry ([29 CFR 1910.134](#)) [[related OSHA Safety and Health Topics page](#)]
5. Electrical, wiring methods, components and equipment, general industry ([29 CFR 1910.305](#)) [[related OSHA Safety and Health Topics page](#)]
6. Powered industrial trucks, general industry ([29 CFR 1910.178](#)) [[related OSHA Safety and Health Topics page](#)]
7. Ladders, construction ([29 CFR 1926.1053](#)) [[related OSHA Safety and Health Topics page](#)]
8. Control of hazardous energy (lockout/tagout), general industry ([29 CFR 1910.147](#)) [[related OSHA Safety and Health Topics page](#)]

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## Control of Hazardous Energy (Lockout/Tagout)



*“Failure to control hazardous energy accounts for nearly 10 percent of the serious accidents in many industries.”*

### What is hazardous energy?

Energy sources including electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other sources in machines and equipment can be hazardous to workers. During the servicing and maintenance of machines and equipment, the unexpected startup or release of stored energy could cause injury to employees.

### What are the harmful effects of hazardous energy?

Workers servicing or maintaining machines or equipment may be seriously injured or killed if hazardous energy is not properly controlled. Injuries resulting from the failure to control hazardous energy during maintenance activities can be serious or fatal! Injuries may include electrocution, burns, crushing, cutting, lacerating, amputating or fracturing body parts.

- A steam valve is automatically turned on burning workers who are repairing a downstream connection in the piping.
- A jammed conveyor system suddenly releases crushing a worker who is trying to clear the jam.
- Internal wiring on a piece of factory equipment electrically shorts shocking employee who is repairing the equipment.

Craft workers, electricians, machine operators and laborers are among the 3 million workers who service equipment routinely and face the greatest risk of injury. Workers injured on the job from exposure to hazardous energy lose an average of 24 workdays for recuperation.

### What can be done to control 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 the release of hazardous energy. OSHA's Lockout/Tagout [fact sheet](#) describes the practices and procedures necessary to disable machinery or equipment to prevent the release of hazardous energy. The OSHA standard for The Control of Hazardous Energy (Lockout/Tagout) ([29 CFR 1910.147](#)) for general industry outlines measures

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## *Control of Hazardous Energy (Lockout/Tagout), cont.*

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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](#)) 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 the area where the energy control procedure (s) are utilized need to be instructed in the purpose and use of the energy control procedure(s) and about the prohibition against attempting to restart or reenergize machines or equipment that is 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.
- 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.

OSHA's Lockout/Tagout [fact sheet](#) [208 KB PDF\*, 2 pages] describes the

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*“The OSHA standard ... outlines specific action and procedures for addressing and controlling hazardous energy...”*



## Extreme Heat



*Did you know?  
On average,  
Extreme Heat claims more lives each year than floods, lightning, tornadoes, and hurricanes combined.*

This may seem like a strange time to publish an article on extreme heat, but it's better to understand this potential killer before it hits.

Although it's only 7 °F at the time of writing this article, be assured that spring is around the corner, and anticipate a hot summer.

### *Facts about extreme heat...*

- Extreme Heat occurs when temperatures reach 10 degrees or more above the average high temperature for a region over an extended period of time.
- Each year Extreme Heat is responsible for hundreds of deaths in the United States.
- Extreme Heat paired with high humidity makes it difficult for the body to maintain its normal temperature.
- Overexposure to Extreme Heat can cause several heat-related illnesses, including: Heat Stroke, Heat Exhaustion, and Heat Cramps.

### *Heat-related illnesses...*

Knowing the differences between heat-related illnesses is critical when determining the need for medical care.

- **Heat stroke:** also referred to as "Sun Stroke," degrades the body's temperature control system, which regulates perspiration. A victim experiencing heat stroke can suffer brain damage or death if they do not receive proper medical care.
- **Heat Exhaustion:** typically occurs when people overexert themselves in hot, humid weather conditions. Heat exhaustion causes an increase in blood flow to the skin, resulting in a deprivation of blood in the vital organs. If untreated, heat exhaustion may cause a victim to suffer heat stroke.
- **Heat Cramps:** are muscular pains and spasms due to heavy exertion. Although heat cramps are non-life threatening, they are often a precursor

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## *Properly Securing Radioactive Materials*

The Radiation Safety Office (RSOF) conducts Security Checks during non-business hours to ensure that radioactive materials (RAM) are properly secured. This includes laboratories that only use sealed sources. Guidelines for proper storage have been established by the Ohio Department of Health, Bureau of Radiation Protection. Case Western Reserve University abides by these guidelines.

Stock vials should be stored in a locked refrigerator or freezer or have a lockable storage container that has been secured to the inside of the freezer. Boxes chained to a removable shelf inside of the freezer are not secure. They should be chained to a permanent shelf or other structure.

Isotopes stored at room temperature should be kept in a locked cabinet. If the freezer or cabinet is unable to be locked, then the room should be locked when no one is present. Always secure your isotopes before leaving the room even if it is only for a few minutes. Isotopes that are out of your line of sight are considered unsecured.

If you have any questions about how to secure your laboratory's radioactive inventory, please call the Radiation Safety Office at 368-2906. The RSOF also has a few lock boxes available from our recycling program that are available at a first come, first-serve basis.



*“Boxes chained to a removable shelf inside of the freezer are not secure”*

## *Cited OSHA Standards, cont.*

*“...you can generate a report on the most frequently cited federal or state OSHA standards...”*

*(Continued from page 1)*

9. Electrical systems design, general requirements, general industry ([29 CFR 1910.303](#)) [[related OSHA Safety and Health Topics page](#)]
10. Machines, general requirements, general industry ([29 CFR 1910.212](#)) [[related OSHA Safety and Health Topics page](#)]

For more detailed information, visit [Frequently Cited OSHA Standards](#).

At that site, you can generate a report on the most frequently cited federal or state OSHA standards by your NAICS code and the number of employees in your establishment.

**Construction’s “Fatal Four” 2012**  
Falls—278 (36%)  
Struck by Object—78 (10%)  
Electrocutions—66 (9%)  
Caught-in/Between—13 (2%)

## *Hazardous Energy, cont.*

*(Continued from page 3)*

practices and procedures necessary to disable machinery or equipment to prevent the release of hazardous energy.

The control of hazardous energy is also addressed in a number of other OSHA standards, including marine terminals ([1917 Subpart C](#)), longshoring ([1918 Subpart G](#)), construction ([1926 Subparts K and Q](#)), electrical ([1910 Subpart S](#)), and electric power generation, transmission and distribution ([1910 Subpart R](#) and [1926 Subpart V](#)).

### **How can OSHA help?**

OSHA has developed this webpage to provide workers and employers useful, up-to-date information on control of hazardous energy (lockout/tagout). For other valuable worker protection information, such as Workers' Rights, Employer Responsibilities and other services OSHA offers, read [OSHA's Workers](#) page.



## *Extreme Heat, cont.*

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to more serious heat-related health concerns.

### *Before Extreme Heat:*

- Cover your home's windows that receive morning or afternoon sun with drapes, shades, awnings, or louvers. (Outdoor awnings or louvers can reduce the heat that enters a home by up to 80%).
- Install temporary window reflectors (e.g. aluminum foil-covered cardboard) between windows and drapes to reflect heat away from your home.
- Weather-strip doors and windows to keep cool air in your home.

### *During Extreme Heat:*

- Stay indoors as much as possible and limit exposure to the sun. If air conditioning is not available, stay on the lowest floor of your home as it will be the coolest.
- Avoid strenuous outside work during the hottest part of the day (between 11:00AM - 4:00PM).
- When outside, wear loose-fitting, lightweight clothing and drink plenty of water.
- **Never** leave pets or children alone in closed vehicles.
- Check on family, friends, and neighbors who do not have air conditioning.

Sources: [nws.noaa.gov](http://nws.noaa.gov), [fema.gov](http://fema.gov), [ready.gov](http://ready.gov)



*“Avoid strenuous outside work during the hottest part of the day.”*



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