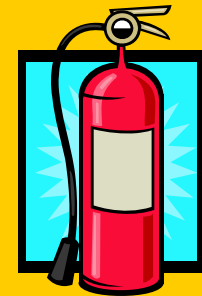
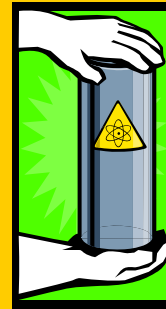




# Workplace Safety

Your Guide to Staying Safe



# 1. Safety in the Workplace Is Critical

To help keep you injury-free everyday, on-the-job safety is critical.

**Some common hazards employees face at work include:**

- ◆ Eye, face, hearing, and head injuries
- ◆ Burns
- ◆ Cuts, punctures, fractures, and abrasions
- ◆ Electrical shock
- ◆ Contact with hazardous chemicals
- ◆ Muscle strains and sprains, back injuries
- ◆ Slips, trips and falls
- ◆ Musculoskeletal disorders (MSD)

**Statistics show that in the workplace:**

- ◆ Injuries occur every 18 seconds
- ◆ Approximately 10,000 Americans die each year
- ◆ 33,000 people receive disabling injuries from falling on stairs
- ◆ 1,500 people are killed each year from falls
- ◆ 2,500 eye injuries occur daily
- ◆ Musculoskeletal disorders account for half of reported occupational illnesses

Work conditions is the Occupational Safety T F

Employees of chemical hazards in the workplace. T F

Technical name, the name and address of its manufacturer, T F

Hazardous chemicals. T F

Power machines and equipment. T F

Safe distance away from a machine's moving parts are fixed, T F

Workplace. T F

Safe lifting. T F

Answers: 1. True 2. True 3. True 4. False 5. True 6. True 7. False 8. True 9. True 10. False

## Quiz and Training Verification

### Test Your Safety in the Workplace Knowledge

1. The organization that works with employers to assure safe and health and Health Administration.
2. OSHA's Hazard Communication Standard requires employers to inform
3. Chemical container labels must always state the common and/or chem and its potential health hazards.
4. Employees should only wear protective gloves when working with ha:
5. Lockout and tagout procedures are used when maintaining or repairin
6. The four general types of machine guards used to keep workers a safe interlocked, adjustable, and self-adjusting guards.
7. Aluminum helmets can help protect against electrical hazards.
8. Housekeeping and commonsense practices can reduce hazards in the
9. Obstructions are a major cause of slips, trips, and falls.
10. Musculoskeletal disorders are caused by not stretching muscles before

### OSHA and your employer: Working together for your safety

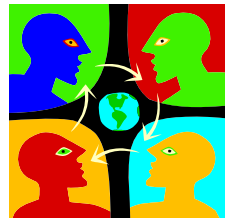
The federal Occupational Safety and Health Administration (OSHA) works with employers to assure safe and healthy work conditions for employees. OSHA creates safety standards for employers to follow to make your company a safer place to work. It's your responsibility to learn about the safety standards and to follow them!

#### To help keep you safe, OSHA requires your employer to:

- ◆ Provide information about the hazards you may face on the job
- ◆ Identify potential causes of job-related injury or illness
- ◆ Explain procedures, equipment, and training that you and your employer must use to reduce hazards and perform jobs safely

#### Your employer will provide you with:

- ◆ Safety training specific to your job and the hazards around you
- ◆ Protective clothing and equipment
- ◆ Material safety data sheets that explain chemical hazards
- ◆ Educational materials, including handbooks, posters, pamphlets, newsletters, videos, and safety memos
- ◆ Emergency and first-aid plans



## Keep a safety-sense attitude

Hazards can be found almost everywhere in the workplace, and there are many different types, including slipping on a wet floor, accidents with machinery and other equipment, burns from chemicals, and fires from flammable materials. The list is endless.

Keeping a safety-sense attitude means always thinking about what could go wrong so you can keep accidents, injuries, and illnesses from happening.

Ask yourself:

- ◆ What situations or actions could cause trouble?
- ◆ Could anything spill or catch fire?
- ◆ Could someone trip?
- ◆ What can I do to prevent or correct a potential hazard?



**Stability** The likelihood a material is to remain unchanged. Material is considered stable if it remains unchanged under normal conditions.

**Suspension** The inner structure of a hard hat, consisting of the headband and straps, capable of absorbing and distributing impact experienced by a hit or blow.

**Tagout** Procedure where a tag (generally accompanied by a lock) is placed on a disconnected electrical power source. The tag states that only authorized personnel can reconnect the power, operate the controls, or remove the tag.

**Toe cap** Metal reinforcement added to the toes of safety shoes to prevent injuries.

**Toxic substance** A chemical or substance that may present an unreasonable risk of injury to health or the environment.

**Vapor** The gaseous phase of a substance.

**Vinyl chloride** A chemical compound, used in producing some plastic that is believed to be carcinogenic.

**Physical hazard (OSHA)** "... means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water-reactive." Any chemical that can be classified as a physical hazard is considered to be a hazardous chemical under the law. *See also hazardous chemical.*

**Puncture** To pierce with a sharp point.

**Radiation** Energy radiated in the form of rays, waves, or streams of energetic particles.

**Reactivity** A measure of the tendency of a substance to undergo chemical reaction with the release of energy.

**Respirator** Device designed to protect the wearer from inhaling harmful contaminants.

**Respiratory system** The system necessary for breathing and the channels by which they connect with the outer air.

**Right to know** A term applied to a variety of laws and regulations enacted by municipal, count, and state governments that provide for the availability of information on chemical hazards; also includes the OSHA Hazard Communication Standard. *See also HazCom.*

**SCBA** Self-contained breathing apparatus respirator.

**Safety glasses** Eye protectors with side pieces that fit over the ear.

**SEI** Safety Equipment Institute

**Shatterproof** The inability of an object to break apart or disintegrate.

**Sideshields** Sidepieces that are worn with safety glasses or goggles that prevent hazards from entering the eyes from the side.

## First aid: know what to do

Sometimes, even when you take extra precautions, accidents happen at work. If an injury does occur, it's important to act fast! Here are some general tips you should follow:



- ◆ Call for medical help immediately
- ◆ Bring help to the victim; don't bring the victim to help
- ◆ Check to see if the victim is breathing
- ◆ Know where your company's first-aid kit is located
- ◆ Don't move an injured person, unless it's to get away from danger

### If you need to call for emergency help, give this information:

- ◆ What kind of injury occurred
- ◆ Where the victim is
- ◆ Your phone number



**The seconds you save could save a life!**

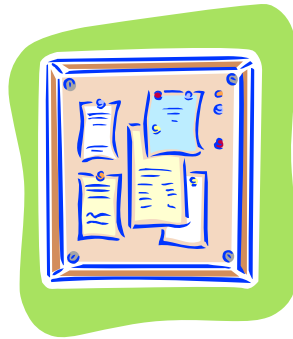


## Do Your Part

Your employer tries to eliminate unsafe working conditions and gives you the equipment, training, and skills you need to protect yourself against them. Do your part by taking the responsibility to learn and understand safety guidelines and procedures *before* starting any job.

It's also important that you know your company's Emergency Action Plan—that will tell you what to do in case of an emergency like a fire or a chemical spill.

More important, practice what you learn—it could save your life! And if you don't understand something, ask your supervisor! Make the commitment to keep your workplace safe.



**Neoprene** A synthetic rubber characterized by superior resistance.

**NIOSH** National Institute for Occupational Safety and Health.

**Nonconductive** The inability to conduct or transmit electricity, heat, sound, or light.

**OSHA** Occupational Safety and Health Administration. The federal agency responsible for developing and enforcing workplace safety and health regulations.

**Penetration** A chemical's passage through an opening in a protective material.

**Permeation** The passage of a chemical through a piece of clothing on a molecular level, even if the material has no visible holes.

**Personal protective equipment (PPE)** Devices or clothing designed to protect against workplace hazards.

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**Personal protective equipment (PPE)** Devices or clothing designed to protect against workplace hazards.

**Health hazard (OSHA)** ... "Means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees."

**IDLH** Immediately dangerous to life and health.

**Impervious** Unable to be penetrated (i.e., by a chemical).

**Ingest** To take in, as if for digestion.

**Inhalation** Chemicals that enter the body by breathing in and that may have local effects and/or may be absorbed into the bloodstream through the lungs.

**Label (OSHA)** "... any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals."

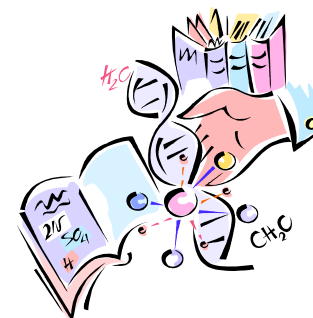
**Leggings** Protective coverings worn over the leg from the knee to ankle.

**Lockout** Procedure where the electrical power source and operating controls are disconnected with a lock that holds the control in the "off" position.

**Machine guards** Safety devices used on or around machinery to help prevent injury to employees.

**MSD** Musculoskeletal disorders. Painful occupational illnesses that develop over time. Caused by constant repetitive motion causing damage to the muscles, tendons, and/or nerves in the hands, wrists, elbows, back, neck, and/or shoulders. Most-common MSD include tendonitis, carpal tunnel syndrome, Reynaud's syndrome, and tenosynovitis.

**MSDS** Material safety data sheet. A compilation of information required under the OSHA Hazard Communication Standard that outlines the identity of hazardous chemicals, health and physical hazards, exposure limits, and storage and handling precautions.



## 2. Your Right to Know

Chemicals are necessary to perform many jobs. However, if they are not handled properly, they can present a hazard to your health and safety. The Hazard Communication Standard (HazCom) has been developed by OSHA to inform employees of workplace chemical hazards. Under the HazCom rule, you have the right to know about the hazards in your workplace and how to protect yourself against them.

HazCom was developed so that everyone who works around hazardous chemicals:

- ◆ Understands their specific hazards
- ◆ Has the information, knowledge, and equipment to prevent safety and health problems



## HazCom: The standard for hazard communication

HazCom requires employers to develop a written hazard communication program that informs employees:

- ◆ About the HazCom rule and how it's used in the workplace
- ◆ How to recognize, understand, and use labels and material safety data sheets (MSDS)
- ◆ About safety procedures to follow when working with hazardous materials

### What you need to know

The written hazard communication program provides you with critical safety information. Specifically, it tells you:

- ◆ Who's in charge of your company/facility hazard communication
- ◆ What hazardous chemicals are stored and used at your facility
- ◆ How you will be informed about workplace hazards

And, you will be provided:

- ◆ Training to identify and reduce chemical hazards
- ◆ Accurate and complete MSDS and chemical labels

Outside vendors, such as contractors, will also be informed about the chemical hazards they may face in the workplace.

**Face shield** Clear window attached to a frame that fits over the face for protection.

**Flameproof** Resistant to damage or burning on contact with flame.

**Flame-resistant/flame-retardant** Clothing treated to resist burning.

**Goggles** Eye coverings that seal around the eyes and are held securely to the head with a strap or headband.

**Hardhat** A protective hat made of rigid material, such as metal or fiberglass, that protects the head from injury.

**Hazard communication** The process of informing workers about workplace hazards, accurate labeling of hazards, and effective training of employees about proper handling and use of those hazardous materials in the workplace. The OSHA Hazard Communication Standard describes how employers are to inform employees of workplace chemical hazards. The purpose is to reduce and eliminate adverse health effects due to unnecessary exposures to hazardous materials.

**Hazard warning (OSHA)** ... "Means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazards of the chemical (s) in the container (s)." A hazard warning is one of the types of information required on a container. See also label.

**Hazardous chemical (OSHA)** ... "Means any chemical which is a physical hazard or a health hazard." See also health hazard; physical hazard.

**Hazardous substance** Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive.

**HazCom** Hazard Communication Standard. Developed by the federal OSHA for employers on how to inform employees of workplace chemical hazards.



**Compliance** Meeting all the requirements of the law.

**Conductive** Having the quality or power to conduct or transmit electricity, heat, sound, or light.

**Container (OSHA)** "Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes and piping systems are not considered to be containers." Note that some state right-to-know laws consider pipes to be containers.

**Contaminate** To soil, stain, corrupt, or infect by contact or association.

**Corrosive** A chemical that causes the destruction of living tissue by chemical action at the site of contact.

**Decontaminate** The freeing of a person or object of some contaminating substance (such as radioactive material, organisms, chemicals, soil, etc.)

**Disinfectant** An agent or chemical that destroys harmful microorganisms and eliminates infection.

**Earmuffs** Padded cushions on a headband that cover the ears used to protect your ears from excessive noise.

**Earplugs** Foam or other molded plugs that fit into the ear canal used to protect your ears from excessive noise.

**Electrical shock** Electrical current that enters the human body, which can cause bodily harm/damage (i.e. pain, internal bleeding, damage to muscles, nerves, or tissues, cardiac arrest, or death).

**Exposure** The condition of being subject to some effect or influence.

**Eye hazards** Hazards that pose a risk to the eye or ability to see.

### 3.

## Chemical Labels and the MSDS: Know What You're Dealing With

Labels and MSDS provide important safety information. Protect yourself by taking time to carefully read chemical labels and MSDS before you move, handle, or open a chemical container



### Reading container labels

Labels and MSDS should always tell you:

- ◆ The common and/or chemical name, including any chemical ingredients
- ◆ The name and address of its manufacturer or importer
- ◆ Its potential health and physical hazards (for example, some chemicals can damage the eyes or skin, causing burns, rashes, vision problems, etc.).




All MSDS and some labels also provide information regarding:

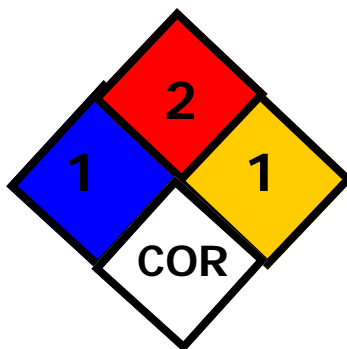
- ◆ Protective clothing, equipment, and procedures needed to safely use the chemical
- ◆ Proper storage and handling such as "keep away from open flames."

## Colors, bars and diamonds

Information on labels can be shown using words, colors, numbers, pictures, symbols, or any combination of these.

The most common labeling systems use color-coded bars or diamonds to indicate the type of hazard. Colored areas on bars and diamonds indicate the kind of hazard. For example:

-  Red = fire hazard
-  Yellow = instability hazard (on diamonds)
-  Blue = health hazard



## 13. Dictionary of Commonly Used Terms

**Abrasions** The wearing, grinding, or rubbing away by friction, such as on the skin.

**Acute exposure** Exposure to a toxic substance that results in severe biological harm or death. Acute exposure is usually characterized as lasting no longer than a day.

**Asbestos** A mineral fiber that can pollute air or water and cause cancer or asbestosis when inhaled. The Environmental Protection Agency has banned or severely restricted its use in manufacturing and construction.

**Carcinogen** A substance that causes cancer. A cancer is characterized by the growth of abnormal cells, sometimes in the form of a tumor. Examples of carcinogens include asbestos, vinyl chloride, and benzene. Substances regulated by OSHA as carcinogens would be found in 29 CFR Subpart Z.

**Carcinogenic** Cancer-producing

**Caustic** Capable of destroying or eating away by chemical action; corrosive.

**Chemical** According to OSHA, "any element, chemical compound, or mixture of elements and/or compounds."

**Chemical-protective clothing** Clothing that may be resistant to chemical permeation, penetration, or degradation.

**Chronic** A human health problem whose symptoms develop slowly over a long period of time or frequently recur. Chronic effects are the result of long-term exposure and are long-lasting.



## 12. Summary

Safety in the workplace is everyone’s responsibility—so take it seriously! Under state and federal laws, you are provided all the necessary resources to assist you in learning and understanding the job-related hazards you face. Don’t try to do any job you’re not trained for.

Stay attentive at all times, regardless of how many times you’ve performed the job before. Safety depends on a sharp mind and a safety-sense attitude. Pay close attention to safety training and put what you learn to use everyday. And if you don’t understand something—ask!

Make safety a part of everything you do on and off the job—for your safety and the safety of those you work with.

## Numbers

Numbers in the color-coded sections classify the degree of hazard.

For example:

- 0 = No hazard
- 1 = Slight
- 2 = Moderate
- 3 = Serious
- 4 = Severe

Examples:

- OX** = OXIDIZER
- ACID** = ACID
- ALK** = ALKALI
- COR** = COROSIVE
- W** = NO WATER

**A = Safety Goggles**



**B = Safety Goggles, Gloves**



**C = Face Shield, Gloves, Apron**



**D = Face Shield, Gloves, Apron, Respirator**



## Reading the MSDS

MSDSs provide more detailed information on a particular chemical. Although there is no one MSDS format, you'll find specific information about each chemical, such as:

### Ingredients

- ◆ **Hazard Identification**—key hazards to be aware of, including health hazards
- ◆ **First-aid measures**
- ◆ **Firefighting measures**
- ◆ **Accidental release measures**—what to do in case of a spill, leak or release into the air
- ◆ **Safe handling and storage**
- ◆ **Exposure controls and personal protection**—guidelines to avoid exposure to hazards
- ◆ **Physical and chemical properties**—identifies properties that could affect how hazardous the chemical is in a given situation
- ◆ **Stability and reactivity**—what could happen if the chemical is combined with air, water, or other chemicals.

**The new 16 section MSDS format developed by the American National Standards Institute (ANSI) includes:**

**Toxicological information**—how the substance was tested for health hazards

- ◆ **Ecological information**—what happens if the chemical is released into the environment
- ◆ **Disposal considerations**
- ◆ **Transport information**
- ◆ **Regulatory information**—regulations that apply to the chemical issued by OSHA, the Environmental Protection Agency, etc.

## MSD prevention guidelines

MSD can be minimized or prevented by changing the way you perform your job and how it is organized. Your employer may use ergonomics to help design tasks and tools that match your abilities and limits.



Tips for preventing MSD:

- ◆ Avoid repetitive movements whenever possible or take regular breaks
- ◆ Don't wear gloves or clothing that are too tight around the wrists
- ◆ Adjust your chair for comfort and good posture
- ◆ Use power tools instead of manual tools whenever possible
- ◆ Grasp objects with your entire hand and all fingers
- ◆ Keep your wrists straight, rather than bent or flexed
- ◆ Carry all objects with a palm-down grip
- ◆ Organize your work area and functions for comfort
- ◆ Look for ways to reduce repetitive and awkward movements
- ◆ Learn to identify MSD symptoms in their early stages
- ◆ Get medical attention if MSD symptoms occur



## 11. Avoiding MSD risks

Musculoskeletal disorders (MSD) are occupational illnesses that develop over time. Most involve damage to muscles, tendons, and neck, and shoulders. MSD can be serious and painful.

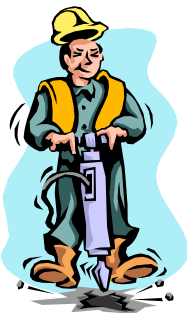
### Who's at risk of developing MSS?

MSDS affect workers in a wide variety of industries and jobs, including keyboarders, cashiers, mechanics, lifters, construction workers, and more. You may be at risk of developing MSD if you:

- ◆ Use repetitive motions
- ◆ Remain in one position for long periods
- ◆ Sit or work in an awkward position
- ◆ Work with tools or equipment that don't properly match your body
- ◆ Use steady force when performing your job
- ◆ Experience constant heavy vibration
- ◆ Twist, reach, and stretch in awkward positions



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## Labels and MSDSs: Quick reminders

Never use a chemical that does not have a label affixed to the container. If a chemical container is without a label or if it's difficult to read, notify your supervisor immediately. By doing this, you help keep yourself and co-workers safe from potential danger.



### Some important reminders:

- ◆ Read MSDs and container labels carefully prior to handling a chemical
- ◆ Be sure you know exactly what chemicals you are dealing with
- ◆ Never use a chemical that is not labeled properly
- ◆ Follow guidelines on labels and MSDSs
- ◆ Use protective clothing and equipment to decrease exposure to health hazards
- ◆ Ask questions if you don't understand something



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## 4. PPE: Your Personal Bodyguard

Personal protective equipment (PPE) is one of your best defenses against exposure to job-related hazards. When you use the appropriate PPE, and use it correctly, you can significantly reduce your risk of injury.

### OSHA requires your employer to:

- ◆ Assess your workplace to determine if hazards are present
- ◆ Select and provide you with the appropriate PPE
- ◆ Train you on how to use PPE correctly

### Select the right PPE

OSHA requires that you use the correct PPE to protect you from injuring your head, eyes, face, respiratory system, hands, and feet. When using PPE, be sure if:

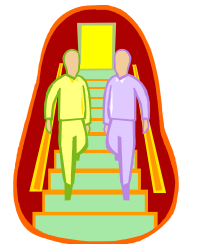
- ◆ Fits properly each time you use it
- ◆ Provides you with the protection you need
- ◆ Is comfortable enough so you can move and perform your job



## Prevent slips, trips, and falls

Common workplace accidents, such as slips, trips and falls, can be avoided when you remain attentive to your surroundings. These guidelines can help:

- ◆ Keep everything in its proper place
- ◆ Be sure lighting is adequate
- ◆ Wear shoes with antiskid soles and other PPE that are right for you
- ◆ Never use broken or unstable ladders
- ◆ Don't carry anything that blocks your vision while walking
- ◆ Walk, don't run
- ◆ Hold the railing on the stairs
- ◆ Keep one hand free for support or to break a fall
- ◆ Don't jump from platforms
- ◆ Clean up or report spills immediately
- ◆ Don't leave drawers open
- ◆ Stay away from loading docks, manholes, and other ledges
- ◆ Report loose or worn flooring or torn carpet
- ◆ Remove debris or obstructions from stairs and walkways.



## 10. Housekeeping and Common Sense Help Keep You Safe



Using good housekeeping and commonsense practices at work can prevent serious injuries and accidents, lost work time, costly medical fees, and low productivity. Good housekeeping is everyone's responsibility. Keeping your workplace clean and organized is easy when you use commonsense.

Keep these tips in mind everyday at work:

- ◆ Keep a safety sense attitude
- ◆ Get enough sleep before coming to work
- ◆ Avoid complacency
- ◆ Pay attention to housekeeping tasks daily
- ◆ Get the training you need to do your job safely
- ◆ Avoid distractions
- ◆ Never cut corners or take shortcuts
- ◆ Obey safety signs and warnings
- ◆ Don't use alcohol or drugs on the job
- ◆ Never let personal feelings or problems get in the way of safety
- ◆ Don't fool around or show off on the job
- ◆ Never ignore a co-worker's unsafe acts
- ◆ Ask questions about anything that is unclear



## Protect your hands

Gloves can protect your hands from the continuous exposure to all kinds of hazards. There are many different types of gloves available for different job functions. Ask your supervisor about which ones (if any) you should be wearing for each job function you perform. Remember to ask if they can be reused and for how long.

Here are some examples:

### These gloves protect against These effects

Cotton fabric



abrasions

leather



burns

rubber, neoprene, vinyl, or latex



contact with hazardous chemicals and pathogens

metal mesh



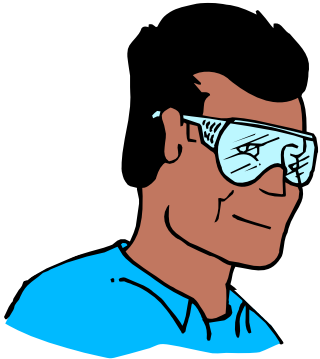
cuts

specially insulated



electrical shock

## Eye and face Protection



Shatterproof safety glasses, goggles, and face shields protect your eyes and face from hazards. Many have side shields that protect eyes from flying objects and filter lenses to keep out harmful light radiation. Face shields are generally worn over safety goggles for protection against high temperatures, hot sparks, or splashes.

Keep all eyewear clean and undamaged. Replace eyewear if:

- ◆ Lenses and face shields are pitted, scratched, or dirty
- ◆ It's uncomfortable or fails to keep out dust and splashes
- ◆ Elastic headbands are stretched, twisted, knotted, or worn out
- ◆ Sidepieces don't touch the side of the head and curl behind the ears

## Know what to do in an emergency

If a fire does start, you need to know what to do, and do it quickly! Remember—stay calm—and follow these rules:

- ◆ Get yourself to safety
- ◆ Warn others of the fire
- ◆ Sound the alarm



It's important that you're familiar with your company's evacuation plan so you can quickly vacate the area if you need to. If you need to use a fire extinguisher, follow these steps:

1. Remember to choose the right extinguisher for the fire
2. Pull the pin
3. Aim the hose at the base of the fire
4. Squeeze the trigger





## Different fires need different treatment



The National Fire Protection Association has classified fires into four main types. Remember to determine which type of fire you're dealing with before you choose an extinguisher. All fire extinguishers are labeled to tell you which class of fire they're designed to be used for.

**Class A** fires are the most common. They involve wood, cloth, paper, rubber, and plastics. Water or dry chemicals should be used to extinguish these fires. Do not use carbon dioxide extinguishers or those containing sodium or potassium bicarbonate.



**Class B** fires involve flammable liquids, gases, and greases. Foam, carbon dioxide, and dry chemical extinguishers should be used. Water fog and vaporizing liquid extinguishers may also be used.

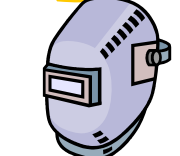
**Class C** fires involve electrical equipment. Carbon dioxide and dry chemical extinguishers should be used. Do not use foam or water extinguishers.



**Class D** fires involve combustible metals, such as magnesium, titanium, zirconium, and sodium. These fires require special techniques to control. None of the extinguishers mentioned should be used.

## Protect your feet

You may not think so, but your feet can be the victims of a variety of injuries, such as from nails, wire, scrap metal, heavy objects, carts, and chemicals. Protective footwear can provide many safety features, including protection against:



- ◆ Impact
- ◆ Compression
- ◆ Punctures
- ◆ Heat
- ◆ Wet or slippery surfaces
- ◆ Electrical



Be aware of the injuries that could occur and use the right foot protection for the hazards you face on the job!

## Respirators can save lives

Respirators can protect your lungs and respiratory systems from harmful dusts, fumes, fogs, mists, gases, smokes, sprays, and vapors.

**There are two basic types of respirators:**

**Air-purifying respirators** should be used when the air has enough oxygen (19.5% or greater) but contains dangerous contaminants. Most air-purifying respirators use replaceable filters, canisters, or cartridges that filter or absorb contaminants from the air.

**Atmosphere-supplying respirators** should be used when there's not enough oxygen to breathe (less than 19.5%), when contaminant levels are considered "Immediately Dangerous to Life or Health" (IDLH), or when an air-purifying respirator is ineffective.

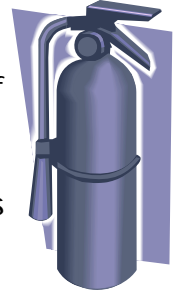
For *any* respirator to protect you, it must fit properly. OSHA requires all respirators to be fit-tested to make sure you're getting the best protection.



## 9. Fire Safety: Prevention is the Key

When it comes to fires, preventing them is your most important defense. Although fires can happen anytime in anyplace, there are things you can do to prevent them from starting. Here are some tips:

- ◆ Keep motors and machine tools free of dust and grease
- ◆ Don't let transmission shafts or bearings overheat
- ◆ Dispose of combustible scrap, like oily rags, in tight metal containers and empty them daily
- ◆ Restrict welding and cutting operations to separate fireproof rooms
- ◆ Check chemical labels and MSDS so you don't use or store incompatible substances together
- ◆ Keep passages and fire doors clear
- ◆ Don't store oxygen cylinders near combustible materials



## Electrical safety tips

When it comes to working on or near electrical circuits and equipment, you can't be too careful. Leave electrical jobs to qualified workers who have been specially trained to work on or near exposed energized electrical parts.

Follow these tips when working with electrical power:

- ◆ Observe locks, tags, signs, barricades, and attendants warning you about electrical hazards
- ◆ Don't use equipment that has defective parts or loose connections
- ◆ Use insulated materials and protective shields and barriers to prevent contact with live parts in confined spaces
- ◆ Never use adapters
- ◆ Don't fasten cords with staples or nails
- ◆ Read, understand, and follow company electrical safety procedures



## Use your head protection



A protective helmet (hard hat) should be worn to protect against head injuries. The hard outer shell protects against blows and penetration, and the shock-absorbing suspensions act as a barrier between the outer shell and your head to absorb impact. As with all PPE, make sure your helmet fits properly and remember to inspect it for damage before each use.

**All helmets protect you from impact and penetration, and some protect against electrical hazards also:**

**Class A helmets** provide low-voltage electrical protection



**Class B helmets** provide high-voltage electrical protection

**Class C helmets** are made of aluminum and provide NO electrical protection. Never wear an aluminum helmet when working around electricity!

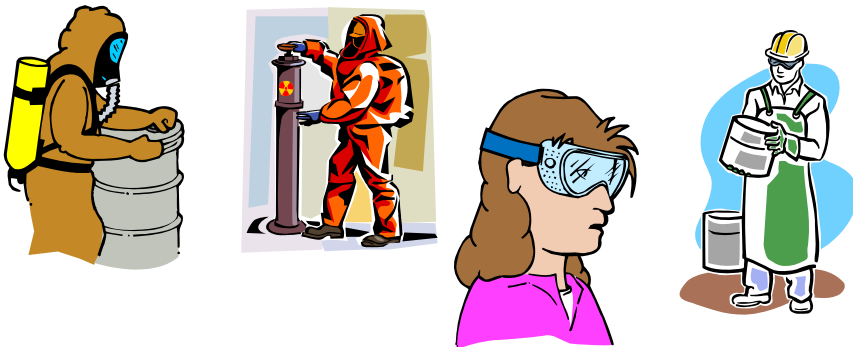


## Protective clothing

Unlike everyday work clothes, special clothing can protect you from job-related hazards. Each job requires its own special protective clothing. Learn what protective clothing you need for each hazard you face.

### Examples of protective clothing:

- ◆ **Leather** to protect against light impact
- ◆ **Encapsulated suits** when working with toxic substances
- ◆ **Disposable clothing** for dust, splashes, oils, etc.
- ◆ **Neoprene, vinyl, or rubber** when handling acids, corrosives, and chemicals
- ◆ **Flame-retardant and heat-resistant fabrics** to fight fires or when around open flames
- ◆ **Vests, aprons, coveralls, leggings, and boots**

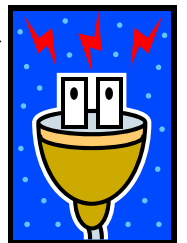


## 8. Safety with Electricity

Unsafe conditions such as defective equipment, loose connections, and carelessness can cause electrical hazards in the workplace. Avoid accidents when working with or near electrical power by following the safety standards set by OSHA and your company.

### Protect yourself from electrical hazards

Remember—only properly trained, qualified employees should perform electrical jobs. If you must work with electricity, your employer may provide you with special PPE, such as nonconductive head protection, insulated tools, and handling equipment designed to keep you safe from electrical hazards. Remember, it's up to you to use it and maintain it properly



To remain safe around electricity, don't reach blindly into areas that may contain energized parts, and keep conductive items away from exposed energized parts. Never handle, plug, or unplug equipment with wet hands. And, remember to read and follow MSDS precautions when handling flammable materials.



## 7. Lockout/Tagout: For Your Protection

When a machine requires maintenance or repair, energy (pneumatic, hydraulic, electrical, or mechanical) must be turned off and locked and tagged with a label to protect workers from accidental machine start-up or unexpected energy release. Lockout and tagout procedures are used to warn employees and ensure that the electrical power is properly disconnected. Only qualified, authorized employees can disconnect the source of power and lock it out and tag it.

Locks and tags are used for everyone's protection against electrical dangers. For your safety and others, *never remove or ignore a lock or tag!*

### Lockout and tagout procedures

Here is a brief summary guide to lockout:

1. **Disconnect equipment** and circuits from the electrical power source
2. **Turn off** machines and equipment. Isolate, release, block, or bleed stored energy
3. **Lock out** electrical energy sources and operating controls with a lock that secures the control in the "off" position
4. **Tag** each lock and state that only authorized personnel may reconnect the power, operate the controls, or remove the tag
5. **Test** to be sure the circuit and equipment are de-energized. If the circuit is more than 600 volts, check the test equipment before and after.

Only authorized personnel can restore the electrical power and remove the lock and tag.

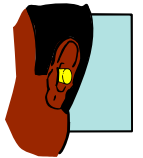


## Protect your hearing

Wearing protection for your ears is an important part of health and safety. OSHA requires that your company follow a Hearing Conservation Program if you work around noise levels of 85 decibels on an Average basis.

There are several types of hearing protection to choose from:

- ◆ **Earmuffs** cover the entire ear and provide the highest protection
- ◆ **Earplugs** seal the ear canal and may come in standard sizes or individually molded varieties
- ◆ **Canal caps** are soft pads on a headband that seal the entrance to the ear canal



The type of hearing protection you use depends on the level of noise you may have to wear more than one at once for extremely loud noise)



## Care for your PPE



In order for your PPE to work properly to protect you, you must keep it in good condition. Here are a few general rules:

- ◆ Always check PPE for damage after you use it
- ◆ Clean PPE before putting it away
- ◆ Dispose of any single-use or damaged PPE only in the proper manner
- ◆ Store PPE carefully in its assigned place. Avoid conditions that could damage it, like heat, light moisture, etc.

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### PPE Summary

In general, always:

- ◆ Select and properly use the right PPE for each job function to reduce exposure to hazards
  - ◆ Clean and store PPE appropriately
  - ◆ Follow safety guidelines when removing, cleaning, and disposing contaminated PPE
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## General machine safety guidelines

Follow these guidelines to keep you safe while working with machinery.

### DON'T:

- ◆ Remove guards or use machinery without a guard
- ◆ Reach around or under a guard
- ◆ Reach blindly into areas that may contain energized parts
- ◆ Plug or unplug equipment with wet hands

### DO:

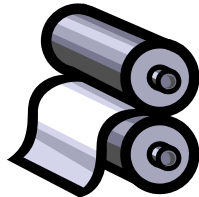
- ◆ Anchor guards securely
- ◆ Keep watches, rings, belt buckles, steel wool, and other conductive items away from exposed electrical energized parts
- ◆ Wear appropriate PPE
- ◆ Stay alert and be prepared for emergencies
- ◆ Perform routine safety checks on machinery and safety guards—replace or fix those that are damaged
- ◆ Follow lockout procedures during maintenance and repair

## Guard against hazards

Machine guards help reduce the potential for serious injury and accidents. They should always be anchored securely and in excellent working condition. The following are examples of guards commonly used in the workplace.

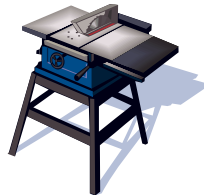
### Fixed guards—

including fences, gates, protective covers—they provide a barrier between the operator and Point of Operation, Power Train, or other moving parts.



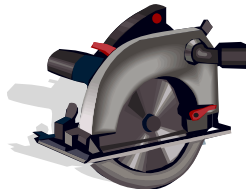
### Interlocked guards—

they disconnect the machine's power source when removed or opened.



**Adjustable guards**—barriers that can be adjusted to conform with different applications.

**Self-adjusting guards**—barriers that self-adjust according to the size or position of the employee.



## 5. Keep Your Back Injury-free

Many occupations require routine lifting. But, lifting the wrong way can lead to serious back injuries. There are some important tips you need to know and use each time you lift, regardless of the objects size or weight.

### Guidelines for safe lifting

Keep your back pain-free by following these important guidelines:

- ◆ Plan ahead
- ◆ Gently stretch your muscles to warm up
- ◆ Use dollies or other mechanical equipment when possible
- ◆ Lift or carry only what you can handle safely
- ◆ Lift with your legs, not your back
- ◆ Never twist
- ◆ Carry the load close to your body to reduce strain
- ◆ Lower loads slowly, bending the knees
- ◆ Work as a team with co-workers for over-sized loads



## Eight steps to safe lifting

To ensure a safe lift:

1. Keep a wide stance and solid footing
2. Bend at the hips and knees to a squatting position, keeping the back straight
3. Tighten stomach muscles
4. Get a good grasp on the load
5. "Hug" the load close to your body
6. Lift steadily with the legs
7. Point feet in the direction of the movement
8. Set the load down—remember to maintain your spine's natural curves



## 6. Machine Safety

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Machines make work easier and more efficient. However, they can pose a significant risk for injury to the operator. For your protection, OSHA requires that certain machine guards be used to keep you a safe distance away from a machine's moving parts while in operation.

### Machines in the workplace

Machines commonly used in the workplace include:

- ◆ Power lifts, conveyer belts, forklifts
- ◆ Welders, solderers, riveters
- ◆ Power presses, rollers, drills, boring machines, grinding wheels
- ◆ Saws, guillotine cutters, alligator shears
- ◆ Inspection devices
- ◆ Other industrial equipment

