

Personnel Protection Equipment



Norfolk State University

Facilities Safety and Risk Management

GROUND RULES

- Bathrooms are located,...
- Please raise hand if you have a questions
- Please silence all cell phones. Please leave the room if you must take or place a call.
- Relax and enjoy!!!!

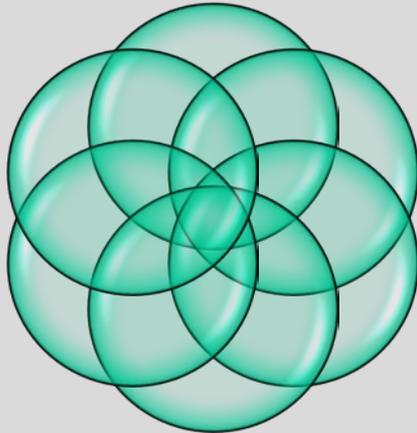


PPE Selection

Equipment must protect against specific hazard present.

Meets the ANSI Z87.1 standard requirements

Durable and easy to clean and disinfect.



Does not interfere with the function of other PPE.

Reasonably comfortable to wear.

Does not impair vision or movement.



DO YOU KNOW WHEN AND WHERE TO WEAR PPE?

Eye and Face Protection



It is estimated that 90% of eye injuries can be prevented through the use of proper protective eyewear. To encourage workers to consistently use their eye and face protection, manufacturers have made considerable advancements in designs that have greatly improved the comfort, durability and fashion of their products.



- The following are eye injury hazards:
 - Acids and other caustic liquid chemicals.
 - Blood and other potentially infectious body fluids.
 - Dust and other flying particles, such as metal or shavings.
 - Intense light created by welding arcs and lasers.

Types of Eye and Face Protection

Goggles - Goggles are designed for specific hazards to protect eyes, eye sockets, and the facial area immediately surrounding the eyes from impact, dust, and splashes. Some goggles are made to fit over corrective lenses.



Safety Glasses - Safety glasses are made with safety frames constructed of metal and/or plastic, fitted with either corrective or Plano impact-resistant lenses and come with or without side shields.



Types of Eye and Face Protection (cont.)



Impact resistant - This eyewear is used for moderate impact from particles encountered when performing carpentry, woodworking, grinding, and scaling.



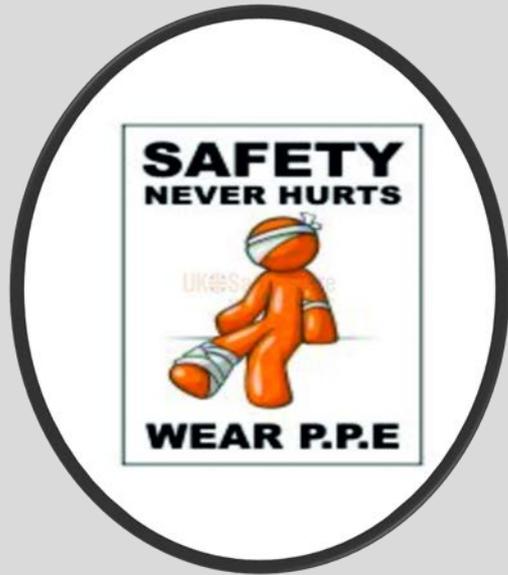
Side shields - The shields on the side protect against particles that may potentially impact the eyes from the side and are made of wire mesh or plastic. Eyecup side shields provide the best protection.



Face shields - These shields are transparent sheets of plastic that extend from the brow to below the chin and across the entire width of the face to protect against dust, spray or splashes of hazardous liquids. Because face shields do not protect against impact hazards, these shields are utilized in combination with safety glasses or goggles.



Eye Protection General Safety Guidelines



Ensure the equipment fits properly.

Do not use the equipment if it has cracks or is broken.

Wear only clean and disinfected eye and face protection.

Use splash-proof goggles and face shield when working with chemicals.

Never look at welding operations without proper protection.

Use goggles in high dust areas.

Protect your eyes from direct high heat.

Head Protection

Designed to provide protection from impact and penetration hazards caused by falling objects and some protect against burns and electric shock. Use head protection when working in areas where there is a potential for injury to the head from:

- Falling objects
- Impact against fixed objects, such as exposed pipes or beams
- Exposed electrical conductors



Types and Classes of Head Protection

- Each type and class of head protection is intended to provide protection against specific hazardous conditions. An understanding of these conditions will help in selecting the proper protection for the particular situation. Protective hats are made in the following types and classes

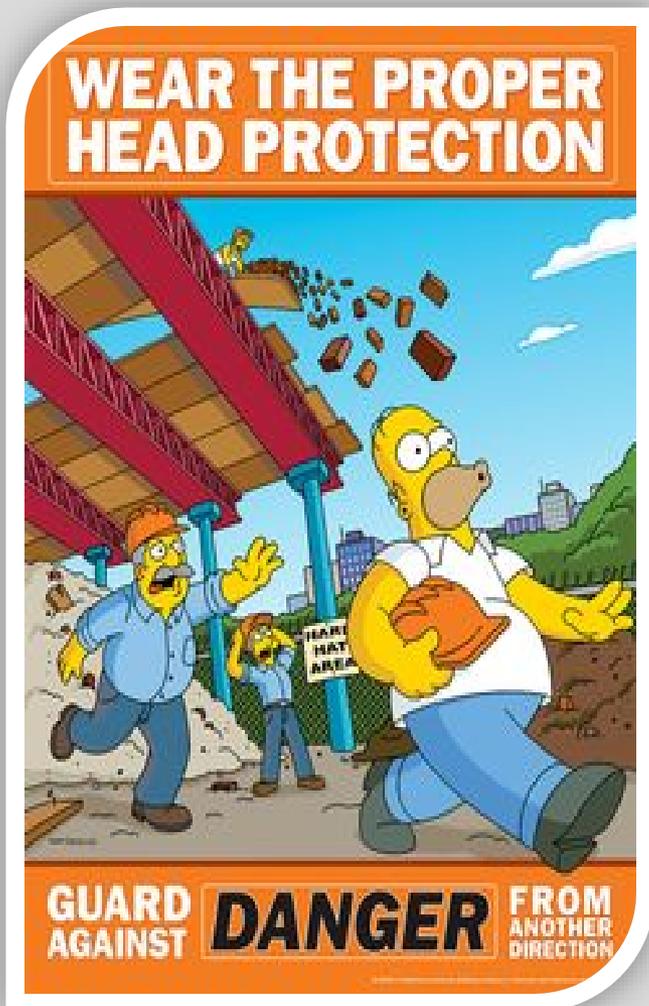
Type 1 Hard hats have a full brim that provide protection from impact to the top of the head



Type 2 Hard hats are brimless helmets with a peak extending forward from the crown which provides protection from side and top impact



Types and Classes of Head Protection



Class G - General (formerly A) are designed for general purpose with 2,200 voltage protection and provide protection against impact hazards.

Class E - Electrical (formerly B) are designed for utility workers providing protection from impact and penetration by falling or flying objects and up to 20,000 volts of electricity.

Class C - Conductive are designed for general purpose, do not provide voltage protection, are lightweight and provide impact protection

Suspension and Chin Straps

Pin-lock suspension- A type of suspension that attaches to the users head with a locking mechanism. This is the most economical of the suspensions. At this time, all hard hats come with either this suspension or the ratchet suspension below



Suspension and Chin Straps (cont.)



Ratchet suspension- A type of suspension with a quick ratchet adjusting knob. This loosens or tightens the hard hat immediately. The pin lock suspension must be removed to be adjusted

Suspension and Chin Straps (cont.)



Chin Straps -
When you are required to work at a higher elevation, you must wear a chin strap to prevent the hard hat from falling.

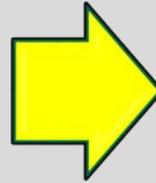
HEAD PROTECTION DON'TS

- Do not use a hard hat when:
 - Shows signs of deterioration
 - The suspension system is cracking, tearing, or fraying.
 - The suspension system no longer holds the shell from 1 inch to 1¼ inches away from the head.
 - The brim or shell is cracked, perforated, or deformed.
 - The brim or shell shows signs of exposure to heat, chemicals, ultraviolet light, or other radiation, such as loss of surface gloss, chalking, or flaking

Care

Paints, paint thinners, and some cleaning agents can weaken the shell of the hard hat and may eliminate electrical resistance.

Consult the helmet manufacturer for information on the effects of paint and cleaning materials on their hard hats. Do not paint or add stickers that can hide signs of deterioration in the hard hat shell.



Ultraviolet light and extreme heat, such as that generated by sunlight can reduce the strength of the hard hats. Do not store or transport hard hats on the rear-window shelves of automobiles or otherwise in direct sunlight

Foot and Leg Protection

- Having the right footwear for the job you do is critical to your safety and the prevention of injuries. According to the National Safety Council, as many as 130,000 disabling foot injuries and 40,000 toe injuries occur annually.

General hazards to your feet on the job are:

- Heavy objects.
- Sharp objects.
- Improper footwear.
- Molten metal.
- Hot or wet surfaces.
- Slippery surfaces.
- Hazardous liquids.



Types of Foot and Leg Protective Equipment

- **Leggings** are worn to protect the lower legs and feet from heat hazards.
- **Metatarsal guards** are used to protect the instep area from impact and compression.
- **Toe guards** fit over the toes of regular shoes and protect only the toes from impact and compression hazards.



Types of Foot and Leg Protective Equipment



Combination foot and shin guards are used in combination with toe guards when greater protection is needed.



Safety shoes are sturdy shoes that have impact-resistant toes and heat-resistant soles that protect against hot work surfaces and some with metal insoles protect against puncture wounds.



Electrically conductive shoes protect against the buildup of static electricity.



Electrical Hazard, Safety-Toe Shoes are nonconductive and prevent feet from completing an electrical circuit to the ground



Wearing Foot Protection

Every Job Presents
Unique Hazards



Before you enter any work area,



make sure you are wearing
the right foot protection.

Check footwear every day for damage, such as worn tread, frayed laces, holes, and tears.

Select footwear with non-skid soles

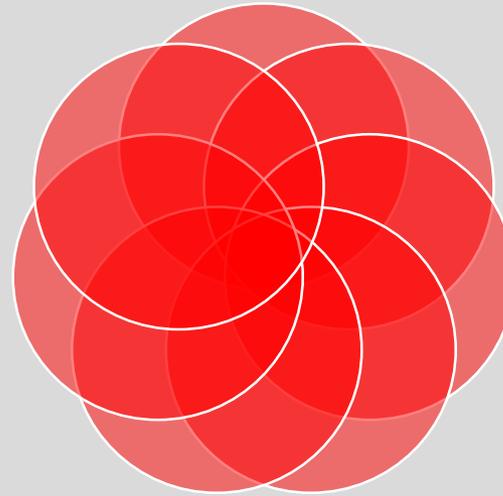
Wear chemical resistant footwear if handling chemicals.

Wear rubber boots in wet areas.

Use replaceable cushioned insoles for added comfort.

Select footwear with good ankle support.

Keep socks and footwear dry. Change your footwear if they become wet.



the right foot protection
make sure you are wearing

Hearing Protection

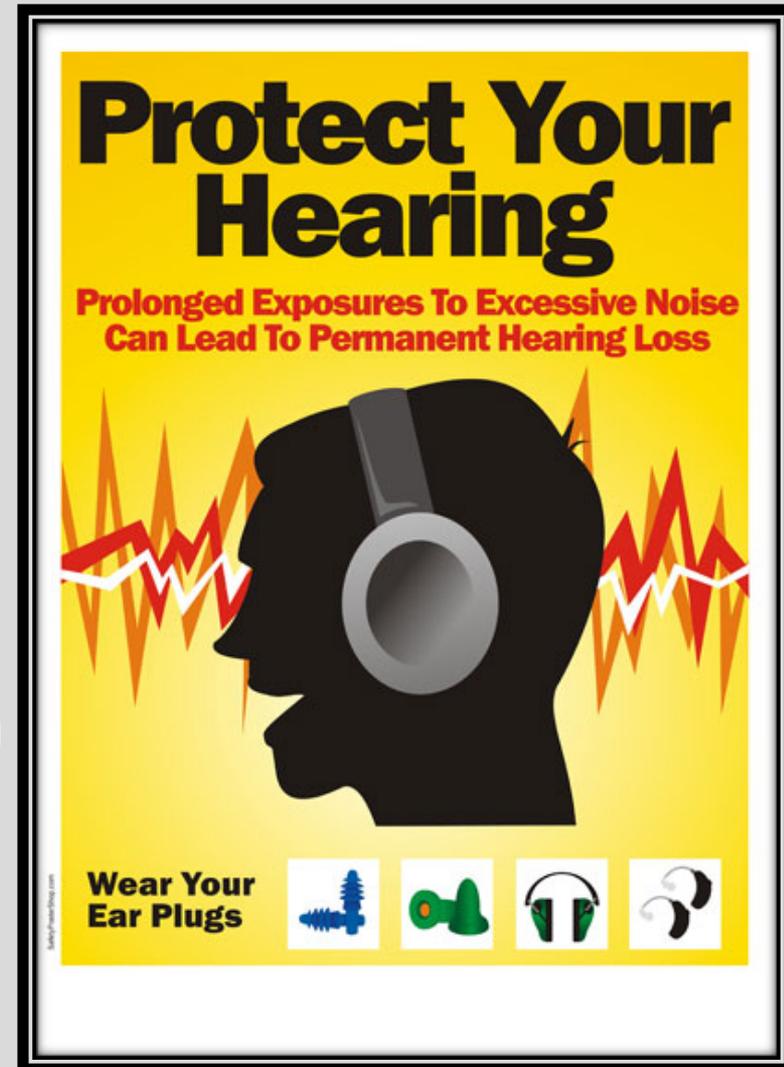
Hearing protection is essential when noise exposures cannot be controlled at their source and negatively affect your job performance, safety, and health.

Physical effects:

- loss of hearing, pain, nausea, and interference with communications when the exposure is severe.

Psychological effects:

- annoyance and disruption of concentration.



Hearing Protection Equipment



Single-use earplugs are made of waxed cotton, foam, or fiberglass wool, and are self-forming.



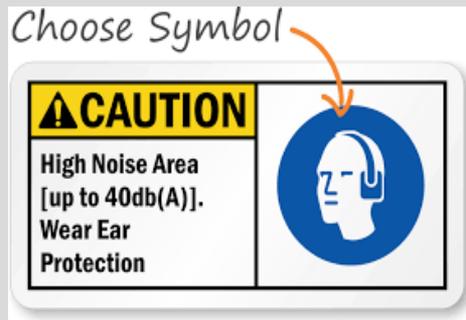
Preformed or molded earplugs must be professionally fitted for an individual and are not disposable requiring cleaning after each use.



Band type hearing protectors come on a flexible plastic band that is worn under the chin while the protectors are in the ears. The band can be left resting around the neck while the protectors are not in use.

Hearing Protection Equipment

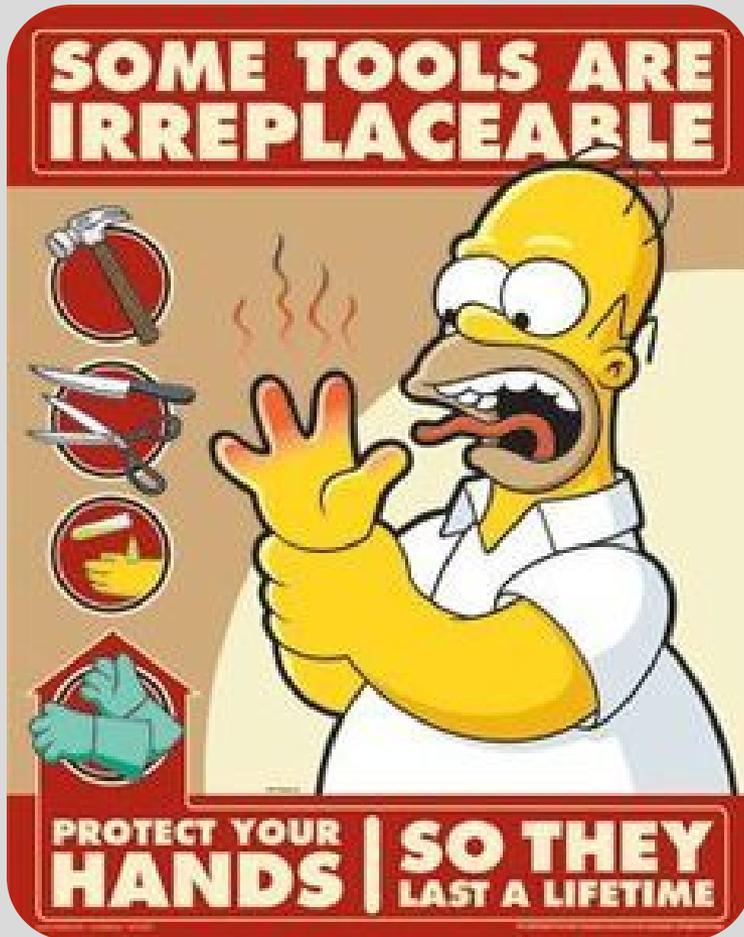
- **Ear canal caps** seal the opening to the ear without entering the ear canal, usually come on a band that can be placed around the neck when the caps are not in use for convenience in work areas with varying noise levels.



- **Earmuffs** require a perfect seal around the ear. Glasses, long sideburns, long hair, and facial movements, such as chewing may reduce the protective value of earmuffs



Hand Protection



Your hands should be protected whenever you are cutting, painting, welding, or handling sharp metal, chemicals, needles, or blood samples. It is imperative to wear the proper glove for the specific task, since no one glove protects against all hazards

Hand Hazards

- Electric shock
- Chemical exposure
- Cuts, punctures, amputation and abrasions
- Bio-hazard exposure
- Vibration
- Bruises
- Burns



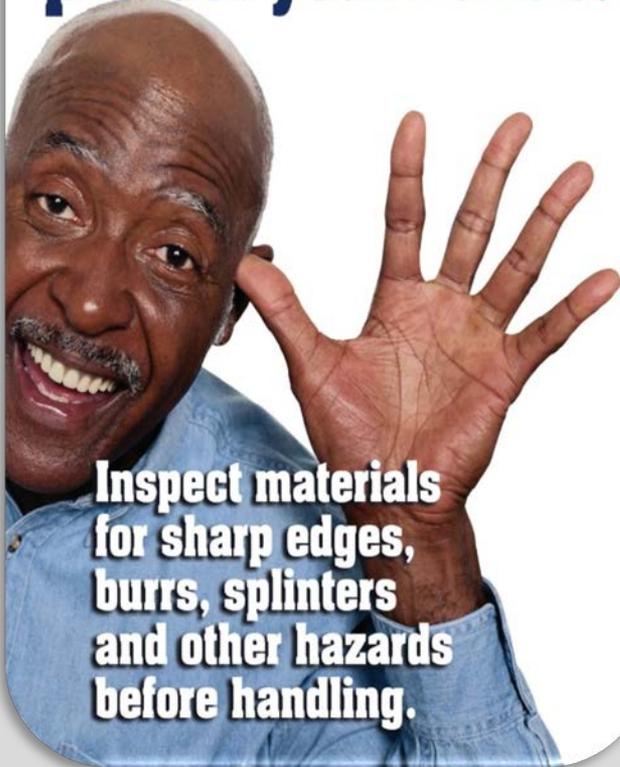
Types of Gloves

- **Leather gloves** protect against sparks, moderate heat, blows, chips, and rough objects. Welders in particular need the durability of higher-quality leather gloves.
- **Aluminized gloves** provide reflective and insulating protection against heat. Aluminized gloves require an insert made of synthetic materials that protect against heat and cold. These gloves usually are used for welding, furnace, and foundry work.
- **Aramid fiber gloves and other synthetic materials** protect against heat, cold, and are cut-/abrasive-resistant



Types of Gloves cont.

**Use your eyes to
protect your hands.**



**Inspect materials
for sharp edges,
burrs, splinters
and other hazards
before handling.**

- **Fabric gloves** protect against dirt, slivers, chafing, and abrasion, however do not provide sufficient protection from rough, sharp, or heavy materials.
- **Coated fabric gloves** are general-purpose hand protection offering slip-resistant qualities.
- **Butyl rubber gloves** protect against nitric acid, sulfuric acid, hydrofluoric acid, red fuming nitric acid, rocket fuels, and peroxide. In addition, they resist oxidation, ozone corrosion, abrasion and remain flexible at low temperatures.

Types of Gloves cont.

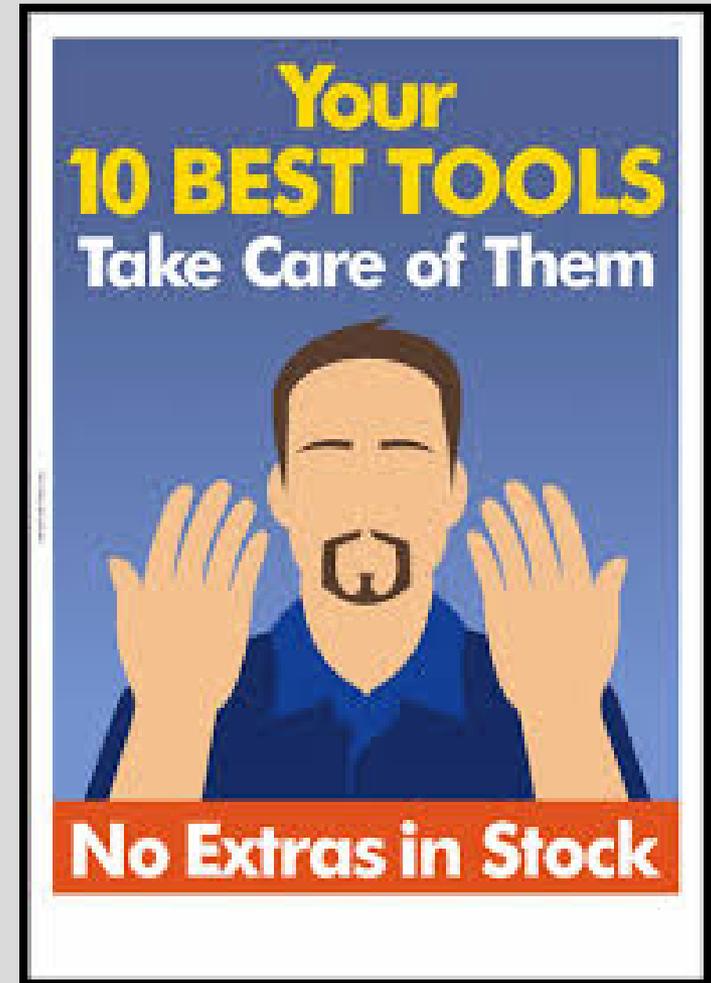
- **Natural latex or rubber gloves** are a general-purpose glove that resist abrasions caused by sandblasting, grinding, and polishing. They provide protection from from most water solutions of acids, alkalis, salts, and ketones.
- **PLEASE NOTE:** When selecting hand protection, you should be aware that latex gloves have caused allergic reactions in some workers and may not be appropriate for you. Hypoallergenic gloves, glove liners, and powderless gloves are possible alternatives for workers allergic to latex gloves

Types of Gloves cont.

Neoprene gloves have good pliability, finger dexterity, high density, and tear resistance that protect against hydraulic fluids, gasoline, alcohols, organic acids, and alkalis.

Nitrile rubber gloves provide protection from chlorinated solvents, such as trichloroethylene and perchloroethylene, and resist abrasions, punctures, snags, and tears.

Anti-vibration gloves protect the hand from vibration hazards, and generally cover only the palm and first joint of the fingers.



Wearing Hand Protection



Always wear
the proper
glove for the
task.

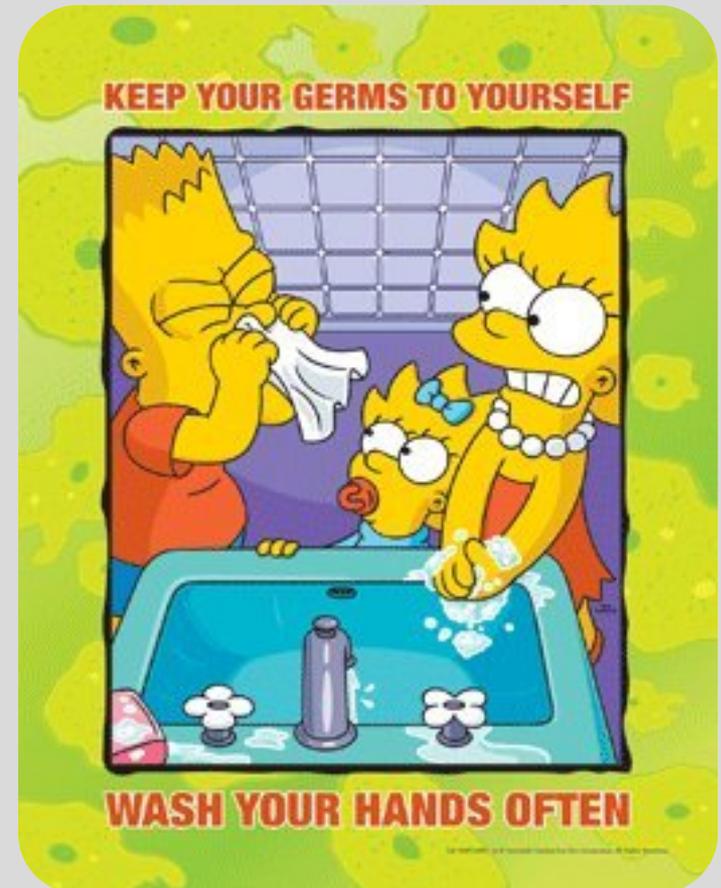
Remove any
rings or
bracelets.

Check
gloves for
wear or
damage.

Check if
they have
the potential
for catching
in
machinery.

Hygiene

Wearing gloves is important, but it is also important to maintain personal hygiene and keep your hands clean to prevent infection. Barrier creams provided limited protection against alkali's and acids, but are sometimes used in conjunction with gloves. If you use barrier creams, always be sure to wash your hands before putting on the cream and at the end of the day when you are ready to go home.



Protective Clothing Limitations

Each type of protective clothing has a specific purpose as well as limitations. The following are common problems associated with the use of protective clothing:

- No clothing is resistant to all chemicals.
- Workers have decreased manual dexterity and or mobility.
- Vision is often impaired.
- Heat stress may result from the prevention of normal heat exchange mechanisms.

The most important safety guideline for wearing personal protective equipment is to know the hazards present, then select the proper protective equipment



Protective Clothing

Proper clothing and personal protective equipment are your first and often only defense against many safety and health hazards. It is not uncommon to hear about tragedies that have taken place when a worker who was wearing loose clothing got too close to an operating machine and was drawn into the machine. Machines are powerful and unforgiving! Loose clothing is never appropriate in an industrial workplace. Protective clothing protects primarily because of the material from which it is made.



Types of Protective Clothing

- Vests
- Jackets
- Aprons
- Coveralls
- Full body suits



Types of Protective Materials

- Wool and specially treated cotton are two natural fibers that are fire-resistant and comfortable since they adapt well to changing temperatures.
- Duck is a closely woven cotton fabric and is used to protect against cuts, and bruises from heavy, sharp or rough material.
- Heat-resistant material, such as leather, is used to guard against dry heat and flames.
- Rubber and rubberized fabrics, neoprene, and plastics provide protection against some acids and chemicals.
- Disposable suits of synthetic materials provide protection from dusty materials and some liquids

THANK YOU, For Your Attention!

*“BEHOLD THE **GREEN** AND
GOLD!!!!”*

*We Wish You Success in Your
Career Here At
Norfolk State University*