



# **Physical Plant**

## **Personal Protective Equipment Program**

Program originated: 06/1997

Last updated: 06/2009

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## **I. Introduction**

The objective of the Personal Protective Equipment (PPE) program is to protect employees from the risk of injury by creating a barrier against workplace hazards. Personal protective equipment is not a substitute for good engineering or administrative controls or good work practices, but should be used in conjunction with these controls to ensure the safety and health of employees. Personal protective equipment will be provided, used, and maintained when it has been determined that its use is required and that such use will lessen the likelihood of occupational injury and/or illness.

This program addresses eye, face, head, foot, and hand protection. Separate programs exist for respiratory and hearing protection.

The UNI Physical Plant Personal Protective Equipment Program includes:

- Responsibilities of supervisors/managers, employees, and the University Environmental Health and Safety Office
- Hazard assessment and PPE selection
- Employee training
- Recordkeeping requirements

## **II. Responsibilities**

**A. Supervisors/Managers:** Supervisors and managers have the primary responsibility for implementation of the PPE Program in their work area. This involves:

- Conducting workplace hazard assessments to determine the presence of hazards which necessitate the use of PPE.
- Providing appropriate PPE and making it available to employees.
- Ensuring employees are trained on the proper use, care, and cleaning of PPE.
- Maintaining records on PPE assignments.
- Supervising staff to ensure that the PPE Program elements are followed and that employees properly use and care for PPE.

- Seeking assistance from the Environmental Health and Safety Office to evaluate hazards.
- Notifying the Environmental Health and Safety Office when new hazards are introduced or when processes are added or changed.
- Ensuring defective or damaged equipment is immediately replaced

**B. Employees:** The PPE user is responsible for following the requirements of the PPE Program. This involves:

- Wearing PPE as required.
- Attending required training sessions.
- Caring for, cleaning, and maintaining PPE as required.
- Informing the supervisor/manager of the need to repair or replace PPE.

**C. University Environmental Health and Safety Office:**

The University Environmental Health and Safety Office is responsible for the development, implementation, and administration of the PPE Program. This involves:

- Assisting with periodic workplace reassessments as requested by supervisors/managers or as determined by the Safety Office
- Maintaining records on hazard assessments.
- Providing training and technical assistance to supervisors/managers on the proper use, care, and cleaning of approved PPE.
- Providing guidance to the supervisor/manager for the selection and purchase of approved PPE.
- Periodically reevaluating the suitability of previously selected PPE.

- Reviewing, updating, and evaluating the overall effectiveness of the PPE Program.

### **III. Program Components**

#### **A. Hazard Assessment and Equipment Selection**

OSHA requires employers to conduct inspections of all workplaces to determine the need for personal protective equipment (PPE) and to help in selecting the proper PPE for each task performed. For each work site, a certificate must be completed which lists the findings of the inspection and the specific protective equipment needed.

Each supervisor/manager, with the assistance of the Environmental Health and Safety Office if requested, will conduct a walk-through survey of each work area to identify sources of hazards, including impact, penetration, compression, chemical, heat, dust, electrical sources, material handling, and light radiation. Each survey will be documented using the Hazard Assessment Certification Form (Appendix B), which identifies the workplace surveyed, the person conducting the survey, findings of potential hazards, and date of the survey.

Once the hazards of a workplace have been identified, the Environmental Health and Safety Office will determine the suitability of the PPE presently available and as necessary select new or additional equipment which ensures a level of protection greater than the minimum required to protect the employees from the hazards. Care will 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 will be provided or recommended for purchase.

#### **B. Protective Devices**

All personal protective clothing and equipment will be of safe design and construction for the work to be performed and shall be maintained in a sanitary and reliable condition. Only those

items of protective clothing and equipment that meet NIOSH or ANSI (American National Standards Institute) standards will be procured or accepted for use. Newly purchased PPE must conform to the updated ANSI standards which have been incorporated into the OSHA PPE regulations, as follows:

- Eye and Face Protection - ANSI Z87.1-1989
- Head Protection - ANSI Z89.1-1986
- Foot Protection - ANSI Z41.1-1991
- Hand Protection - There are no ANSI standards for gloves, however, selection must be based on the performance characteristics of the glove in relation to the tasks to be performed.

Careful consideration will be given to comfort and fit of PPE in order to ensure that it will be used. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected. (see Appendix A – General Guidelines for Choosing Personal Protective Equipment)

### **1. Eye and Face Protection**

Prevention of eye injuries 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 hazard area. To provide protection for these personnel, supervisors/managers of such areas shall procure a sufficient quantity of 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.

Suitable protectors shall be used when employees are exposed to hazards from flying particles, molten metal, acids or caustic liquids, chemical liquids, gases, or vapors, bioaerosols, or potentially injurious light radiation.

- Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment.

- Side protectors shall be used when there is a hazard from flying objects.
- Goggles and face shields shall be used when there is a hazard from chemical splash.
- Face shields shall only be worn over primary eye protection (safety glasses or goggles).
- For employees who wear prescription lenses, eye protectors shall either incorporate the prescription in the design or fit properly over the prescription lenses.
- Protectors shall be marked to identify the manufacturer.
- Equipment fitted with appropriate filter lenses shall be used to protect against light radiation. Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.

### **Prescription Safety Eyewear**

OSHA regulations require that each affected 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 (i.e. goggles, faceshields) without disturbing the proper position of the prescription lenses or the protective lenses. Personnel requiring prescription safety glasses must contact the Administrative Office to have their request for prescription safety glasses evaluated and processed.

### **Emergency Eyewash Facilities**

Emergency eyewash facilities meeting the requirements of ANSI Z358.1 will be provided in all areas where the eyes of any employee may be exposed to corrosive or caustic materials. All such emergency facilities will be located where they are easily accessible in an emergency.

## **2. Head Protection**

Head protection will be furnished to, and used by, all employees engaged in activities where there may be hazards from falling or fixed objects.

## **3. Foot Protection**

Safety shoes shall be required as necessary for all full-time, part-time, temporary employees and students identified as needing foot protection. This type of protection shall be required if the work necessitates lifting or carrying dense, rigid articles or equipment; operating machinery that presents a hazard of foot injury; or constantly traversing areas where such activities take place. Employees assigned to the following areas within the Physical Plant are required to wear safety shoes:

- Area Mechanics
- Boiler Operators
- Carpenters
- Electricians
- Environmental Systems Mechanics
- Equipment Operators
- Facility Mechanics
- Greenhouse Caretakers
- Groundskeepers
- HVAC Technicians
- Locksmiths
- Painters
- Pipefitters
- Repairers
- Steamfitters
- System Control Technicians

All safety footwear shall comply with ANSI Z41-1991, "American National Standard for Personal Protection - Protective Footwear."

## **4. Hand Protection**

Suitable gloves shall be worn when hazards from chemicals, cuts, lacerations, abrasions, punctures, burns, biologicals, and harmful temperature extremes are present. Glove selection shall be based on performance characteristics of the gloves, conditions, durations of use, and hazards present. One type of glove will not work in all situations. (see Appendix A)

## **C. Cleaning and Maintenance**

It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision. PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection. Personal protective equipment shall not be shared between employees until it has been properly cleaned and sanitized. PPE will be distributed for individual use whenever possible.

It is also important to ensure that contaminated PPE which cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.

## **D. Training**

Any worker required to wear PPE shall receive training in the proper use and care of PPE. Periodic retraining shall be offered to both the employees and the supervisors/managers, as needed. The training shall include, but not necessarily be limited to, the following subjects:

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

After the training, the employees shall demonstrate that they understand the components of the PPE Program and how to use PPE properly, or they shall be retrained.

### **E. Recordkeeping**

Written records shall be kept of the names of persons trained, the type of training provided, and the dates when training occurred. The Environmental Health and Safety Office shall maintain employees' training records for at least 3 years. The Environmental Health and Safety Office shall also maintain the Hazard Assessment Certification Form for each work site evaluated for at least 3 years.

## APPENDIX A

### General Guidelines for Choosing Personal Protective Equipment

#### 1. Description and Use of Eye/Face Protectors

- a. **Safety Glasses.** 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. Safety glasses are also available in prescription form for those persons who need corrective lenses.
- b. **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.
- c. **Welders/Chippers Goggles.** These goggles are available in rigid and soft frames to accommodate single or two eyepiece 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.
- d. **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.
- e. **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 light burns, 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.

## Eye and Face Protection Selection Chart

Source	Assessment of Hazard	Protection
<b>IMPACT</b> - chipping, grinding, machining, drilling, chiseling, riveting, sanding, etc.	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles with side protection, goggles, face shields. For severe exposure, use face shield over primary eye protection.
<b>CHEMICALS</b> - Acid and chemicals handling	Splash  Irritating mists	Goggles, eyecup and cover types. For severe exposure, use face shield over primary eye protection Special-purpose goggles
<b>DUST</b> - Woodworking, buffing, general dusty conditions	Nuisance dust	Goggles, eyecup and cover types.
<b>LIGHT and/or RADIATION</b>  Welding - electric arc  Welding - gas  Cutting, torch brazing, torch soldering  Glare	Optical radiation  Optical radiation  Optical radiation  Poor vision	Welding helmets or welding shields. Typical shades: 10-14  Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4  Spectacles or welding face shield. Typical shades: 1.5-3  Spectacles with shaded or special-purpose lenses, as suitable.

## 2. Head Protection

Head injuries are caused by falling or flying objects, or by bumping the head against a fixed object. Head protectors, in the form of protective hats, must resist penetration and absorb the shock of a blow. The shell of the protective hat is hard enough to resist the blow and the headband and crown straps keep the shell away from the wearer's skull. Protective hats can also protect against electrical shock.

### **Protective hats are made in the following types and classes:**

- Type 1 - Helmets with a full brim.
- Type 2 - Brimless helmets with a peak extending forward from the crown.
- Class A - General service, limited voltage. Intended for protection against impact hazards. Used in mining, construction, and manufacturing.
- Class B - Utility service, high voltage. Used by electrical workers.
- Class C - Special service, no voltage protection. Designed for lightweight comfort and impact protection. Used in certain construction, manufacturing, refineries, and where there is a possibility of bumping the head against a fixed object.

## 3. Foot Protection

There are many types and styles of protective footwear and it's important to realize that a particular job may require additional protection other than listed here. Footwear that meets established safety standards will have an American National Standards Institute (ANSI) label inside each shoe.

- a. **Steel-Reinforced Safety Shoes.** These shoes are designed to protect feet from common machinery hazards such as falling or rolling objects, cuts, and punctures. The entire toe box and insole are reinforced with steel, and the instep is protected by steel, aluminum, or plastic materials. Safety shoes are also designed to insulate against temperature extremes and may be equipped with special soles to guard against slip, chemicals, and/or electrical hazards.
- b. **Safety Boots.** Safety boots offer more protection when splash or spark hazards (chemicals, molten materials) are present:
  - When working with corrosives, caustics, cutting oils, and petroleum products, neoprene or nitrile boots are often required to prevent penetration.
  - Foundry or "Gaiter" style boots feature quick-release fasteners or elasticized insets to allow speedy removal should any hazardous substances get into the boot itself.
  - When working with electricity, special electrical hazard boots are available and are designed with no conductive materials other than the steel toe (which is properly insulated).

## 4. Hand Protection

Skin contact is a potential source of exposure to toxic materials; it is important that the proper steps be taken to prevent such contact. 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 any combination thereof.

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.

Gloves should also be worn whenever it is necessary to handle rough or sharp-edged objects, and very hot or very cold materials. The type of glove materials to be used in these situations include leather, welder's gloves, aluminum-backed gloves, and other types of insulated glove materials.

Consideration in the selection of gloves for use against chemicals must be given, if possible, to the exact nature of the substances to be encountered. Read instructions and warnings on chemical container labels and MSDSs before working with any chemical. All glove materials are eventually permeated by chemicals. However, they can be used safely for limited time periods if specific use and other characteristics (i.e., thickness and permeation rate and time) are known.

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 operation, power train, or other moving parts. To protect hands from injury due to contact with moving parts, it is important to:

- Ensure that guards are always in place and used.
- Always lock-out machines or tools and disconnect the power before making repairs.
- Treat a machine without a guard as inoperative; and
- Do not wear gloves around moving machinery, such as drill presses, mills, and grinders.

The following is a guide to the most common types of protective work gloves and the types of hazards they can guard against:

- a. **Disposable Gloves.** Disposable gloves, usually made of light-weight plastic, can help guard against mild irritants.
- b. **Fabric Gloves.** Made of cotton or fabric blends are generally used to improve grip when handling slippery objects. They also help insulate hands in mild heat or cold.

- c. **Leather Gloves.** These gloves are used to guard against injuries from sparks or scraping against rough surfaces. They are also used in combination with an insulated liner when working with electricity.
- d. **Metal Mesh Gloves.** These gloves are used to protect hands from accidental cuts and scratches. They are used most commonly by persons working with cutting tools or other sharp instruments.
- e. **Aluminized Gloves.** Gloves made of aluminized fabric are designed to insulate hands from intense heat. These gloves are most commonly used by persons working molten materials.
- f. **Chemical Resistance Gloves.** These gloves may be made of rubber, neoprene, polyvinyl alcohol or vinyl, etc. The gloves protect hands from corrosives, oils, and solvents

## **Appendix B**

# Personal Protective Equipment Assessment

Date \_\_\_\_\_

Prepared by \_\_\_\_\_

Job Classification Reviewed: \_\_\_\_\_

## PPE REQUIREMENTS

Please check the hazards that are encountered performing your type of work, this will identify the PPE required.

### 1. Foot Protection:

Hazard	Protection
<input type="checkbox"/> Falling objects or bumps	<input type="checkbox"/> Reinforced impact-resistant toes or metatarsal footguards
<input type="checkbox"/> Punctures	<input type="checkbox"/> Metal insoles or reinforced soles
<input type="checkbox"/> Electrical shock or burns	<input type="checkbox"/> Metal – free footwear
<input type="checkbox"/> Wet floors	<input type="checkbox"/> Rubber type boots/ leather shoes with special soles
<input type="checkbox"/> Cold or damp	<input type="checkbox"/> Insulated footwear
<input type="checkbox"/> Hot floors	<input type="checkbox"/> Heat-resistant soles
<input type="checkbox"/> Hot metal splashes or welding sparks	<input type="checkbox"/> Easily removed over-the-ankle spats
<input type="checkbox"/> Any other major foot hazard, please list _____	

### All work shoes should have

- good fit and support
- be leather, rubber or a strong synthetic material
- be in good condition
- low heels
- nonskid soles
- secure fasteners or laces

### 2. Head Protection:

Hazard	Protection
<input type="checkbox"/> Impact and penetration from bumps or falling objects with <b>low voltage</b> electricity	<input type="checkbox"/> Class A Hard Hat
<input type="checkbox"/> Impact and penetration from bumps or falling objects with high voltage electricity	<input type="checkbox"/> Class B Hard Hat
<input type="checkbox"/> Impact and penetration from bumps or falling objects and not worn around electricity	<input type="checkbox"/> Class C Hard Hat
<input type="checkbox"/> Electric shock and is fire-resistant	<input type="checkbox"/> Class D Hard Hat

- Care for hard hat:**
- Inspect for damage or wear before and after each use
  - Adjust the headband so the hat doesn't touch your head
  - Don't throw, bang or scrape the hat
  - Remove and wash the sweatband periodically
  - Clean the hat occasionally; dip it in hot soapy water, scrub, rinse and dry
  - Store in a safe place away from heat and sun
  - Keep stickers and paint off hat, they can disguise damages

Replace any hat that takes a heavy blow, any damaged shell, or a headband that is stretched or worn.

**3. Eye Protection:**

**Hazard**

- Flying or swinging objects with side protection
- Splashes from chemicals, acids and corrosives or molten metal
- Electrical arcs and sparks/radiation
- Dust, fumes, mists, gases
- Any other major eye hazard, please list \_\_\_\_\_

**Protection**

- Safety spectacles or goggles
- Safety goggles or spectacles with side protection
- Welding goggles/hoods with filtered lenses
- Face shield over safety glasses or goggles

**Make sure eye protection:**

- 1) fits well,
- 2) is fitted with your eye prescription or can be worn over prescription glasses,
- 3) passes daily inspection
- 4) isn't fogged up
- 5) is cleaned daily with soap or mild detergent/ or solution made for that purpose
- 6) is disinfected after chemical exposure or before use by another employee
- 7) is stored in a closed container to protect from dust, dampness or damage

**REMEMBER TO REPLACE DON'T REPAIR** – Knotted, twisted; worn or stretched out goggle straps. Eye protection whose lenses are too pitted, scratched to see through.

**4. Hand Protection:**

**Hazard**

- Chemicals
- Chips and sparks
- Dirt
- Electrical shock and burns
- Heat and cold
- Open flames
- Radiant heat
- Rough surfaces
- Sharp objects
- Splinters and abrasions

**Protection**

- Check the MSDS for the recommended gloves
- Leather gloves
- Cotton gloves
- Special insulated rubber gloves
- Insulated gloves
- Insulated, fire-retardant gloves
- Insulated reflective gloves
- Leather gloves / kevlar gloves
- Metal mesh gloves
- Cotton gloves

**Caution:** Do inspect all gloves before use to make sure they are not torn or damaged  
 Do select the gloves your supervisor or procedure manual tells you to.  
 Do remove contaminated gloves without touching contamination.  
 Don't wear gloves for job where they could get caught in moving parts.  
 Don't wear cotton gloves when handling rough, sharp or heavy materials.

**5. Other hazards**

**PPE**

- |       |   |
|-------|---|
| _____ | <input type="checkbox"/> Respiratory protection _____     |
| _____ | <input type="checkbox"/> Hearing protection _____         |
| _____ | <input type="checkbox"/> Fall protection _____            |
| _____ | <input type="checkbox"/> Skin protection (arm/aprons/etc) |

**I certify that the above inspection was performed to the best of my knowledge and ability, based on the hazards present on \_\_\_\_\_.** (date)

\_\_\_\_\_ (signature)