

# Personal Protective Equipment

## PURPOSE

E Light Electric Services Inc. provides all Employees with required PPE to suit the task and known hazards. This policy covers the requirements for Personal Protective Equipment with the exception of PPE used for hearing conservation, fall protection and prevention and respiratory protection or PPE required for hazardous material response to spills or releases, which are covered under separate programs.

## GENERAL POLICY

PPE is not a substitute for more effective control methods and its use will be considered only when other means of protection against hazards are not adequate or feasible. It will be used in conjunction with other controls unless no other means of hazard control exist. The NIOSH Hierarchy of Controls will be referenced when determining appropriate risk control methods.

## HIERARCHY OF CONTROLS

The Hierarchy of Controls is a specific order you should follow when determining the most effective way to reduce risk. NIOSH outlines 5 rungs of the Hierarchy of Controls. The hierarchy starts with the controls perceived to be most effective and moves down to those considered least effective.

## ELIMINATION OR SUBSTITUTION

Eliminating the hazard completely is always the first choice. Substitution involves replacing the material or process with a less hazardous one.

When considering these options, ask yourself:

1. *Can I find safer ways to perform the task?*  
For example, if falling is a hazard, eliminate the risk by storing materials at lower heights so workers don't have to climb ladders to reach the goods.
2. *Can I use something less harmful?*  
For example, if chemical-heavy industrial cleaners are a hazard, consider substituting a less harmful cleaner. Just make sure the substitutions don't create new hazards.

## ENGINEERING

If you can't eliminate the hazards or substitute safer alternatives, engineering controls are the next best options. These involve using work equipment or other means to prevent workers from being exposed to a hazard. Engineering controls are physical changes to the workplace and may include equipment guarding, guardrails, traffic control lanes and barriers between vehicles and pedestrians, and many other options.

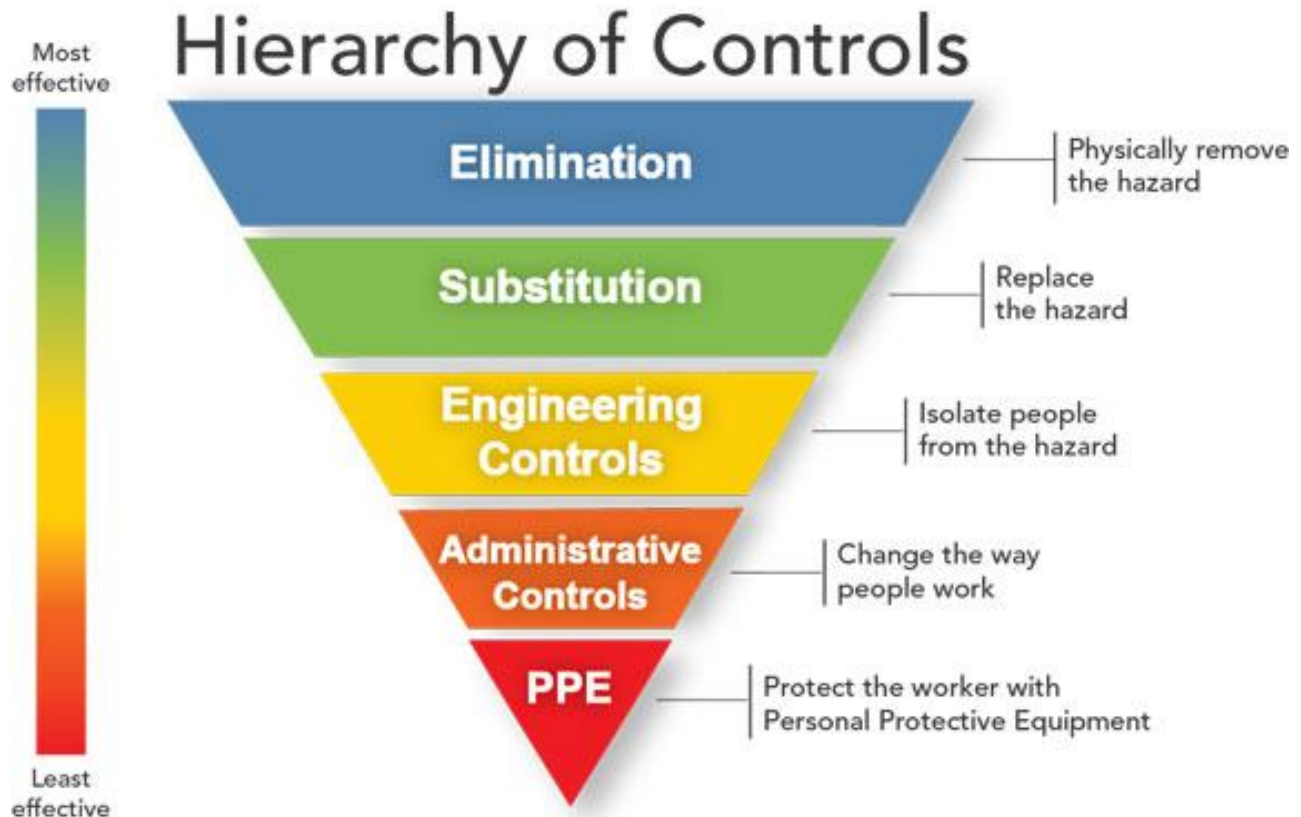
For example, while working at heights cannot be avoided in construction, guardrails can be installed to prevent falls from happening. Guardrails are an example of an engineering control.

## ADMINISTRATIVE

Administrative controls involve identifying and implementing safe work procedures so workers can perform their job duties safely. The findings of a risk assessment will form the basis of these safe work procedures. Administrative controls typically change the way people work—for instance, through rules and policies.

## PERSONAL PROTECTIVE EQUIPMENT

Using personal protective equipment (PPE) is another important control to protect workers.



## RESPONSIBILITIES

### MANAGEMENT

- Conduct hazard assessments to identify specific PPE for specific tasks
- Train employees in the selection, use, inspection, storage, cleaning, and limitations of specific PPE.

### SUPERVISORS

- Monitor use of PPE.
- Provide replacement PPE when needed.
- Identify any new hazards that would require the use of PPE.

### EMPLOYEES

- Properly use and care for assigned PPE.
- Immediately inform supervisor if PPE is damaged or not effective.
- Wear PPE consistently and correctly when required.

## **GENERAL RULES**

### **DESIGN**

All personal protective clothing and equipment will be of safe design and construction for the work to be performed. Only those items of protective clothing and equipment that meet National Institute of Occupational Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards will be procured or accepted for use.

### **HAZARD ASSESSMENT AND EQUIPMENT SELECTION**

Hazard analysis procedures shall be used to assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the following actions will be taken:

- Select, and have each affected Employee use, the proper PPE.
- Communicate selection decisions to each affected Employee.
- Select PPE that properly fits each affected employee.

### **ENERGIZED ELECTRICAL WORK**

Employees shall consult NFPA 70E, Table 130.7(C)(15)(a) for ac systems and Table 130.7(C)(15)(b) for dc systems to determine the Arc-Flash PPE Category and record the Arc-Flash PPE category on the Work Permits. Additional information can found in E Light Electric's [Electrical Hot Work Program](#).

### **DEFECTIVE/DAMAGED EQUIPMENT**

Defective or damaged personal protective equipment shall not be used.

### **TRAINING**

All Employees who are required to use PPE shall be trained to know at least the following:

- When PPE is necessary.
- What PPE is necessary.
- How to properly don, remove, adjust, and wear PPE.
- The limitations of the PPE
- The proper care, maintenance, useful life and disposal of the PPE.

Each affected employee shall demonstrate an understanding of the training and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

Certification of training for PPE is required by OSHA and shall be accomplished by using weekly safety meetings, apprenticeship training course, supervisor meeting training, JHA briefings and specific training when required.

## **PPE SELECTION**

### **CONTROLLING HAZARDS**

PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

## **SELECTION GUIDELINES**

The general procedure for selection of protective equipment is to:

1. Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do, i.e., splash protection, impact protection, etc.
2. Compare the hazards associated with the environment, i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment.
3. Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards.
4. Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.
5. Look up, read and apply E Light policies and procedures for PPE use. All employees are expected to utilize [elightinformation.com](http://elightinformation.com) to look and read applicable policies and procedures in the [Safety, Health and Environmental Program \(SHEP\)](#). The ["How to..." Page](#) can also be consulted in some situations.

## **FITTING THE DEVICE**

Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

## **DEVICES WITH ADJUSTABLE FEATURES**

Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases, a chin strap may be necessary to keep the helmet on an employee's head. (Chin straps should break at a reasonably low force, however, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

## **EYE AND FACE PROTECTION**

The majority of occupational eye injuries can be prevented by the use of suitable/approved safety spectacles, goggles, or shields. Approved eye and face protection shall be worn when there is a reasonable possibility of personal injury.

Eye and Face Protection must comply with ANSI/ISEA Z87.1

***ANSI-RATED SAFETY GLASSES SHALL BE WORN AT ALL TIMES WHILE ON AN E LIGHT ELECTRIC PROJECT IN BOTH OPERATIONS AND SERVICE.***

## GENERAL EYE PROTECTION POLICY

1. Each employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
2. Each employee shall use eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors are acceptable.
3. Each employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design or shall wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses. Eye protection shall provide protection which fits over standard prescription glasses. The employee shall be responsible for prescription safety glasses if they choose to use them opposed to the fit over method.
4. Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.
5. Each employee shall use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation.
6. Employees shall not wear shaded eyeglasses indoors unless they are performing a task which requires light filtering.
7. Only clear lensed safety glasses may be worn indoors.
8. Employees engaged in drilling, grinding or sanding masonry, concrete or plaster shall wear either safety goggles or a face shield to prevent dusts from entering the eyes.

*Typical hazards that can cause eye and face injury are:*

- Splashes of toxic or corrosive chemicals, hot liquids, and molten metals.
- Flying objects, such as chips of wood, metal, and stone dust.
- Fumes, gases, and mists of toxic or corrosive chemicals.
- Aerosols of biological substances.

Prevention of eye accidents requires that all persons who may be in eye hazard areas wear protective eyewear. This includes employees, visitors, contractors, or others passing through an identified eye hazardous area. To provide protection for these personnel, activities shall procure a sufficient quantity of heavy-duty goggles and/or plastic eye protectors which afford the maximum amount of protection possible. If these personnel wear personal glasses, they shall be provided with a suitable eye protector to wear over them.

## **EYE/FACE PROTECTION SPECIFICATIONS**

Eye and face protectors procured, issued to, and used by employees, contractors and visitors must conform to the following design and performance standards:

1. Provide adequate protection against the specific hazards for which they are designed.
2. Fit properly and offer the least possible resistance to movement and cause minimal discomfort while in use.
3. Be durable.
4. Be easily cleaned or disinfected for or by the wearer.
5. Be clearly marked to identify the manufacturer.

Persons who require corrective lenses for normal vision, and who are required to wear eye protection, must wear goggles or spectacles of one of the following types:

1. Spectacles with protective lenses which provide optical correction. (Employee supplied)
2. Goggles that can be worn over spectacles without disturbing the adjustment of the spectacles. (Company supplied)
3. Goggles that incorporate corrective lenses mounted behind the protective lenses. (Employee Supplied)

**Employees engaged in chipping, drilling or scraping of concrete or masonry products shall wear a face shield during these operations.**

## **EYE AND FACE PROTECTION USE**

**Safety Spectacles** Protective eyeglasses are made with safety frames, tempered glass or plastic lenses, temples and side shields which provide eye protection from moderate impact and particles encountered in job tasks such as carpentry, woodworking, grinding, scaling, etc.

**Single Lens Goggles** Vinyl framed goggles of soft pliable body design provide adequate eye protection from many hazards. These goggles are available with clear or tinted lenses, perforated, port vented, or non-vented frames. Single lens goggles provide similar protection to spectacles and may be worn in combination with spectacles or corrective lenses to insure protection along with proper vision.

**Welders/Chippers Goggles** These goggles are available in rigid and soft frames to accommodate single or two eye piece lenses.

1. Welders goggles provide protection from sparking, scaling or splashing metals and harmful light rays. Lenses are impact resistant and are available in graduated shades of filtration.
2. Chippers/grinders goggles provide eye protection from flying particles. The dual protective eye cups house impact resistant clear lenses with individual cover plates.

**Face Shields.** These normally consist of an adjustable headgear and face shield of tinted/transparent acetate or polycarbonate materials, or wire screen. Face shields are available in various sizes, tensile strength, impact/heat resistance and light ray filtering capacity. Face shields will be used in operations when the entire face needs protection and should be worn to protect eyes and face against flying particles, metal sparks, and chemical/ biological splash.

**Welding Shields** These shield assemblies consist of vulcanized fiber or glass fiber body, a ratchet/button type adjustable headgear or cap attachment and a filter and cover plate holder. These shields will be provided to protect workers' eyes and face from infrared or radiant lightburns, flying sparks, metal spatter and slag chips encountered during welding, brazing, soldering, resistance welding, bare or shielded electric arc welding and oxyacetylene welding and cutting operations.

<b><i>Filter Lenses for Protection Against Radiant Energy</i></b>			
<b>Operations</b>	<b>Electrode Size 1/32 in</b>	<b>Arc Current</b>	<b>Protective Shade</b>
Shielded metal arc welding	Less than 3	Less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	More than 8	250-550	11
Torch brazing			3
Torch soldering			2

**Note:** as a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

## ***Selection chart guidelines for eye and face protection***

The following chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.

<b><i>Source</i></b>	<b><i>Hazard</i></b>	<b><i>Protection</i></b>
<b>IMPACT</b> - Chipping, grinding machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles with side protection, goggles, face shield  For severe exposure, use face
<b>Sanding</b>		shield
<b>HEAT-Furnace operation and arc welding</b>	Hot sparks	Face shields, spectacles with side. For severe exposure use face shield.
<b>CHEMICALS-Acid and chemical handling, degreasing, plating</b>	Splash	Goggles, eyecup and cover types. For severe exposure, use face shield.
<b>DUST - Woodworking, buffing, general buffing, general dusty conditions.</b>	Nuisance dust	Goggles, eye cup and cover type



# HEAD PROTECTION

## HARD HATS

A hard hat is a helmet worn on the job to prevent head injury. These protectors consist of the shell and the suspension combined as a protective system. Hard hats shall be of nonconductive, fire- and water-resistant materials.

## BUMP CAPS

Bump caps or skull guards are constructed of lightweight materials and are designed to provide minimal protection against hazards when working in congested areas. Bump caps are not ANSI-rated, do not provide protection from falling objects, and do not meet the OSHA requirements for head protection. Bump caps are not permitted to be used in place of a hard hat.

Head protection shall be furnished to, and used by, all employees and contractors engaged in construction and other miscellaneous work.

## SELECTION GUIDELINES FOR HEAD PROTECTION

### HARD HAT TYPE AND CLASS

#### TYPE

1. **Type I Hard Hats:** Designed to protect workers from objects and blows that come from above and strike the top of a helmet.
2. **Type II Hard Hats:** Designed to offer protection from lateral blows and objects. This includes from the front, back, and side as well as from the top. Type II hard hats are also tested for off-center penetration resistance and chin strap retention.

#### CLASS

- Class E (Electrical) hard hats can withstand up to 20,000 volts of electricity.
- Class G (General) hard hats are able to withstand 2,200 volts of electricity.
- Class C (Conductive) hard hats offer no protection from electric shock.

### E LIGHT HARD HAT POLICY

HARD HATS SHALL BE WORN AT ALL TIMES WHILE ON A PROJECT FOR OPERATIONS.

Compliant head protection will also be required to be worn by engineers, inspectors, and visitors at construction sites.

All head protection must meet the requirements of ANSI/ISEA Z89.1.

E Light policy requires that Class E, white, full brim, "MSA V-Gard" hard hats be worn while on our projects. No other hard hat is permitted to be used by E Light personnel. This hard hat provides protection against such hazards as falling objects overhead, electrical shock and UV radiation.

## **HARD HAT GENERAL USE**

1. Hard hats must be worn according to manufacturer's instructions.
2. Items may not be carried in the webbing of hard hats.
3. Hard hats may not be worn backwards or with the webbing reversed.
4. Items may not be worn under the hard hat if the item interferes with a good fit of the hard hat so that it will remain securely in place. Ball caps shall not be worn underneath hard hats.
5. Hard hats may only have attachments approved by the manufacture or designed for use with the hard hat.
6. Personnel shall write the following information on the inside of their hard hat:
  - a. Emergency contact name.
  - b. Emergency contact number.

## **LOGOS AND MARKINGS**

- Hard hats shall not have the LOGO of any organization other than E Light Electric Services, Inc.
- Hard hats shall not be adorned or marked with any markings other than those required by this policy or project specific requirements.

## **ZERO-ACCIDENT HARD HAT QUICK-REFERENCE STICKERS**

The Zero accidents quick reference sticker is intended to provide a quick reference for employees on the project to identify supervisors, safety personnel, new hires and equipment operators. The concept was designed to provide a color code that can be quickly identified from a distance. The UTV driver and equipment operator stickers are only used on solar sites so that safety and supervisors can easily identify those personnel operating equipment are authorized to do so. The operators of equipment shall also have a training sticker for their specific equipment on their hard hats and shall be trained to operate equipment by manufacturer and model.

Hard hats should be marked with a Zero Accidents Sticker located in the V formed by the ridges of the V guard hard hat based on the following key:

1. **Blue:** Supervisor
2. **Green:** Safety
3. **Yellow:** UTV driver
4. **Orange:** Equipment Operator
5. **Red:** New Hire or Acclimating Employee
  - a. Worn for 30 days for all new hires to easily identify that they need to be assisted
  - b. Worn for 14 days if the project is under high heat conditions and the employee is acclimating to high heat conditions.
  - c. New Hire and Acclimation stickers must be removed when the new hire or acclimation period is expired.

## TRAINING IDENTIFICATION STICKERS

E Light also issues specific training and certification stickers to indicate that an employee has completed specific training. These stickers will be applied on the hard hat upon certification and worn on the hard hat according to policy.

## SAFETY AWARD STICKERS

Safety Award stickers are issued to personnel who have demonstrated an action of Safety Excellence. These stickers may be worn proudly on the hard hat.

## FOOT PROTECTION

### GENERAL REQUIREMENTS

Each affected employee shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where employee's feet are exposed to electrical hazards.

### SELECTION GUIDELINES FOR FOOT PROTECTION

Safety boots provide both impact and compression protection. Boots must be made so that they provide both slip protection and protection from puncture. They should have both a rubber and leather sole to limit puncture and slipping.

1. Employees shall wear foot protection which is electrically rated while on the project.
2. Employees are required to provide their own foot protection.
3. Some projects may have additional and specific requirements for protective footwear.
4. Protective footwear must comply with the following consensus standards:
  - *ASTM F-2412-2005, "Standard Test Methods for Foot Protection," and ASTM F-2413-2005, "Standard Specification for Performance Requirements for Protective Footwear"*
  - *ANSI Z41-1999, "American National Standard for Personal Protection -- Protective Footwear,"*  
OR
  - *ANSI Z41-1991, "American National Standard for Personal Protection -- Protective Footwear,"*

## HAND PROTECTION

### GENERAL REQUIREMENTS

1. Hand protection is required at all times while working on a construction site unless the employee is performing work that requires fine hand manipulations. Supervisors are responsible for ensuring that employees are wearing the correctly fitted gloves, cut rated gloves and that their gloves are in effective working condition.
2. E Light Electric provides **cut level 2 or higher** rated gloves to all personnel. All personnel shall utilize only those gloves approved for use by E Light Electric

Services, Inc. Employees handling wood reels or other items which could cause splinters shall wear leather gloves while handling these materials.

3. Skin contact is a potential source of exposure to toxic materials; it is important that the proper steps be taken to prevent such contact. Gloves should be selected on the basis of the material being handled, the particular hazard involved, and their suitability for the operation being conducted. One type of glove will not work in all situations.
4. Most accidents involving hands and arms can be classified under four main hazard categories: chemicals, abrasions, cutting, and heat. There are gloves available that can protect workers from any of these individual hazards or combination of hazards.
5. Gloves should be replaced periodically, depending on frequency of use and permeability to the substance(s) handled. Gloves overtly contaminated should be rinsed and then carefully removed after use. Employees are required to turn in their previous pair gloves in order to receive a replacement pair of gloves if they are replacing a worn-out pair of gloves.
6. Special gloves should be worn whenever it is necessary to handle rough or sharp-edged objects, and very hot or very cold materials. The type of glove material to be used in these situations includes leather, welder's gloves, aluminum-backed gloves, and other types of insulated glove materials.
7. Careful attention must be given to protecting your hands when working with tools and machinery. Power tools and machinery must have guards installed or incorporated into their design that prevent the hands from contacting the point of operation, power train, or other moving parts. To protect the hands from injury due to contact with moving parts, it is important to:
  - a. Ensure that guards are always in place and used.
  - b. Always lock out machines or tools and disconnect the power before making repairs.
  - c. Treat a machine without a guard as inoperative; and
  - d. Do not wear gloves around moving machinery, such as drill presses, mills, lathes, and bench grinders.

### **SELECTION GUIDELINES FOR HAND PROTECTION**

Selection of hand PPE shall be based on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure.

There is no glove that provides protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused. It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated, e.g., chemical hazards, cut hazards, flame hazards, etc.

The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

### **SELECTION OF GLOVES FOR CHEMICAL HAZARDS**

The first consideration in the selection of gloves for use against chemicals is to determine, if possible, the exact nature of the substances to be encountered. Read instructions and warnings on chemical container labels and SDSs before working with any chemical. Recommended glove types are often listed in the section for personal protective equipment.

All glove materials are eventually permeated by chemicals. However, they can be used safely for limited time periods if specific use and glove characteristics (i.e., thickness and permeation rate and time) are known. The safety department can assist in determining the specific type of glove material that should be worn for a particular chemical.

1. The toxic properties of the chemical(s) must be determined. In particular, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects.
2. Generally, any "chemical resistant" glove can be used for dry powders.
3. For mixtures and formulated products (unless specific test data are available), a glove should be selected based on the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials.
4. Employees must be able to remove the gloves in such a manner as to prevent skin contamination.

### **HEARING PROTECTION**

Light employees shall be issued ear plugs. All employees shall have ear always plugs on their person while on a project. Visitors shall also be issued ear plugs while on site.

Employees shall utilize their ear plugs anytime that the sound level in their work area can be hazardous. A good rule of thumb is that if the sound levels are loud enough that a conversation is difficult to hear when using a normal voice volume, hearing protection should be worn.

Ear buds for music or headphones are NOT hearing protection and can NOT be worn as such.

If approved by the superintendent, employees may wear a single ear bud for music only but must remove this and replace it with hearing protection when needed. At no time can employees wear more than one ear bud for listening to music or other things while on site. Employees need to rely on their ability to hear instructions and warnings while on site.

Earmuffs or other hearing protection may be required depending on the noise levels on the project.

Any employee that is working within 100 yards of pile driving equipment operations must wear both hearing protection plugs and hearing protection earmuffs to ensure adequate hearing protection.