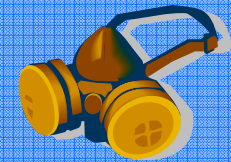


Personal Protective Equipment

Your Defense Against
Workplace Hazards



1 PPE can help protect you

Your employer has many controls and work procedures, including machine guards, engineering controls, and sound manufacturing practices, that reduce the hazards you face at work.



But when these procedures and controls aren't enough, the Occupational Safety and Health Administration (OSHA) requires Personal Protective Equipment (PPE) as the next line of defense against job-related hazards. PPE acts as a barrier between you and potentially hazardous chemicals, machines, tools, and processes. To be effective, PPE must be carefully selected to protect against the particular hazard you face. When you use the right PPE—and use it properly—you greatly reduce the risk of job-related injury and illness.

This booklet explains government regulations that apply to selecting and using PPE. In some cases, OSHA requires your employer to supply you with equipment that meets American National Standards Institute (ANSI) standards. Even more important, it explains the ways you and your employer can work together to make the most of this essential protection. It's designed as a handy pocket-sized reference so you can use it when it counts—on the job.

7. Protective helmets protect your head in two ways. Hard outer shells resist blows and penetration, and shock-absorbing _____ act as a barrier between the outer shell and your head to absorb impact.

8. Gloves can protect your hands from cuts, abrasions, burns, punctures, skin contact with hazardous chemicals, and _____.

9. Safety shoes and boots come with many built-in protections, such as reinforced safety toe or toe cap, metal foot guards, reinforced metal soles, and _____.

10. Three basic types of hearing protection are _____, _____, and _____.

Answers: 1. personal protective equipment 2. OSHA (The Occupational Safety and Health Administration) 3. hands 4. defective; damaged 5. face shields 6. air-purifying; atmosphere-supplying 7. suspensions 8. electrical shock 9. ankle protection 10. earmuffs; earplugs; canal caps

7

QUIZ and TRAINING ACKNOWLEDGEMENT

Test Your PPE Knowledge

- PPE stands for

- To help increase your protection from hazards at work,
_____ requires employers and employees to follow PPE regulations.
- Different types of PPE can prevent you from injuring your eyes and face, respiratory system, head feet and
_____.
- Don't use PPE that's _____ or
_____. Report it immediately and get an effective replacement.
- Shatterproof safety glasses, safety goggles, and
_____ are types of eye and face protection.
- There are two basic types of respirators: _____ and _____.

OSHA PPE Standard

To help increase your protection from hazards at work, OSHA revised and added to its existing PPE regulations (1910.132-1910.140). The regulation requires your employer to:

- Assess the workplace to determine if hazards are present
- Select and provide the appropriate PPE that fits each affected employee*
- Train you on how to use PPE correctly

OSHA requires you to use the PPE provided by your employer to prevent you from injuring your:



Eyes and Face

Head



Respiratory system



Hands

Feet



Not all equipment is qualified as PPE. Employees must buy their own non-speciality safety-glasses, shoes, and outer-wear for cold weather.

Your employer identifies hazards in your workplace



Each piece of PPE is designed to protect against particular hazards. To make sure workers get the right protection, OSHA requires employers to survey the workplace and identify hazards that could put their employees at risk.

Here are some hazards they might find:

Chemical exposures. When you work with hazardous chemicals, you probably need PPE that prevents you from inhaling or ingesting the substance or from splashes or other skin contact.

Falling or dropping objects. If materials or equipment are not carried or placed carefully, they could fall and cause head or foot injuries.

Particulates. Many jobs create dust that can irritate the eyes. If they're inhaled, these dusts can irritate or damage the lungs and respiratory system.



Heat and high temperatures. Without proper protection, hot processes or substances could burn the skin or eyes.



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

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

Vapor A substance in a gaseous state.

NOTES:

Personal protective equipment (PPE) Any devices or clothing worn to protect against workplace hazards.

Protective helmet (hard hat) Used to prevent head injury. Usually made of slow-burning, water-resistant materials.

Puncture To pierce with a sharp point.

Radiation Any form of energy propagated as rays, waves, or streams of energetic particles.

Radionuclide A radioactive type of atom.

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

Respiratory system A system of organs, including the lungs, necessary for breathing and the channels by which they connect with outer air.

Safety glasses Eyeglass style eye protectors with sidepieces that go over the ears.

SCBA Self-contained breathing apparatus respirator.

SEI Safety Equipment Institute.

Sideshields Sidepieces for safety glasses or goggles that prevent hazards from entering the eyes from the side.

Suspension The headband and straps in the inner structure of a hard hat or helmet, which absorb and distribute impact from a blow.

Synthetic Man-made.

Light Radiation. There's a risk of damaging eye radiation from furnaces, high intensity lights, and jobs like brazing, cutting, welding, and heat treating.

Moving equipment and parts. Machines have guards and other design features to prevent contact with moving parts. But sometimes, additional protection is needed to prevent injuries

Rolling or pinching objects. Feet may need protection from equipment or objects that could rollover or pinch them.

Sharp objects. Sharp tools or materials can cut hands, feet, or other parts of the body if you're not properly protected.



Workplace layout and procedures. Hazards can result from the work area layout or the way people stand and move as they perform their jobs. A work area survey might look for such potential problems as:



- Narrow aisles or work areas where people might collide with equipment
- Saws, grinders, or other machines that process materials too close to workers
- Workers who carry too much or are careless can create a risk of dropping objects that could cause injuries.

Matching PPE to identified Hazards

Employers must certify in writing that they have identified their workplace hazards. Then they select PPE that will protect their employees from those hazards—and the injuries they could cause.

OSHA forbids using defective or damaged PPE. Employers must select PPE that:

- Protects each employee from the identified hazards
- Is of safe design and construction
- Is sanitary and reliable
- Provides each employee with a good fit
- Provides more than the minimum required protection
- Protects against multiple hazards when necessary (e.g., eye protection against impact, dust, and radiation)
- Meets American National Standards Institute (ANSI) standards



Ingest To take in, as if for digestion.

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

Leggings Protective coverings that cover the leg from ankle to knee.

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

Material Safety Data Sheet (MSDS) Assembled information required under the OSHA Hazard Communication Standard that covers the identity of hazardous chemicals, health and physical hazards, exposure limits, and handling and storage precautions.

MSHA Mines Safety and Health Administration

Neoprene A synthetic rubber characterized by superior resistance.

NIOSH National Institute for Occupational Safety and Health.

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

Oxygen deficiency An atmosphere with less than 19.5% oxygen.

Particulates Minute, separate particles.

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

Earmuffs Padded cushions on a headband that cover the ears.

Earplugs Foam or other molded plugs that fit into the ear canal.

Electrical shock Electrical current entering the human body, which may result in pain, internal bleeding, damage to nerves, muscles, or tissues, cardiac arrest, or even death.

Engineering controls Mechanical and/or structural procedures such as exhaust ventilation, machine guards, and noise reduction, separate from PPE and safe work practices, that help protect against workplace hazards.

Eye hazards Hazards that affect the eye or ability to see.

Face shield Clear window on frame that fits over and protects the face.

Fume A smoke, vapor, or gas, especially when irritating or offensive.

Goggles Eye coverings that seal around the eyes and hold to head with headband or strap.

Hard hat/helmet Protective headgear with durable outer shell and impact-absorbing inner suspension.

Heat exhaustion Symptoms such as cramps, excessive perspiration, weakness, nausea, and dizziness that result from physical exhaustion in a hot environment.

IDLH Immediately dangerous to life and health.

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

Get a good fit

In order to stay safe at work, you have some responsibilities also. First, make sure your PPE fits well. You may get advance custom fitting for respirators, shoes, and certain hearing protectors. Some PPE gloves, for example—come in a variety of sizes so that you can keep trying until you get a pair that fits.

PPE fits well when it:

1. provides you with the protection you need, and
2. Is comfortable enough to allow you to move and perform your job

Even PPE that is your “size” can stretch or change over time. Check the fit carefully each time you put on a piece of protective clothing or equipment.

Inspect PPE carefully before every use

Personal protective clothing and equipment has to be in top condition to do its job: protecting you. Before you put on any piece of PPE, inspect it carefully. Look for holes, tears, wear, etc.

Don't use PPE that's defective or damaged in any way. Report it immediately and get an effective replacement.

Practice, practice, practice

PPE is designed to protect you while providing the greatest possible comfort. But it can seem heavy or awkward—until you get used to it.



Remember that OSHA says you can't use PPE on the job until you demonstrate that you can use it properly. The best way to do that is to wear it in a non-hazardous situation, such as training, until it gets comfortable. PPE is like most things; to get good at wearing it, you have to practice.

It's also wise to be aware that wearing PPE—especially protective suits and respirators—can make you use extra energy and oxygen. Play it safe:

- Don't overdo it



- Be alert to symptoms of heat exhaustion—protective clothing can trap perspiration in your clothes and make it hard to cool down
- Keep an eye on your respirator supply—don't let yourself run out
- Don't dehydrate. Drink water before starting a job when you wear a protective suit and/or respirator. Drink more during breaks and when you're finished.

Chemical (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.

Compliance Meeting all the requirements of law.

Compressor A machine that presses together or reduces in size or volume, such as compressing air for breathing.

Contaminant Something that soils, stains, or infects by contact or association.

Corrosive A substance that can destroy other materials, including human tissue.

Decibel (dB) A unit of sound measurement

Degradation The destructive effect a chemical may have on a piece of chemical-protective clothing. Degraded clothing may be completely destroyed or may partially dissolve, soften, harden, or be completely destroyed. If not destroyed, its strength and flexibility may be reduced, which may make it more likely to tear or puncture and open up a direct route to skin contact with the chemical.

Dehydration An abnormal depletion of body fluids that could be dangerous.

Disinfectant A chemical or a physical process that kills pathogenic organisms in water.

6 Dictionary of Terms

Abrasion Scraping or rubbing off, as with 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.

Air-purifying respirator Type of respirator that should be used when air contains enough oxygen but contains dangerous contaminants

American National Standards Institute (ANSI) A coordinating body of trade, technical, professional, and consumer groups who develop voluntary standards, including standards used for personal protective clothing and equipment. PPE that meets the ANSI standards is so identified by manufacturers. Their address is ANSI, 1430 Broadway, New York, New York 10018, (212) 354-3300.

ASTM American Society for Testing and Materials.

Atmosphere-supplying respirator Type of respirator that should be used when there's not enough oxygen to breathe (<19.5%), when contaminant levels are considered IDLH, or when air-purifying respirators are ineffective.

Canal caps Soft pads on a head band that seal the entrance to the ear canal.

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

2 Use the right PPE

Depending on the hazards you face on the job, you may need a variety of PPE to protect yourself. This section will explain the PPE that's available and when and how you should use it.

Protect your eyes and face

Many jobs create hazards that could injure the eyes or face. In fact, as many as 2,500 eye injuries occur on the job every day! A government study found that most occur because workers:

- Aren't aware of potential eye hazards, *or*
- Don't use protective eyewear, *or*
- Use the wrong type of eyewear for the hazard



OSHA requires your employer to choose eye and face protection that complies with ANSI Z87.1-1989.

Without protection, you could be harmed by:

- Flying chips or particles (the most common cause of eye injuries)
- Electrical arcing or sparks
- Chemical gases or vapors
- Harmful light or from welding, cutting, brazing, or soldering.
- Liquid chemicals, acids, or caustics
- Molten metal
- Dusts
- Swinging objects like ropes or chains

Shatterproof safety glasses, safety goggles, and face shields provide good eye and face protection. They come in a variety of styles that keep things out of your eyes and let you see clearly. In addition to preventing impact and injury coming at you from the front, many eye protectors also have:

- Side protection when there is a hazard from flying objects
- Filtered lenses to keep out harmful light radiation. The greater the radiation, the darker the lenses must be.



Jobs in which hazards include hot sparks or splashes plus high temperatures usually require wearing a face shield *over* safety goggles.



APPENDIX—Respiratory Protection

Table 3. Atmospheric Contaminants

Respirator canisters should be chosen based on the atmospheric contaminant you're dealing with. Canisters can be identified by their color.

Atmospheric Contaminants	Colors assigned*
Acid Gasses.....	White
Hydrocyanic acid gas	White with 1/2" green stripe completely around the canister near the bottom
Chlorine gas	White with 1/2" yellow stripe completely around the canister near the bottom
Organic vapors	Black
Ammonia gas	Green
Acid gases and ammonia gas	Green with 1/2" white stripe completely around the canister near the bottom
Carbon monoxide	Blue
Acid gases and organic vapors	Yellow
Hydrocyanic acid gas and chloropicrin vapor	Yellow with 1/2" blue stripe completely around the canister near the bottom
Acid gases, organic vapors, ammonia gases	Brown
Radioactive materials, excepting tritium and noble gases.....	Purple (magenta)
Particulates (dusts, fumes, mists, or vapors) in combination with any of the above gases	Canister color for contaminants, as designated, with 1/2" gray stripe completely around the canister near the top
All of the above atmospheric contaminants	Red with 1/2" gray stripe completely around the canister near the top

*Gray shall not be assigned as the main color for a canister designed to remove acids or vapors

NOTE: Orange shall be used as a complete body or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

APPENDIX—Eye Protection

Operation	Electrode 1/32 in.	Arc current	Min* protect shade
Shielded metal arc welding	<3	<60	7
	3-5	60-160	8
	5-8	160-250	10
	>8	250-550	11
Gas metal arc welding and flux cored arc welding		<60	7
		60-160	10
		160-250	10
		250-500	10
Gas tungsten arc welding		<50	8
		50-150	8
		150-500	10
Air carbon Air cutting	(light)	<500	10
	(heavy)	500-1000	11
Plasma arc welding		<20	6
		20-100	8
		100-400	10
		400-800	11
Plasma arc cutting	(light)**	<300	8
	(medium)**	300-400	9
	(heavy)**	400-800	10
Torch brazing Torch soldering Carbon arc welding			3
			2
			14

Operations	Plate thickness (in)	Plate thickness (mm)	Min* protect shade
Gas welding: Light Medium Heavy	<1/8	<3.2	4
	1/8 to 1/2	3.2 to 12.7	5
	>1/2	>12.7	6
Oxygen cutting: Light Medium Heavy	<1	<25	3
	1 to 6	25-150	4
	>6	>150	5

If you wear corrective lenses...

People who wear prescription glasses or contact lenses need special attention. In order to assure good vision and safety, workers who wear glasses have to wear protective eyewear that either:

- Incorporates prescription lenses *or*
- Fits comfortably over prescription glasses without disturbing the proper position of the prescription or protective lenses.

If you wear contact lenses, remember that dusty and/or chemical environments may pose an additional hazard.

Inspect protective eyewear before use

To be effective, eye protectors must be in good condition and fit well. Before each use, check these points:

- Eyewear feels comfortable but fits securely enough to keep out dust and splashes
 - Spectacle sidepieces touch the side of the head and curl behind the ears
 - Goggles fit so eyes look through the lens center, with the bridge on the nose, and the strap rests low on the back of the head
- Elastic headbands are flexible—not stretched, knotted, twisted, or worn out

Lenses and face shield windows are clean and clear—not dirty, pitted, or scratched. Lens defogging solutions are available if necessary

If lenses are badly scratched or the headband no longer fits, get replacements

Keep protective eyewear clean

Follow these steps when you remove protective eyewear:

- Clean the lenses thoroughly with soap and water
- Disinfect eyewear that's been exposed to a hazardous substance or that may be worn by someone else
- Store clean eyewear in a closed, dustproof case



Two important protective eyewear precautions

Caution: Never use eyewear with metal frames in an area with potential electrical hazards. Because metal conducts electricity, you risk serious or even fatal electrical shocks or burns.

Caution: It's best not to wear contact lenses where there are hazardous dusts, vapors, gases or liquids that could get trapped beneath the lenses.

Protection

- as, Spectacles with side protection, goggles, face shields. See notes 1, 3, 5, 6, 10.*
- Faceshields, goggles, spectacles with side protection. See notes 1, 2, 3.*
- Faceshields worn over goggles. See notes 1, 2, 3.
- Screen face shield, reflective face shield. See notes 1, 2, 3.
- Goggles, eyecup and cover types. See notes 3, 11.*
- Special-purpose goggles
- Goggles, eyecup and cover types. See Note 8.
- Welding helmets or welding shields. Typical shades: 10-14. See notes 9, 12.
- Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4. See note 9
- Spectacles or welding face shield. Typical shades: 1, 5-3. See notes 3, 9.
- Spectacles with shaded or special-purpose lenses, as suitable. See notes 9, 10.

5 Appendix (cont.)

Table 1. Eye and Face Protection Selection Chart

Source	Assessment of Hazard
IMPACT—chipping, grinding, machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and sanding.	Flying fragments, objects, large chips, particle sand, dirt, etc.
HEAT—Furnace operations, pouring casting, hot dipping, and welding	Hot sparks
	Splash from molten metals
	High temperature
	Splash
CHEMICALS—Acid and chemicals handling, degreasing plating	Irritating mists
	Nuisance dust
DUST—Woodworking, buffing, general dusty conditions	Optical radiation
	Optical radiation
LIGHT/RADIATION— Welding: electric arc	Optical radiation
	Optical radiation
Welding: gas	Poor vision
Cutting, torch brazing, torch soldering	
Glare	

*For severe exposure, use faceshield



Protect your breathing

You can irritate or damage your lungs and respiratory system as well as your other organs if you inhale harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors. When ventilation and other engineering controls can't reduce the risks enough, you must wear a respirator for protection.

Your employer must provide a suitable respirator when it is necessary to protect your health and safety. OSHA requires your employer to maintain a respiratory protection program that includes:

- written procedures on the selection and use of respirators
- employee training (your employer must provide training that gives you the opportunity to handle the respirator, have it fitted properly, test the seal, wear it in normal air for a long familiarity period, and wear it in a test atmosphere)
- regular cleaning and maintenance of respirators
- medical evaluation of employees using respirators
- approval of respirators by the Mine Safety and Health Administration (MSHA) and the National Institutes for Occupational Safety and Health (NIOSH).

Like all PPE, a respirator must be selected to protect against the particular hazards you face. There are strict rules for respirator use. For instance, it's very important to have careful fit testing to be sure you:

- Can safely wear a respirator
- Have a respirator that fully seals out contaminants
- Can perform work while wearing a respirator. The fit around the chin should be secure, but not too tight. It shouldn't slip or pinch your nose and you should be able to move your head and talk while you wear it.

It's your responsibility to use and maintain the respiratory protection that's provided—and to use it correctly.

Respirator types

There are two basic types of respirators:

- Use an **air-purifying respirator** when the air has enough oxygen but contains dangerous contaminants. A disposable surgical-type mask may be adequate for mild dust. Most air-purifying respirators, however, use replaceable filters, canisters, or cartridges to filter dangerous materials or absorb contaminants from the air. It's important to practice wearing and using the respirator in a test atmosphere. Make sure you're comfortable with it before you use it in your job.

5 Appendix

Notes for Eye and Face Protection Chart

1. Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protective devices do not provide unlimited protection.
2. Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided
3. Faceshields should only be worn over primary eye protection (spectacles or goggles)
4. As required by the standard, filter lenses must meet the requirements for shade designations in §1910.133(a)(5). Tinted and shaded lenses are *not* filter lenses unless they are marked or identified as such
5. As required by the standard, persons whose vision requires the use of prescription lenses must wear either protective devices fitted with prescription lenses or protective devices designed to be worn over regular prescription eye-wear
6. Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
7. Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
8. Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.
9. Welding helmets or faceshields should be used only over primary eye protection (spectacles or goggles).
10. Non-sideshielded spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for "impact."
11. Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.
12. Protection from light radiation is directly related to filter lens density. See Note 4. Select the darkest shade that allows task performance.

Use PPE—and your good sense—to stay safe and healthy on the job

PPE is an important part of your safety and health. Your employer has many responsibilities to follow in order to protect you. Your employer must:

- Assess your job to determine what PPE is needed
- Provide the proper PPE to keep you safe on the job
- Provide training on how to select, use, and maintain PPE

You also have to take on responsibilities to keep yourself safe:

- Learn when to use PPE
- Take part in training to learn how to use PPE correctly
- Use the correct PPE every time
- Maintain your PPE so it can continue to keep you safe

If there's something you don't understand—ASK!

Your safety and health are too important to risk. If you're not sure about something, ask your supervisor!

- Use an **atmosphere (air)-supplying respirator** when there's not enough oxygen to breathe (<19.5%), when contaminant levels are high enough to be considered "Immediately Dangerous to Life or Health" (IDLH), or when an air-purifying respirator is ineffective. It may be a SCBA (self-contained breathing apparatus) with a tank like divers use or it may have a full-face mask connected by hose to a compressor or large tank of compressed air.



Identifying and labeling canisters

Respirator canisters are identified by the words and colors on their labels. On each canister, in bold letters, the name of the atmospheric contaminant should be listed.

Remember that air-purifying respirators should only be used when there is enough oxygen to support life ($\geq 19.5\%$), since they are designed to neutralize or remove contaminants from the air. Each canister should have an appropriate warning listed.

Canisters that have a special high efficiency filter for protection against radionuclides and other highly toxic particulates should have a special label attached to the neck of the canister marking the degree of protection.

And, canisters should be labeled with a distinctive color or combination of colors indicated in Table 3 in the appendix

Respirator inspection

Before you put on a respirator, check it carefully. Be sure there are no:

- Holes, cracks, tears, or other damage
- Loose connections

Report any of these problems immediately!

- Signs of wear, especially in the rubber parts
- Dents or corrosion in filters, cartridges, or canisters

When you remove a respirator:

- Do it carefully to avoid contamination
- Clean and disinfect the respirator
- Store it away from dust, heat, light, cold, moisture, and chemicals
- Leave it in its proper shape, right side up with all the rubber and plastic parts in their normal position.



4 New hazards may require new PPE—and PPE training



You use personal protective clothing and equipment that's specially selected to protect you from specific hazards you face on the job.

Everyone must be trained to learn the hazards that may be encountered on the job each day. But when jobs change, hazards may change too. You may be assigned to different operations or a different area of your workplace. Your employer may add new equipment or new procedures. You may start working with hazardous substances that are new to your workplace.

Or your employer may find PPE that provides even better protection or more comfort.

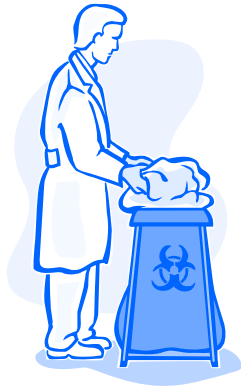
If your on-the-job hazards and protections change, OSHA requires that you receive new PPE training so that you will:

- Understand the new hazards you may face
- Know what PPE to use to protect yourself
- Know how to select, wear, maintain, and care for the PPE

Chemical protection

PPE that protects you from chemical exposure need special care. You have to remove it without contaminating yourself, other people, or clean areas of the workplace.

- Remove the most contaminated PPE first
- Remove PPE one piece at a time, from the top down, so you don't drip anything on uncovered parts of your body.
- Wear gloves when you unfasten possibly contaminated zippers, tape, or snaps—or have someone help you—and get help to remove your second glove; don't remove it with your bare hands.
- Place contaminated PPE in the proper containers for cleaning or disposal. Only authorized people, with training and the proper protections, can clean contaminated PPE



Protect your head



You should wear a helmet (hard hat) when falling object hazards are present, including working:

- Below other workers
- Around or under conveyor belts
- Below machinery or processes
- Around exposed energized conductors

Wear a **protective helmet** to prevent injury. Made of slow-burning, water-resistant materials (usually molded plastic), these hard hats protect your head in two ways.

1. Hard outer shells resist blows and penetration
2. Shock absorbing suspensions (head band and straps) act as a barrier between the outer shell and your head to absorb impact. Some hats also have:
 - A liner to keep your head warm. A helmet can't protect you if it's worn over a cap or parka hood.
 - A chin strap so they don't blow or fall off

Helmet classes

Select a helmet that provides the level of protection you need.

- **Class A** helmets resist impact and penetration and provide low voltage electrical protection
- **Class B** helmets resist impact and penetration and provide protection from high voltage electricity
- **Class C** helmets are usually made of aluminum and provide impact and penetration resistance only. Never wear an aluminum helmet when you work around electricity.

OSHA requires your employer to choose head protection that complies with ANSI Z89.1-1986.

Take care of your hard hat

Inspect your protective hard hat before each use to be sure that:

- The headband isn't stretched or worn and fits comfortably
- The shell has no dents, cracks, or other visible damage.

When you remove your hard hat:

- Check the hat for damage—replace the inner liner if it's stretched, and replace the whole hat if the shell is broken or punctured
- Wash the shell in hot, soapy water; rinse thoroughly
- Store the hat carefully in a cool, dark, dry place.

3 Care for your PPE so it can take care of you



All tools have to be kept clean and in good condition in order to work well. PPE is no different.

OSHA says that employees who use PPE on the job just know how to care for and maintain it properly.

Your training program and the PPE manufacturers' instructions will help you remove PPE properly in order to keep it in good condition and protect yourself. Here are a few general rules to keep in mind:

- Always check PPE for damage after you remove 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 any conditions that could damage it, such as heat, light, moisture, etc.

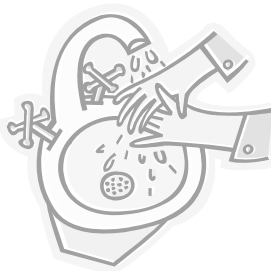
The type of ear protector you use depends on the level of noise. In some cases, you may have to use more than one at once.

Ear protectors must, of course, fit properly in order to actually protect you. Once you're used to them, they should be comfortable.

Taking care of ear protectors

Good maintenance and inspection of ear protection is important, too.

- Inspect ear protectors before use—if they're loose, cracked, or damaged in any way, replace them.
- Wash hands before inserting earplugs
- Be sure you have a good fit
- Clean ear protectors before you put them away



Note: It's also important to use proper ear protection when you're exposed to loud noise at home, too.

Protect your hands

Your hands perform your work, so they're directly exposed to all kinds of hazards. That's why you need gloves to protect you from:

- Cuts
- Abrasions
- Burns
- Punctures
- Skin contact with hazardous chemicals
- Electrical shock

Selecting protective gloves

Almost 70 percent of people who injure their hands at work aren't wearing gloves. While no glove can protect you from every possible hazard, wearing the right glove is an excellent way to prevent injury.

Be sure the gloves you wear are designed to protect against the particular hazard you face and determine how long they can be worn and whether they can be reused. In addition, your employer should request documentation from the manufacturer that the gloves meet the appropriate test standard for chemical and physical hazards. Here are some general guidelines. Use gloves made of:

- **Metal mesh** to prevent cuts from knives or other sharp objects

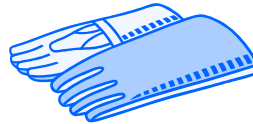


- **Leather** to protect against rough objects, chips and sparks, or moderate heat



- **Cotton fabric** for protection against dirt, splinters, slippery objects, or abrasion; don't use them if you work with rough, sharp, or heavy materials

- **Rubber, neoprene, vinyl, or other type** for chemical protection. Be sure to check the MSDS for specific instructions on just what kind of gloves you need for protection from a particular chemical



Some gloves are insulated to protect against heat or cold. When you work around electricity, you'll need insulated liners or special gloves. Open flames require fire-retardant fabrics. For radiant heat, you'll need reflective materials.

And remember, you should be able to remove the gloves so you do not contaminate your skin.

Caution: Not every job requires gloves. In fact, they can become a hazard, not a protection. If they get caught in a machine, they can take your hand along. Check with your supervisor to find out when *not* to wear gloves.

Protect your hearing

Although it's listed as a separate OSHA standard (Subpart G 1910.95), wearing hearing protection is an important part of your health and safety. Exposure to loud noise over a period of time can damage your hearing.

OSHA requires that your company follow a Hearing Conservation Program if noise levels reach 85dB on an 8-hour, Time Weighted Average basis. That means your employer will test the hearing of people who work in those areas on a regular basis. If noise can't be brought down to safe levels, employers must provide hearing protectors along with training on how to use them properly.

Homemade hearing protectors aren't allowed. Just putting cotton in your ears won't protect you from noise. There are three basic types of hearing protectors:



Earmuffs. They provide the greatest protection

Earplugs. They seal the ear canal and may come in standard sizes or individually-molded varieties



Canal caps. These soft pads on a headband are much like headphones. They seal the entrance to the ear canal

Know how to protect against electrical hazards

Protection from electrical hazards can come in many varieties, such as:

- insulating blankets
- matting
- covers
- line hoses
- gloves
- rubber sleeves

Be sure to check electrical safety equipment each day for damage, or after any incident that could have caused damage. Don't use the equipment if it has:

- holes
- tears
- ozone cutting
- an embedded foreign object
- swelling, softening, hardening, stickiness, or inelasticity

Maintenance and storage

Clean your insulating equipment as needed to remove foreign substances. It's important to store the equipment to protect it from light, extreme temperatures, excessive humidity, ozone, and other damaging substances and conditions.

Taking care of your gloves

To get the best protection from your gloves, follow these steps:

- Check gloves before wearing to make sure they're not cracked, torn, or damaged in any way
- Make sure gloves fit properly. They should cover your hands completely and be comfortable enough for you to perform your job

When you remove gloves that come in contact with chemicals:

- Take care to avoid contamination—don't let your bare skin touch contaminated gloves
- Dispose of single-use gloves in the proper containers—if they're contaminated, you can't throw them in the regular trash



- Decontaminate and, if necessary, sanitize other gloves according to company procedures
- Store clean gloves in a cool, dark, dry place—be sure they're right side out so they don't trap chemicals

Protect your body



Your everyday work clothes can't always provide enough protection against workplace hazards. You may need special clothing to protect you from burns, scratches, or hazardous chemicals. Again, match the PPE to the hazard. For example:

- **Flame-resistant cotton or duck** for moderate heat or sparks
- **Special flame-retardant and heat-resistant synthetic fabrics** to fight fires or for jobs around open flames
- **Rubber, neoprene, vinyl or other protective materials** for wet jobs or to handle acids, corrosives, and chemicals
- **Leather** to protect against light impact



Some jobs require a full protective suit. For others, an apron or leggings will do. What's important is to know what the hazard is and select the right PPE to protect you. Check the manufacturer guidelines or ask our supervisor if you are unsure of which PPE to use.

Built for safety

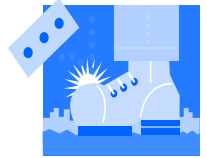
Safety shoes and boots come with many built-in protections such as:

Ankle protection to keep sparks or molten metal splashes from getting into the shoe.



Reinforced metal soles to protect you from punctures

Reinforced safety toe or toe cap that will absorb the blow if a heavy object falls on your foot



There are also special shoes or boots for special conditions. For example:

- Metal-free to provide safety when working around electricity
- Rubber or wooden-soled to provide traction and protection on wet floors
- Insulated against the cold or water
- Treated to resist chemicals and corrosives

Protect your feet

Your feet carry you through life. Be aware of hazards that could injure them and be sure they're well protected. Protective footwear can provide a variety of safety features, including protection against:

- impact
- compression
- punctures
- heat
- wet or slippery surfaces

Some protective footwear also provides metatarsal (middle part of the foot) protection and conductive or insulating safety.



Wear shoes that protect your feet from punctures in areas with nails, wire, scrap metal, or other sharp objects on the floor.



Use safety footwear if you carry or handle heavy objects or work with carts or materials that could roll over your feet.



When you work with chemicals, wear boots or boot covers made of a chemical-resistant material. OSHA requires your employer to choose foot protection that complies with ANSI Z41-1991.

Don't let clothes create hazards

Be sure your street clothes don't become a hazard. Take these precautions



- Don't wear pants that drag on the floor and could trip you
- Don't wear pants with cuffs for jobs that could create flying sparks or embers
- Avoid loose sleeves or ties, and if you wear long sleeves, be sure to button them at the wrist
- Remove clothes immediately if they're soaked by a flammable liquid so you don't catch fire
- Don't wear jewelry around machinery. If a necklace, ring, bracelet, or watch catches in moving machinery—it could take you along. Metal jewelry can also make you an electrical conductor, with a risk of serious or even deadly shock

When you remove protective clothing:

- Inspect it for damage—report anything that's torn, worn, or damaged
- Take off contaminated clothing from the top down, and don't let the clothing touch your skin
- Place soiled or contaminated clothing in the assigned places for cleaning, disposal, or decontamination