MONTHLY REFRESHER TRAINING
RESPIRATORY PROTECTION

May Week 1

WHAT IS RESPIRATORY PROTECTION?

A respirator is a device that protects you from inhaling dangerous substances, such as chemicals and infectious particles. Respirators are among the most important pieces of protective equipment for working in hazardous environments. Selecting the right respirator requires an assessment of all the workplace operations, processes or environments that may create a respiratory hazard. The identity of the hazard and its airborne concentrations need to be determined before choosing a respirator.

HOW DO RESPIRATORS WORK?

Respirators work by either filtering particles from the air, chemically cleaning (purifying) the air, or supplying clean air from an outside source.

Particulate Respirators: Particulate respirators are the simplest, least expensive, and least protective of the respirator types available. These respirators only protect against particles (e.g., dust). They do not protect against chemicals, gases, or vapors, and are intended only for low hazard levels. The commonly known "N-95" filtering facepiece respirator or "dust mask" is one type of particulate respirator, often used in hospitals to protect against infectious agents. Particulate respirators are "air-purifying respirators" because they clean particles out of the air as you breathe.

Particulate respirators:

- Filter out dusts, fumes and mists.
- Are usually disposable dust masks or respirators with disposable filters.
- Must be replaced when they become discolored, damaged, or clogged.
- Examples: filtering facepiece or elastomeric respirator.

There are nine classes of particulate filters which are broken down into three series: N, R, and P. Each series (N, R, and P) is available at three efficiency levels: 95%, 99%, and 99.97%. The N series filter is used in environments free of oil mists. The R series filters can be exposed to oil mists, but should only be worn for one work shift. The P filter can be exposed to oil mists for longer than one work shift.

Chemical Cartridge/Gas Mask Respirator: Gas masks are also known as "air-purifying respirators" because they filter or clean chemical gases out of the air as you breathe. This respirator includes a facepiece or mask, and a cartridge or canister. Straps secure the facepiece to the head. The cartridge may also have a filter to remove particles.

Gas masks are effective only if used with the correct cartridge or filter (these terms are often used interchangeably) for a particular biological or chemical substance. Selecting the proper filter can be a complicated process. There are cartridges available that protect against more than one hazard, but there is no "all-in-one" cartridge that protects against all substances. It is important to know what hazards you will face in order to be certain you are choosing the right filters/cartridges.
Chemical Cartridge/Gas Mask respirator:

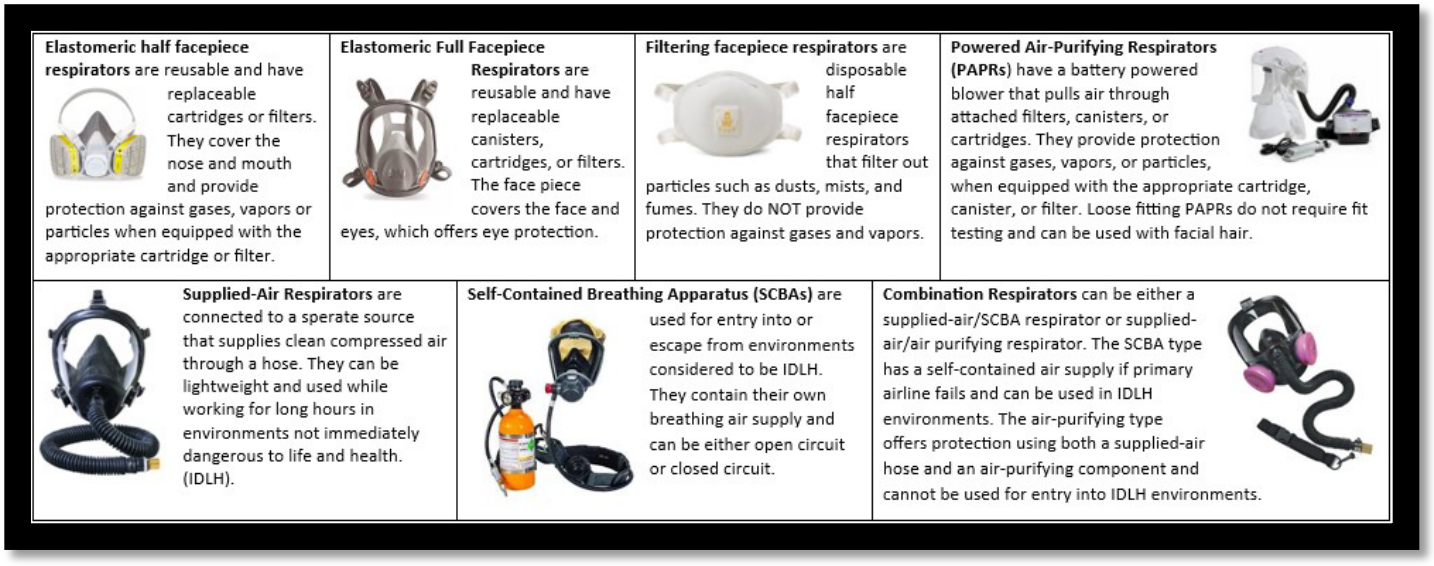
- Uses replaceable chemical cartridges or canisters to remove the contaminant.
- Are color-coded to help you select the right one.
- May require more than one cartridge to protect against multiple hazards.

Powered Air-Purifying Respirator (PAPR): Powered air-purifying respirators use a fan to draw air through the filter to the user. They are easier to breathe through; however, they need a fully charged battery to work properly. They use the same type of filters/cartridges as other air-purifying respirators. It is important to know what the hazard is, and how much of it is in the air, in order to select the proper filters/cartridges.

Self-Contained Breathing Apparatus (SCBA) is the respirator commonly used by firefighters. These use their own air tank to supply clean air, so you don't need to worry about filters. They also protect against higher concentrations of dangerous chemicals. However, they are very heavy (30 pounds or more), and require very special training on how to use and to maintain them. Also, the air tanks typically last an hour or less depending upon their rating and your breathing rate (how hard you are breathing).

QUESTIONS TO CONSIDER REGARDING ANY RESPIRATOR

- What protection (which chemicals and particles, and at what levels) does the respirator provide?
- Is there more than one size?
- Which size should I use?
- How do I know if the gas mask or respirator will fit?
- What type of training do I need?
- Are there any special maintenance or storage conditions?
- Will I be able to talk while wearing the respirator?
- Does the hood restrict vision or head movement in any way?



MONTHLY REFRESHER TRAINING
RESPIRATORY PROTECTION

May Week 2

RESPIRATOR USE AND PRECAUTIONS

Each type of respirator can come in several varieties, each with its own set of cautions, limitations, and restrictions of use. Tight fitting respirators require fit testing to ensure an adequate fit to the face, and cannot be used with facial hair. Certain escape respirators use a nose clip and mouthpiece, which is clenched between your teeth, similar to a snorkel. Some respirators prevent the user from talking while others have speaking diaphragms or electronic communication devices. Every respirator contaminated with hazardous chemicals should be cleaned and decontaminated or disposed of properly.

All respirators require training in order to be properly used. Sometimes you can practice using your own respirator. Some escape respirators come in a package that must remain sealed until use, so you need to be trained using a special “practice” version. Training is extremely important in regard to the storage, maintenance, use, and disposal of the respirator. If you do not use a respirator correctly, it is very likely that it will not adequately protect you and may even hurt you.

HOW WELL DOES A RESPIRATOR NEED TO FIT ME?

If your mask does not make a tight seal all the way around your face when you inhale, you may breathe contaminated air that leaks around the edges of the face seal. Most respirators come in different styles and sizes, and fit different people differently because people's faces have different shapes. You also need training to know how to correctly put the mask on and wear it correctly.

The only way to tell if a tight-fitting respirator fits you properly, and is capable of protecting you, is to fit test the respirator. Fit testing can be accomplished a number of different ways and should be done by a health and safety professional before workers wear a respirator in a hazardous environment. Respirators must be checked for proper fit each time they are donned to ensure they provide adequate protection.

CAN I WEAR A RESPIRATOR WITH FACIAL HAIR?

Anything that prevents the face mask from fitting tightly against your face, such as a beard or long sideburns, may cause leakage. If your respirator requires a tight fit, you must trim back your beard so that it will not interfere with the face-facepiece seal. If your respirator is a loose-fitting (hooded) positive pressure respirator (e.g., a powered air-purifying respirator, PAPR) then you may have a beard.

WILL THE CORRECT RESPIRATOR ALWAYS OFFER PROTECTION?

No. Gas masks and respirators reduce exposure to the hazard, but if the exposure is such that it goes beyond what the filter is capable of handling (either because the amount of toxic gas or particles is more than what the filter is designed to handle, or because the exposure lasts longer than what the filter is designed to handle), the filter may not be effective in providing required protection. If there is a large amount of a toxic chemical in the outside air, even that small leakage can be dangerous.

CAN ANYONE WEAR A RESPIRATOR?

No. Breathing through a respirator is more difficult than breathing in open air. People with lung diseases, such as asthma or emphysema, elderly people, and others may have trouble breathing. People with vision problems may have trouble seeing while wearing a mask or hood (there are special masks for people who need glasses). Employees must be medically evaluated before assigned to use a respirator.

HOW LONG WILL MY RESPIRATOR CARTRIGE / FILTER LAST?

Cartridges, filters, and masks get old. If the filter cartridges are outdated, have been open to the air or are damaged, you may not be protected. If cartridges are open or not packed in air-tight packaging, they should not be used. Even cartridges in original packaging have expiration dates that should be checked before purchase and use. Also, over time your mask can get old and break down. Keep your mask in a clean, dry place, away from extreme heat or cold. Inspect it before and after use according to the manufacturer's instructions. Cartridges also have a limited-service life; they must be changed periodically during use.

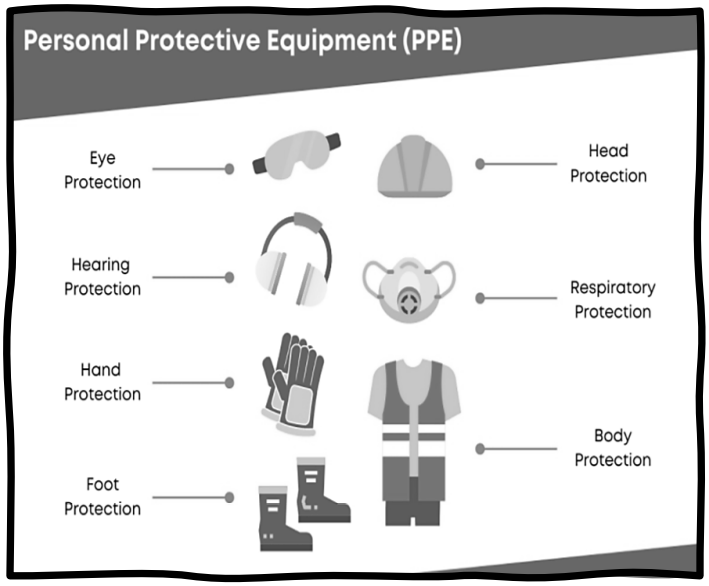
WILL A GAS MASK PROTECT ME FROM LOW OXYGEN?

No. Air-purifying respirators do not provide oxygen. If used in an environment with low oxygen levels, such as in a fire or a confined space, you are in danger of asphyxiation.

MONTHLY REFRESHER TRAINING
PERSONAL PROTECTIVE EQUIPMENT

May Week 3

WHAT IS PPE?



A Personal Protective Equipment (PPE) is clothing or equipment designed to reduce employee exposure to chemical, biological, and physical hazards when on a worksite. It is used to protect employees when engineering and administrative controls are not feasible to reduce the risks to acceptable levels.

IMPORTANCE OF PPE

According to the hierarchy of controls, PPE is recommended to be the last level of defense to prevent occupational injuries, illnesses, and fatalities. Combine PPE with other control measures helps ensure a safe and healthy environment. Here are some benefits of using PPE:

- prevent unnecessary injury in the workplace;
- protect employees from excessive chemical exposure;
- prevent the spread of germs and infectious diseases;
- help businesses comply with regulatory requirements; and
- improve employee productivity and efficiency.

BASIC TYPES OF PPE

However, even the strictest controls will not necessarily eliminate all the risks associated with most job tasks and this is where the need for PPE must be evaluated. The JHA can help identify which specialized PPE will be required. There are numerous types of workplace safety equipment available depending on the hazard exposure and work conditions

Face and Eye Protection PPE includes safety goggles and face shields and should be used for tasks that can cause eye damage or loss of vision, sprays of toxic liquids, splashes, and burns.

- Check if safety glasses comply with the ANSI Z87.1 eye protection standard.
- Ensure that there are no cracks or deformities on the lenses.
- Ensure the strap is in good working condition and is firmly sealed to the cheek and forehead.
- Clean and disinfect after use.

Head Protection

PPE includes hard hats and headgears and should be required for tasks that can cause any force or object falling to the head.

- Ensure that there are no dents or deformities on the shell and connections are tightened inside.
- Do not store in direct sunlight as extreme heat can cause damage.
- Choose appropriate cleaning agents as it can weaken the shells of hard hats and may eliminate electrical resistance.
- Always replace a hard hat if it was used for any kind of impact, even if the damage is unnoticeable.

Hand Protection

PPE includes safety gloves and should be used for tasks that can cause hand and skin burns, absorption of harmful substances, cuts, fractures or amputations.

- Ensure hand protection fits perfectly with no spaces and is free from cuts, burns and chemical residue.
- Always replace them if any sign of contamination was observed.
- Use rubber gloves when working with heat and electricity to reduce the risk of burn or electrical shock.
- At a minimum all hand protection we use should incorporate A4 level cut resistance.

Foot Protection

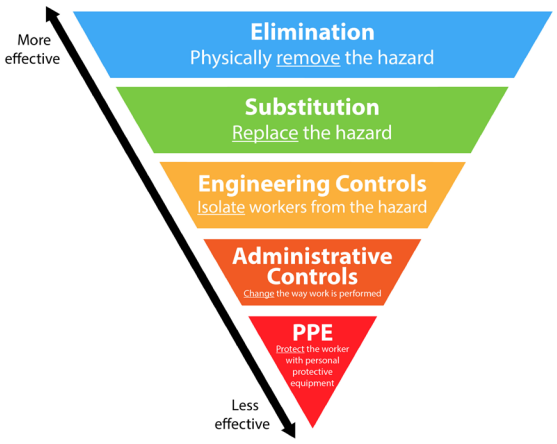
PPE includes knee pads and safety boots and should be used for tasks that can cause serious foot and leg injuries from falling or rolling objects, hot substances, electrical hazards, and slippery surfaces.

- Ensure boots have slip-resistant soles that can protect against compression and impact.
- Ensure the sole plate is in good condition to prevent punctures.

Hearing Protection

PPE includes ear muffs and plugs and should be used for tasks that can cause hearing problems and loss of hearing.

- Ensure the equipment fit the ear canal perfectly.
- It is recommended to use formable earplugs to fit on different sizes of ear canals.
- Use protectors that reduce noise to an acceptable level to have a room for communication.
- Ensure earplugs are clean and in good condition.



Centurion Safety Education

MONTHLY REFRESHER TRAINING
PERSONAL PROTECTIVE EQUIPMENT

May Week 4

PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) is employees' last line of defense against injury and illness. That defense will not work unless it's the appropriate gear. Once the hazards have been documented, appropriate steps should be taken to engineer, substitute, or manage the hazard through policy. If that cannot be done, personal protective equipment may be the answer.

Employees should be well versed in the below information so they are equipped to keep themselves safe. Remember, PPE does not eliminate the hazard, but rather manages the employee's exposure to the hazard.

Before starting a task make sure you know:

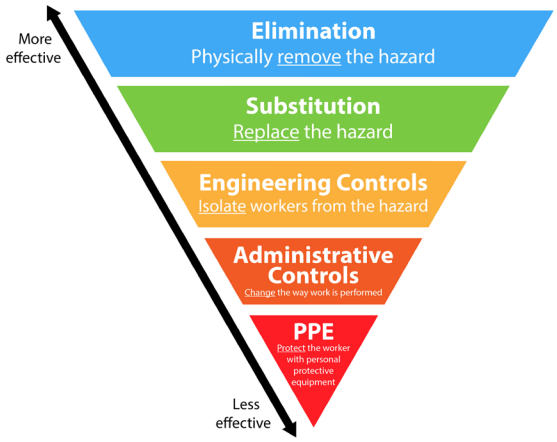
- Necessary PPE
- When PPE is needed
- Donning/doffing PPE
- Capacity of the PPE
- Care, maintenance, and lifespan of the gear
- When to replace gear
- How to discard used/contaminated PPE.

PPE can include eyewear, clothing, gloves, chaps, footwear, respiratory protection of many types, ear and hearing protection, high visibility clothing items, headwear, and even skin applications such as sunscreen. Most PPE has ratings that apply to qualifying the gear's capabilities and which situations it is designed to protect us. At a very basic minimum, employees should:

- Inspect PPE every shift and following any incident that could have damaged the gear
- Know what the gear is protecting them from and how
- Understand proper use of the gear Take action.

Key takeaways for staying safe and using PPE:

- PPE is the last line of defense protecting employees from a hazard.
- PPE should be chosen based on a written hazard assessment identifying hazards and gear
- required for protection.
- PPE should be inspected at minimum each shift to ensure it is in good working condition.
- Employees should be trained at donning and doffing gear to ensure it works



SAFETY HELMET

- Please ensure to wear appropriate head protection before getting engaged in hazardous work.
- Head protection prevents from injuries which might happen due to fall.

EYE AND EAR PROTECTION

- Ear muffs protects from excessive noise.
- Appropriate eye protection to protects from liquid chemicals, molten splashes and flying particle that may arise while doing hazardous work.

SAFETY BOOTS

- Appropriate safety boots must be worn to protect the feet from falling objects, punctures or any other incidents.

PROTECTIVE CLOTHING

- Flame retardant clothing protects from incidents that might happen due to flash fire, flames and sparks.
- Daletec fire-resistant fabrics protects employees who are working in Oil & Gas industries, Utilities, Welding & Foundries.

HI VISIBILITY VESTS

- Hi visibility vests should be worn by resources working in construction zone.
- This ensures that worker can be seen by everyone and he can do his job safely.

SAFTY GLOVES

- Always wear protective gloves.
- It protects from harmful substances, severe cuts and punctures, chemical and thermal burns.

Centurion Safety Education

MONTHLY REFRESHER TRAINING
PERSONAL PROTECTIVE EQUIPMENT

May Week 5

PROTECTIVE GLOVES FOR HAND PROTECTION

Preventing hand injuries is the responsibility of everyone on the worksite. Our work requires the use of our hands so we will naturally be at much higher risk than workers in other industries for hand injuries. As might be expected, many hand hazards are equipment-related, including vibrating equipment, rotating equipment and tool and equipment pinch points. Chemical exposure, cuts and punctures from sharp instruments are also major hazards.

APPEARANCES ARE DECEIVING

When selecting protective gloves, it's important to note that just because a pair of gloves appears to be tough, that doesn't mean they are cut resistant. For example, many people believe that leather gloves are strong and naturally cut resistant. Leather is really just skin, and as such, it's no more resistant to cuts than our own skin, so leather gloves cut very easily. The same is true of cotton.

Engineered, synthetic fibers, such as Kevlar and Dyneema, offer five to ten times the cut protection of leather. These modern materials are used in bulletproof vests and are much stronger than steel on an equal-weight basis. Also, Kevlar provides good thermal protection against both heat and cold, while Dyneema is extremely abrasion resistant.

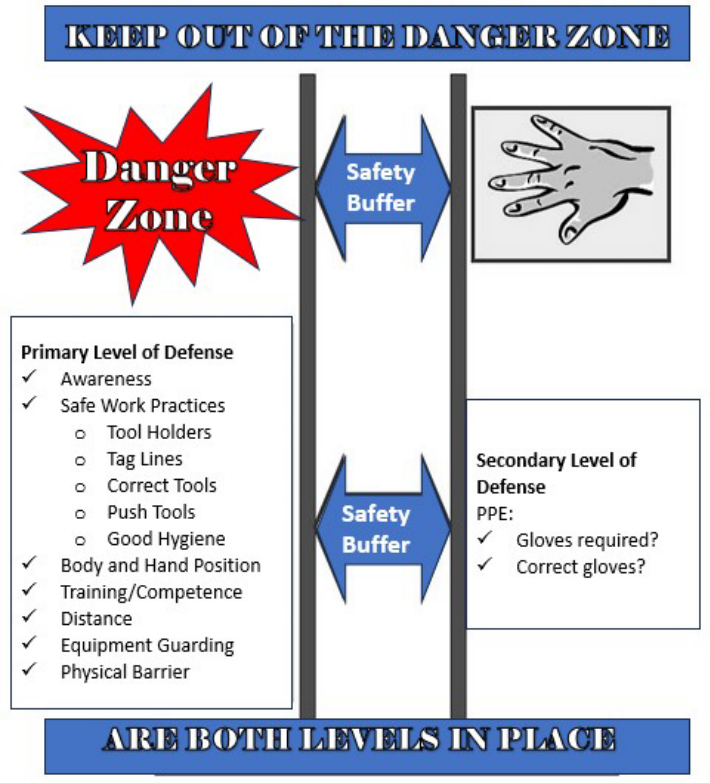
Chemical-resistant gloves offer crucial protection from industrial chemicals. These gloves are made from various types of rubber: natural, butyl, neoprene, nitrile or fluorocarbon; or various kinds of plastic: polyvinyl chloride (PVC), polyvinyl alcohol or polyethylene. Glove manufacturers typically blend or laminate chemical-resistant gloves for improved performance. Typically, thicker gloves provide more chemical resistance, but overly thick gloves may impair grip and dexterity, a factor that can introduce its own safety risks.

Selecting the right gloves to prevent cuts, abrasions and burns is critical. Gloves should not only be cut resistant, but vibration and chemical resistant as well. Other factors include grip, since a secure grip can reduce the threat of injury by preventing the tool a worker is using from slipping; abrasion resistance and durability, since most gloves are used for long periods of time; and dexterity and comfort, which can encourage workers to continue to use protective gloves when they otherwise might discard them because they get in the way of performing tasks.

CHOOSING THE RIGHT GLOVE

Standards used to rate the cut resistance of gloves: ANSI/ISEA is a testing agency that rates cut resistance, and its ratings measure cut protection in a range from 0 to 5, with 0 being lowest and 5 being the highest.

Gloves with cut levels 1 and 2 are typically used in work areas with minimal cut hazards, such as routine handling of non-hazardous materials. Gloves rated 3 or 4 should typically be used in work areas where a medium cut hazard is present,



such as parts with sharp edges. Gloves rated 5 are for high-risk work areas, such as when handling glass products or sheet metal. There's a wide variety of gloves that meet key cut protection requirements. While we require all hand protection to at least achieve a cut resistance level of A4 your task may require even higher levels of cut protection. If unsure always ask.

PRECAUTIONS FOR ALL GLOVES

While cut-resistant gloves can be great, they are not impervious. To help make sure your gloves are effective as possible make sure to inspect before each use for damage and replace as needed. Inspection of chemical-resistant gloves should confirm that they have not absorbed the chemicals they are designed to protect against, since that could compromise their protective capability.

Safe glove use is critical since so many accidents occur when employees are working with their hands. Even with the best glove use, if we place our hands in the Danger Zone an injury may be impossible to prevent. Remember, PPE is only the last line of defense for hand safety!