

Personal Protective Equipment Sample Program

Prepared for:

Date:



UnitedHeartland.com
1-800-258-2667

Our safety evaluations, reports and recommendations are made solely to assist your organization in reducing hazards and the potential of hazards and accidents. These recommendations were developed from conditions observed and information provided at the time of our visit. They do not attempt to identify every possible loss potential, hazard or risk, nor do they guarantee that workplace accidents will be prevented. These safety evaluations, reports and recommendations are not a substitute for ongoing, well-researched internal safety and risk management programs. This report does not warrant that the property inspected, and its operations are compliant with any law, rule or regulation.

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I. INTRODUCTION

As part of the Organization's overall safety and health program, a Personal Protective Equipment (PPE) Program has been established. PPE protects employees from the risks of injury by creating a barrier against workplace hazards. PPE must be used when the eyes, face, hands, extremities or other parts of the body are exposed to workplace hazards that cannot be controlled by other means.

PPE is not a substitute for good engineering controls, administrative controls or good work practices, but should be used in conjunction with those controls to ensure the safety and health of employees. The use of PPE does not eliminate the hazard, and if the PPE fails or is used improperly, exposure to the hazard may occur.

II. OBJECTIVE

The Organization developed this program to help departments protect employees from exposure to workplace hazards and to facilitate compliance with state and federal regulatory requirements. This program complies with the requirements of the Occupational Safety and Health Administration regulations 29 CFR 1910 Subpart I and 29 CFR 1926 Subpart E.

III. SCOPE

This program applies to all Organization locations, and to all work performed by Organization employees regardless of job location.

This program specifically addresses eye, face, foot, hand and torso protection. This program does not address PPE required for respiratory, noise, fall, electrical or non-ionizing radiation (such as laser) hazards, though the need for such PPE may be identified during the hazard assessment process. If such potential hazards are identified during the assessment process, a separate written compliance program will be developed for each.

IV. ADMINISTRATIVE & ENGINEERING CONTROLS

Administrative controls involve changing the methods or procedures used to perform specific tasks to reduce employee exposure to a hazard.

Engineering controls reduce or eliminate employee exposure to a hazard on a relatively permanent basis and are the most desirable type of hazard control.

Examples of engineering controls include installing barricades and shields, or changing the work area layout, tools, lighting or ventilation.

V. APPLICATION

The Personal Protective Equipment (PPE) Program will be implemented by:

- Designation of responsible persons by departments to coordinate the requirements of this program in their respective areas.
- Training of designated departmental personnel.

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- Performing a hazard assessment of worksites and/or employee job duties by designated departmental personnel,
- Assigning PPE to employees based upon the results of the hazard assessment performed.
- Training of employees by designated departmental personnel.

VI. RESPONSIBILITIES

The PPE Program will be implemented by using “train-the-trainer” methods. <Insert program coordinator name/title> is responsible for developing, implementing and administering the PPE Program. This involves:

- Training supervisors or other departmental representative(s) to conduct workplace hazard assessments.
- Assisting with the hazard assessment surveys by serving as a technical resource.
- Providing guidance on the selection, care and use of PPE.
- Maintaining centralized records of hazard assessments, training and inspections.
- Providing training and technical assistance to the designated departmental personnel.
- Developing and maintaining the PPE train-the-trainer program, videos and other training resources.
- Evaluating the overall effectiveness of the PPE Program on a periodic basis, and revising the program as needed to assure the safety of Organization employees.
- Maintaining the company Respiratory Protection and Hearing Conservation programs and evaluating workplace exposure to hazards that would require the use of respirators or hearing protection.

A. Departmental

Departments are expected to maintain safe and healthy working environments for staff and visitors to our facilities. Departments must require staff, and visitors to use, where necessary, personal protective equipment and protective work clothing suitable to protect them from contact with, or exposure to, hazardous conditions or substances within departmental facilities.

The Organization recommends each department to designate one person to help coordinate and implement this program. This individual will conduct or coordinate inspections of all workplaces to determine the need for PPE and help in selecting the proper PPE for each task performed. This responsibility will fall to the highest supervisory level of each departmental unit unless otherwise specified.

The program coordinator, or other person(s) designated by the department, will perform the following operations once they have been properly trained.

1. **Hazard Assessments.** Each department is required to assess the hazards in their workplace(s) to determine which operations require PPE. In some situations, it may be more appropriate for the hazard assessment to involve a review of an employee’s job duties or duties for a class of employees to determine if work is performed that will require the use of PPE. This hazard assessment must be performed in accordance with the requirements outlined in this program.
2. **Equipment selection.** If the work site hazard assessment or the review of employee job duties indicate that there is exposure to a hazard(s) that requires the use of PPE, the departmental designee(s) will:
 - a. Select, and have each affected employee use, the type(s) of PPE that will protect the employee from the hazards identified in the hazard assessment.
 - b. Inform the employee of the reasons for selecting the specific PPE.

3. **Written certification.** Verify that the hazard assessment has been performed through a written certification. This certification must identify the workplace or job duties evaluated, the name of the person performing the assessment, and the date of the assessment.
4. **Employee-owned equipment.** Where employees provide their own protective equipment, the department is responsible for assuring that it is adequate for the hazardous condition, and that this equipment is properly maintained as required by this program.
5. **Design.** The department must assure that all PPE is of a safe design and construction for the work to be performed.
6. **Defective and damaged equipment.** The department must assure that defective or damaged personal protective equipment is not used.
7. **Training.** The program coordinator or designated department representative must train each employee who is required to use PPE.
8. **Recordkeeping.** Maintain records of hazard assessments, PPE assignments and training, and provide a copy of all records to program coordinator.
9. **Seek assistance.** Seek assistance from program coordinator as needed to evaluate hazards.
10. **Repeat.** Reassess the worksite when new hazards are introduced or when processes are changed or added in the workplace.

B. Employees

Employees are responsible for following the requirements of this program. Employees are expected to:

1. Attend required training sessions on PPE.
2. Wear PPE as required.
3. Clean, maintain, and care for PPE as required.
4. Inform their supervisor of the need to repair or replace PPE.
5. Be aware of and report newly introduced hazards from process changes and hazards found that may have been omitted from initial assessments.

C. Contractor

Contractors must comply with all local, state, and federal safety requirements, and must assure that all of their employees performing work on Organization property have been suitably trained.

D. Visitors

Visitors to Organization property must abide by the requirements of this program. It is the responsibility of the person(s) hosting the visitors to enforce this program. PPE used by visitors, whether provided by the visitor or the host department, must meet the minimum requirements established for Organization employees.

VII. TRAINING

Each employee required to wear PPE must receive training in the proper use and care of their PPE. It is expected that either the program coordinator or designated department representative will provide this training. This training must include the following:

- When PPE is to be worn.
- What PPE is necessary.
- How to properly put on, take off, adjust, and wear PPE.
- The limitations of PPE.

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- The proper care, maintenance, useful life, and disposal of PPE.

The employee must demonstrate an understanding of the training and ability to use PPE properly before being allowed to perform work requiring the use of PPE.

The program coordinator must maintain a written certification that each affected employee has received and understood the required training. This certification must include the name of each employee trained, the dates(s) of training, and the subject of the training.

When the program coordinator or designated department representative has reason to believe that an employee using PPE does not have the understanding and skill required to use this equipment safely, the employee must be retrained immediately. Retraining is also required when changes in the workplace render previous training obsolete, or when changes in the type of PPE to be used render previous training obsolete.

VIII. EVALUATION OF HAZARDS

Two types of hazard assessments may need to be performed by the designated department representative. Workplace hazards should be evaluated when an employee works at one location or performs only one class of work. Job specific hazards should be evaluated when an employee does not work at a fixed location and is exposed to hazards at a number of work locations.

A. Workplace Hazards

The designated department representative will be reviewing departmental workplaces to determine if hazards are present or are likely to be present that require the use of PPE. The workplace hazard assessment is conducted using the guidance provided in Appendix A. A copy of this assessment must be provided to the program coordinator.

The first step of the hazard assessment is to perform a walk-through survey of the worksite to observe and record potential hazards. Hazards are identified as follows:

- Electrical hazard
- Layout of workplace
- Presence of sharp objects or edges
- Stacked or stored objects that could fall or roll
- Sources of light radiation
- Types of chemical exposure
- Sources of rolling or pinching objects
- Sources of high and low temperature
- Exposed moving parts of machinery or equipment
- Sources of harmful dust

After the worksite survey is completed, hazards are grouped into the following categories:

- Impact
- Heat
- Penetration
- Compression (roll-over)

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- Chemical
- Respiratory
- Light (optical) radiation
- Electrical
- Hearing
- Harmful dust, mist, or fumes

Finally, organize your data by hazard, and assess the hazards as to the type, level of risk, and seriousness of potential injury. This evaluation should include the possibility of exposure to multiple hazards.

B. Job Specific Hazards

When an employee is exposed to hazards on multiple job sites the employee and/or their supervisor should be interviewed to identify the hazards to which he/she is exposed. The job specific hazard assessment is conducted using the guidance provided in Appendix A The assessment must be documented in writing and a copy of this assessment must be provided to the program coordinator. The hazard assessment is performed in a manner similar to the evaluation of workplace hazards.

IX. WHO PAYS FOR PPE?

The Organization must provide most types of PPE at no cost to the employee. Employers are not required to pay for:

- Non-specialty safety-toe protective footwear (including steel-toe shoes or steel-toe boots) and non-specialty prescription safety eyewear, provided that the employer permits such items to be worn off the jobsite.
 - If the organization provides metatarsal guards and allows the employee, at his or her request, to use shoes or boots with built-in metatarsal protection, the employer is not required to reimburse the employee for the shoes or boots.
- Logging boots required by 29 CFR 1910.266(d)(1)(v)
- Everyday clothing, such as long-sleeve shirts, long pants, street shoes and normal work boots.
- Ordinary clothing, skin creams, or other items, used solely for protection from weather, such as winter coats, jackets, gloves, parkas, rubber boots, hats, raincoats, ordinary sunglasses and sunscreen.

The Organization will pay for replacement personal protective equipment, except when the employee has lost or intentionally damaged the personal protective equipment.

APPENDIX A: HAZARD ASSESSMENT AND PPE SELECTION

OVERVIEW OF THE HAZARD ASSESSMENT PROCESS

A. Hazard Identification

The first step of the hazard assessment is to inspect the worksite and/or review the type of work performed by an employee if he/she conducts work at multiple sites. The purpose of the inspection and/or job review is to identify the hazards to which the employee is exposed. Your inspection findings should be documented on the Hazard Assessment Form found in Appendix A. During this inspection/review pay particular attention to the following potential hazards:

1. Moving equipment, parts of equipment, processes or personnel that could result in collision, compression or impact.
2. Potential for objects to fall or drop from above on an employee.
3. Exposure to chemicals or potentially harmful dusts, mists, or fumes.
4. Rolling or pinching objects or machinery processes that could crush body parts, catch hair, or snag loose clothing.
5. Electrical hazards, either from equipment, wiring or utilities.
6. Presence of use of sharp objects that could cut or pierce the body.
7. Hot or cold surfaces that could cause burns or freezing.
8. Light (optional) radiation from welding, cutting, brazing or other sources.
9. Use of tools or equipment that may generate flying debris, harmful dusts or noise.
10. The layout of the workplace and the locations of coworkers and the way in which work is staged or performed.

B. Analyze Your Data

Determine the level of risk and the seriousness and type of potential injury from each of the hazards identified during your assessment. The possibility of exposure to several hazards simultaneously should also be considered.

C. Control or Eliminate the Hazard(s)

Before you select and provide PPE to an employee, first determine if exposure to the hazard can be reduced or eliminated through the use of administrative or engineering controls. Ask the following questions:

1. Does the manufacturer supply guards for the machinery or equipment? Do these guards completely contain or control exposure to the hazard if used properly?
2. Can a shield, barrier, or guard be manufactured or purchased that will contain or control exposure to the hazard?
3. Can older equipment be replaced with newer, safer equipment?
4. Can the layout of the worksite be changed to eliminate or reduce exposure to the hazard?
5. Can the product or chemical used be replaced with a less hazardous product or chemical?
6. Can exposure to an airborne chemical or dust be controlled with exhaust ventilation?

If the answer to any of the above is 'yes', or 'maybe', it may be possible to use administrative or engineering controls to eliminate or reduce the hazard; contact the program coordinator.

D. Select PPE Appropriate for the Hazard(s)

Your review of the potential hazards in relation to specific job activities forms the basis for selecting PPE. The quick reference charts contained in each Appendix are a good place to begin. After identifying the basic hazards, the general procedure for selection of protective equipment is to:

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- Review the types of protective equipment that are available. An overview of the various types of PPE is provided in Appendices B through F.
- Compare the specifics of the hazard (i.e., how heavy and/or fast the object is moving, projectile shape, the type of light being emitted, duration of exposure, etc.) against the capabilities of the available protective equipment.
- Select protective equipment that provides a level of protection adequate to protect the employee from the hazard.

The PPE must be fit to the user, and the employee must be given instructions on the care and use of his or her PPE. It is very important that end users be made aware of all warning labels and limitations of their PPE.

E. Fitting the Device

Carefully consider the comfort and fit of PPE. PPE that fits poorly will not provide the necessary protection, and an employee is less likely to wear the device if it does not fit comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure the right size is selected for each individual wearer.

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 chinstrap may be necessary to keep the helmet on an employee’s head. (Chinstraps, if provided, should break at a reasonably low force to avoid a strangulation hazard). Always review and follow the manufacturer’s instruction.


F. Devices with adjustable features

Adjustments must be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position.




G. Reassessment

It is the responsibility of the departmental representative to reassess workplace hazards when new equipment, processes or other hazards are introduced.





PERSONAL PROTECTIVE EQUIPMENT SELECTION

Your Name:		Department:		Date:	
I am reviewing:	<input type="checkbox"/> A worksite		Location:		
	<input type="checkbox"/> A single employee’s job		Employee Name/Title:		
	<input type="checkbox"/> Job description for a class of employees		Title of all position covered:		
	Eye and Face Hazards: (Appendix B) Tasks that can cause eye injury include: working with chemicals or acids; chipping; sanding, or grinding; welding; furnace operations; and metal and wood working.				
	Check the appropriate box for each hazard:			Description of Hazard(s):	Based upon the hazard assessment, the following PPE is required:
	Chemical Exposure	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
	High Heat/Cold	Yes <input type="checkbox"/>	No <input type="checkbox"/>		

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	Dust/Flying debris	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Impact	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Light/Radiation	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Head Hazards: (Appendix C) Tasks that can cause head injury include: working below other workers who are using tools or materials that could fall; working on energized electrical equipment; and working in trenches or excavations or confined spaces.					
	<i>Check the appropriate box for each hazard:</i>				<i>Description of Hazard(s):</i>	<i>Based upon the hazard assessment, the following PPE is required:</i>
	Impact	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Lateral	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Electrical	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Foot Hazards: (Appendix D) Tasks that can cause foot injury include: exposure to chemicals or acids; welding or cutting; material handling; foundry operations; renovations or construction; electrical work; and spray finishing or other work with flammable or explosive materials.					
	<i>Check the appropriate box for each hazard:</i>			<i>Hazard(s) Description:</i>	<i>Based upon hazard assessment, the following PPE is required:</i>	
	Chemical Exposure	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	High Heat/Cold	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Impact/Compression	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Slips/Trips/Wet	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Puncture	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Explosives/Flammable Atmosphere	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
Electrical	Yes <input type="checkbox"/>	No <input type="checkbox"/>				
	Hand Hazards: (Appendix E) Hand injury can be caused by: work with chemicals or acids; exposure to cut or abrasion hazards (such as during renovation, demolition, or woodworking) work with hot or cold objects; BLOODBORNE PATHOGENS – ADDITIONAL TRAINING/MONITORING IS REQUIRED.					
	<i>Check the appropriate box for each hazard:</i>			<i>Hazard(s) Description:</i>	<i>Based upon hazard assessment, the following PPE is required:</i>	
	Chemical Exposure	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	High Heat/Cold	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Cuts/Abrasion	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Puncture	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Electric Shock	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
Bloodborne Pathogens	Yes <input type="checkbox"/>	No <input type="checkbox"/>				
Body/Torso Hazards: (Appendix F) Injury of the body or torso occur during: work with chemicals or acids; abrasive blasting; welding; cutting; brazing; chipping or grinding; use of chain saws and similar equipment; foundry operations; and work around electrical equipment (arc)						
<i>Check the appropriate box for each hazard:</i>			<i>Hazard(s) Description:</i>	<i>Based upon hazard assessment, the following PPE is required:</i>		

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	Chemical Exposure	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Extreme Heat/Cold	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Abrasion	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Impact	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Electrical Arc	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
	Fall Hazards: Personnel may be exposed to fall hazards when performing work on a surface with unprotected side or edge that is 6 feet or more above a lower level, or 10 feet or more on a scaffold. Fall protection may also be required when using vehicle manlifts, elevated platforms, tree trimming, performing work on roofs, poles or fixed ladders. ADDITIONAL TRAINING/MONITORING IS REQUIRED					
	<i>Check the appropriate box for each hazard:</i>			<i>Hazard(s) Description:</i>	<i>Based upon hazard assessment, the following PPE is required:</i>	
	Fall Hazard	Yes <input type="checkbox"/>	No <input type="checkbox"/>	SEE FALL PROTECTION PROGRAM	SEE FALL PROTECTION PROGRAM	
	Noise Hazards: Personnel may be exposed to noise hazards when machining, grinding, sanding, using pneumatic equipment, generators, motors, jackhammers, or similar equipment. ADDITIONAL TRAINING/MONITORING IS REQUIRED					
	<i>Check the appropriate box for each hazard:</i>			<i>Hazard(s) Description:</i>	<i>Based upon the hazard assessment, the following PPE is required:</i>	
	Noise Hazard	Yes <input type="checkbox"/>	No <input type="checkbox"/>	SEE HEARING CONSERVATION PROTECTION PROGRAM	SEE HEARING CONSERVATION PROTECTION PROGRAM	
	Respiratory Hazards: Personnel may be exposed to respiratory hazards that may require the use of a respirator when using certain chemicals outside of a ventilation hood; when applying paints, glues or chemicals including pesticides; when sanding or working with wood, working in confined spaces; when welding/cutting or brazing on certain metals: ADDITIONAL TRAINING/MONITORING IS REQUIRED					
	<i>Check the appropriate box for each hazard:</i>			<i>Hazard(s) Description:</i>	<i>Based upon hazard assessment, the following PPE is required:</i>	
	Respiratory Hazard	Yes <input type="checkbox"/>	No <input type="checkbox"/>	SEE RESPIRATORY PROTECTION PROGRAM	SEE RESPIRATORY PROTECTION PROGRAM	

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APPENDIX B: EYE AND FACE PROTECTION

Compliance with National Standards

All personal protective equipment and clothing must be of safe design and construction for work to be performed and must be maintained in a sanitary and reliable condition.

Eye and face protection used by employees must meet NIOSH or ANSI (American National Standards Institute) standards as follows:

- Protective eye and face devices purchased after July 5, 1994 must comply with ANSI Z87.1-1989, "American Standard Practice of Occupational and Education Eye and Face Protection".
- The referenced standards do not apply to hazards related to X-rays, gamma rays, high-energy particulate radiation, microwaves, radio-frequency radiation or work with lasers and masers. Information on PPE required for work involving these hazards is available through additional ANSI standards.

General Requirements

Employees must use eye and/or face protection when exposed to eye or face hazards from flying particles, molten metal, acids, or caustic liquids or other chemicals, chemical gases or vapors, or potentially hazardous light radiation.

Each affected employee must use eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors (e.g., clip-on or slide on shields) are acceptable if they meet ANSI requirements. Generally, the clip-on/slide-on side shields must have been made specifically for the frames they are used on.

All eye and face protective equipment will have a mark on the lens identifying the manufacturer.

Face shields when used must be used in conjunction with goggles or safety glasses.

- If protecting against chemical splash the face shield must be used with goggles worn under it.
- Face shields must be worn over safety glasses or goggles when there is a potentially severe exposure from flying fragments or objects, hot sparks from furnace operations, potential splash from molten metal, or extreme temperatures.

Each affected employee who wears prescription lenses, when engaged in operations that involves eye hazards, must either:

- Wear eye protection that incorporates the prescription in its design, or,
- Wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription glasses.

Each affected employee must use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation. Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.

TYPES OF EYE AND FACE PROTECTION

Safety Glasses

Protective eyeglasses are made of 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, etc. Prescription safety glasses and tinted lenses are also available.

Standard safety glasses are designed to protect against flying particles and objects. Safety glasses have lenses that are impact resistant and frames that are far stronger than regular eyeglasses.

Tinted (sun) glasses shall not be used indoors.

Photochromatic (transitions) lenses shall not be used by lift truck operators who frequently enter warehouses from the outdoors. The glasses take time to adjust and may obscure the vision during this transition time.

Safety glasses are not safety glasses unless they have side protection (side shields) or consist of a single lens that wraps around the eyes.

* ANSI adopted a new Z87.1 in 2003 which specifies high impact and high velocity testing requirements. Equipment surpassing these tests is marked with the symbol "Z87-2". Glass lenses will not pass the new testing requirements. Very few manufacturers are making prescription safety glasses with glass lenses. The safety glasses today are almost exclusively made with plastic or polycarbonate lenses. Existing prescription safety glasses with the "Z87.1" notation are acceptable for use in low impact/low velocity hazard settings.

Safety Goggles

Vinyl framed goggles of soft pliable body design provides adequate eye protection from many hazards and are available in clear and tinted lenses, perforated, vented and non-vented body styles. Single lens goggles provide similar protection to safety glasses and may be worn in combination with glasses or alone. Goggles offer best all-around impact protection of all eyewear types because they form a positive seal around the eye area.

Welders Goggles

Welders and chippers goggles are available in rigid and soft frames to accommodate single- or two-piece lenses. Welder's goggles provide protection from sparking, scaling, or splashing metals and harmful rays. Lenses are impact resistant and are available in graduated shades of filtration. Appropriate shade numbers for various operations are listed in Table 1: WELDING.

Face Shields

Face shields normally consist of an adjustable head gear and face shield of either tinted or transparent acetate or polycarbonate materials and can be wire screen. Face shields are available in various sizes, tensile strength, impact/heat resistance and light filtering capacity.

Face shields are used in operations when the entire face needs protection and to protect the eyes and face against flying particles, metal sparks and chemical or biological splash hazards.

Welding Helmets

The shield assemblies consist of a vulcanized fiber or glass fiber body, a ratchet or button type adjustable headgear or a cap attachment, a filter and cover plate holder.

These shields must 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 electrical arc welding and oxyacetylene work. Appropriate shade numbers are listed in Table 1.

Storage and Care

Safety glasses and other eye and face protection should be stored carefully so they don't get scratched or damaged. In general, do not store this equipment where it would be exposed to high heat or sunlight.

- Inspect eye and face protection prior to use. If the equipment is damaged or broken do not use it. It may be able to fully resist impact.

- Pitted lenses, like dirty lenses, make it more difficult for an employee to see and should be replaced. Lenses that are pitted or deeply scratched are more prone to break under impact and should be replaced.
- Clean eye and face protection according to the manufacturer’s recommendation. If the manufacturer’s instructions are not available, clean with a mild soap and water solution by soaking in the solution for ten minutes. Rinse thoroughly and allow to air dry.
- PPE that has been previously used should be disinfected before being used by another employee. PPE may be disinfected by completely immersing all parts in a solution of germicidal fungicide for 10 minutes. Remove the parts from the solution and allow to air dry at room temperature.
- Face shields should only be worn over primary eye protection (glasses or goggles).
- Caution should be exercised when wearing metal frame protective devices near electrical hazard areas.
- Welding helmets should only be worn over primary eye protection (glasses or goggles).
- Local exhaust systems may allow safe use of safety glasses rather than goggles in woodworking operations.

To protect employees, who are exposed to intense radiant energy, begin by selecting a shade too dark to see the welding zone. Then try lighter shades until you find one that allows a sufficient view of the welding zone without going below the minimum protective shade.

Table 1: WELDING

FILTER LENS SHADE NUMBERS FOR PROTECTION AGAINST RADIANT ENERGY	
WELDING OPERATION	SHADE NUMBER
Shielded metal-arc welding 1/18-,3/32-,1/8-, 5/32-inch diameter electrode	10
Gas-shielded arc welding (nonferrous) 1/16-, 3/32-,1/8-,5/32-inch diameter electrode	11
Gas-shielded arc welding (ferrous) 1/16-, 3/32-,1/8-,5/32-inch diameter electrode	12
Shielded metal-arc welding 3/16-,7/32-,1/4-inch diameter electrodes	12
5/16-,3/8-inch diameter electrodes	12
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch blazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Gas welding (light), up to 1/8 inch	4 or 5
Gas welding (medium), 1/8 inch to 1/2 inch	5 or 6
Gas welding (heavy), over 1/2 inch	6 or 8

APPENDIX C: HEAD PROTECTION

Compliance with National Standards

All personal protective clothing and equipment must be of safe design and construction for the work to be performed and must 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 may be used. Protective helmets purchased after September 1997 must comply with ANSI Z89.1-1997, “American National Standard for Personnel Protection- Protective Headwear for Industrial Workers-Requirements.”

General Requirements

Each affected employee must wear protective helmets when working in areas where there is a potential for injury to the head from falling, objects or impact. Some examples of occupations for which head protection should be routinely considered are carpenters, electricians, linemen, mechanics and repairers, plumbers and pipe fitters, welders, laborers, freight handlers, timber cutting and logging, warehouse operations, and construction or renovation operations.

Protective helmets designed to reduce electrical shock hazard must be worn by each affected employee when working near exposed electrical conductors which could contact the head.

Employees working at higher elevations must wear protective helmets with chinstraps. The chinstrap should be designed to prevent the hard hat from being bumped off the employees’ head but must not be so strong that it presents a strangulation hazard.

TYPES OF HEAD PROTECTION

The ANSI classification system for head protection changed significantly with the 1997 revision. The 1997 standard requirements apply to helmets purchased after September 1997. A description of the type and class of helmets under the 1997 standard are shown Table 1: HELMETS.

Table 1: HELMETS

DESCRIPTION OF PROTECTIVE HELMETS – 1997 STANDARD	
Type 1	Helmets providing crown impact protection
Type 2	Helmets providing lateral impact protection
Class G	General service, limited voltage. Intended for protection against impact hazard. Used in mining, construction, and manufacturing. Provide electrical protection from low-voltage conductors (proof tested to 2,200 volts).
Class E	Utility service, high voltage. Used by electrical workers and workers who also need protection from falling objects. Provides electrical protection from high-voltage conductors (proof tested to 20,000 volts).
Class C	Conductive – no electrical 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. This class of helmet may not be used around electrical hazards.

A hardhat may be classified at Type 1, Class G if it is for impact and general use. It may be a combination with the two types and each class, for example, Type 2, Class E, or Type 1, Class E.

Bump caps may be used when head (impact) protection isn’t required, but where an employee may be exposed to minor head bumps or laceration hazards. Bump caps are not approved for use where impact protection is required.

Storage and Care

If a helmet needs to be cleaned it should be scrubbed with a mild detergent and rinsed in clear water. The shell, cradle, headbands, sweatbands and accessories should be visually inspected daily for signs of cracks, dents, damage or wear that might reduce the protection of the device. Any helmet with worn, damaged or defective parts should be removed from service until the defective part has been replaced per the manufacturer's instructions.

Tar, paint, oils and some chemicals can damage the shell and reduce protection. Helmets should not be painted, and the manufacturer's instructions should be consulted if tars, paints or similar material need to be cleaned from the shell of the helmet.

Hardhats shall be replaced on a frequency in accordance with the manufacturer's recommendation; this is typically every five years but check with your specific manufacturer.

Helmets must be worn properly and must be properly maintained to provide adequate protection.

Do not:

- Drill holes for added ventilation.
- Paint or inscribe the helmet.
- Allow the helmet to be exposed to extreme temperatures or direct sunlight for long periods of time. Don't, for example, store your helmet in the back window area of your car.
- Wear the hard hat with the shell tilted to one side.
- Wear the hat backwards (e.g., with the brim facing your back).
- Stickers can hide signs of deterioration in the hard hat shell and should not be placed on hard hats.

APPENDIX D: FOOT PROTECTION

Compliance with National Standards

All personal protective clothing and equipment must be of safe design and construction for the work to be performed and must 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 may be used. Protective footwear purchased after July 5, 1994 must comply with ANSI Z41.1-1991, "American National Standard for Personal Protection-Protective Footwear."

General Requirements

Each affected employee must wear protective footwear when working in areas where there is a danger of foot injury due to falling or rolling objects, chemical hazards, objects piercing the sole or electrical hazards.

Employees who cannot wear safety shoes for medical reasons must furnish a letter to their supervisor from their physician stating the reason and the anticipated duration of the condition. Employees must wear toe or foot guards over regular work shoes until a proper safety shoe is purchased or the condition subsides. The guards provided under these conditions must be furnished at no cost to the employee.

Protective guards, such as shoe-caps and metatarsal guards, are designed to slip over street shoes. Protective guards are not recommended if an employee will frequently encounter foot hazards on the job. They are not intended to replace steel-toes safety shoes or boots. There are no approved ANSI standards for protective guards.

All footwear requires routine inspection for cuts, holes, tears, cracks, worn soles, and other damage that could compromise its protective quality.

TYPES OF PROTECTIVE FOOTWEAR

There are three basic types of protective footwear:

- General protective footwear that is worn in place of regular shoes or boots.
- Overshoes, which are worn over regular footwear.
- Protective guards, or safety devices that are worn over regular shoes or boots.

General Protective Footwear

The five main types of general protective footwear are:

- **Safety Toe Shoe or Boot**

These shoes are designed to protect feet from common hazards, such as falling or rolling objects, cuts, and punctures. The entire toe box and insole are reinforced with steel (or similar), and steel, aluminum, or plastic materials protect the instep.

Safety shoes are also available that insulate against temperature extremes and/or are equipped with special soles to guard against slips, chemicals and/or electrical hazards.

The shoe or boot may incorporate metatarsal protection, or a shield that protects the upper surface of the foot from impact or compression hazards. This type of footwear would generally be required for work around heavy pipes, activities involving manual material carts, or similar activities where heavy loads could drop on or roll over an employee's feet.

Safety boots offer more protection when splash or spark hazards (chemicals, molten materials) are present.

Chemical protective safety shoes and boots may be required to prevent or minimize chemical penetration when working with corrosives, caustics, cutting oils or petroleum products.

Safety shoes and boots may need to be used in conjunction with other PPE to provide greater protection against some work site hazards. For example, when exposed to molten metals or welding sparks, protect the lower legs and feet from heat hazards by using leather leggings or similar PPE. Safety snaps allow leggings to be removed quickly.

Conductive Footwear

Protects the wearer from static electricity by equalizing the differing electrical potentials.

Type 1 conductive footwear controls static electricity generated on the body of the worker, thereby preventing sparks which could ignite nearby flammable gases or liquids.

Type 2 conductive footwear is designed for linemen working with high-voltage lines where the electrical potential of the person and the energized equipment must be equalized.

NOTE: Conductive shoes are not general-purpose shoes and must be removed upon completion of the tasks for which they are required.

NOTE: Employees exposed to electrical hazards must never wear conductive shoes.

NOTE: Employees must be instructed not to use foot powder or wear socks made of silk, wool or nylon with conductive shoes.

Electrical Hazard Footwear

Shoes or boots designed with non-conductive materials (other than the steel toe, which is properly insulated to protect the wearer, or a toe made from another material). This type of footwear insulates the worker from energized parts. It is intended for secondary protection only, for use on surfaces that are already substantially insulated.

NOTE: Non-conductive footwear must not be used in explosive or hazardous locations; in such locations, electrically conductive shoes are required.

NOTE: Employees using electrical hazard footwear must be trained to recognize that the insulating protection of electrical hazard, safety-toe shoes may be compromised if:

- *The shoe is wet*
- *The rubber sole is worn through*
- *Metal particles become embedded in the sole or heel; or*
- *Other parts of the employee's body come into contact with conductive grounded items.*

Sole puncture resistant footwear – provide protection from nails, wire, tacks, screws, large staples, or similar objects that, if stepped on, could penetrate the sole of the shoe and result in foot injury.

Static dissipative footwear – insulates the wearer from electrical hazards that may exist in areas where static dissipative footwear is required.

Overboots

Overboots protect a worker's boots and shoes from contact with acids, solvents, or other chemicals, or a dirty or wet working environment. Overboots do not generally offer impact or compression protection and may need to be worn in

conjunction with safety shoes to provide adequate protection against workplace hazards. If chemical protection is required, assure the over boot is compatible with, and will provide adequate protection against, the expected exposure.

Protective Guards

Protective guards consist of either shoe-caps or metatarsal guards. Protective guards can provide protection from foot injury but should not be used to replace steel-toes safety footwear. Protective guards can be used where an employee is only occasionally exposed to foot hazards on the job.

Other Considerations

Other types of special footwear that may be required for an employee to perform their job safely include shoes with skid resistant soles, waterproof footwear, chemical-resistant footwear, and combinations thereof. Foundry or “Gaiter” style boots, for example, feature quick-release fasteners or elasticized insets to allow quick removal of the footwear if a hazardous substance or material (such molten metal) were to get into the boot itself.

Storage and Care

Inspect safety footwear prior to each use. Defective or damaged personal protective equipment must not be used. Removed the damaged equipment from service and report the condition to your supervisor. Follow the manufacturer’s instructions for the care and maintenance of safety footwear.

APPENDIX E: HAND PROTECTION

Compliance with National Standards

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

Hand protection: There are no ANSI standards for glove selection. Glove selection, therefore, must be based on the performance characteristics of the glove in relation to the tasks to be performed.

General Requirements

The requirements outlined in this program are generally applicable to all operations. Personnel who are involved in research and laboratory operations or that are exposed to blood or other potentially infectious agents, however, should consult the Chemical Hygiene Plan or Bloodborne Pathogens Programs, as appropriate, for additional requirements.

Supervisory personnel or the department PPE Coordinator must select and require employees to use appropriate hand protection when the employee's hands are exposed to certain hazards. These hazards include, but are not limited to:

- Work with harmful substances that can be absorbed through the skin or that can cause skin irritation, chemical burns or similar conditions. Examples would include strong acids or bases and organic solvents. Consult the Material Safety Data Sheet (MSDS) for the product or chemical to determine the type of hand protection that may be needed.
- Work with tools, equipment, or materials that can cause severe cuts, lacerations, punctures, fractures, amputations or abrasions.
- Work where the employee is exposed to materials or agents that can cause thermal burns or that expose the employee to harmful temperature extremes.

Selection

Hand protection must be selected based upon a review 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. General guidelines are as follows:

- Most accidents involving hand and arms can be classified under four main hazard categories: chemical, abrasion, cut, and burns.
- When protective hand wear is required for the job to be performed, make sure the gloves fit the employee well, are comfortable to wear, and are rated to guard against the particular hand hazards of the workplace.
- When selecting gloves for protection against chemical hazards, the toxic properties of the chemical(s) and the ability of the chemical to penetrate through the glove must be determined. In particular, chemicals that can cause local effects on the skin and/or pass through the skin and cause systemic effects warrant a higher level of protection.
- There are no gloves that provide protection against all potential hand hazards, and commonly available glove materials may provide only limited protection against many chemicals. It is important, therefore, 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. Note that as long as the performance characteristics of the glove are acceptable, in many cases it may be most cost effective to regularly change cheaper gloves than to reuse more expensive types.
- Regardless of material or construction, no glove is completely puncture-proof, nor can any PPE be expected to take the place of proper engineering or work practice controls.
- Before purchasing gloves, the supervisor or designated departmental representative should review the work activities of the employee 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.
- Generally, any "chemical resistant" glove can be used for dry powders.

- For mixtures and formulated products (unless specific test data is available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through some glove materials.
- Employee must be able to remove the gloves in such a manner as to prevent skin contamination.
- Store gloves at room temperature – never in extreme heat or cold. Depending upon the material, some manufacturers may specify special storage requirements – check the accompanying literature or contact the supplier for information.
- Train employees to inspect gloves carefully for discoloration, holes, tears, wear or other imperfections prior to each use, and require them to report any damage immediately to their supervisor or other designated person.
- PPE that is contaminated must be disposed of in a manner that will protect employees from exposure to the hazard. Specific questions on disposal requirements should be addressed to the (Waste Coordinator).

TYPES OF HAND PROTECTION

Five general gloves types are available: chemical resistant, disposable, cut or abrasion resistant, temperature resistant, or combination thereof.

Chemical Resistant Gloves

These gloves may be made of rubber, neoprene, polyvinyl alcohol, vinyl or other materials. The glove protects hands from corrosives, oils and solvents. The selection of the proper chemical-resistant glove begins with an evaluation of the type of work to be performed and the chemical(s) that will be contacted by the employee.

Factors that will influence selection are:

- The type of chemicals(s) to be handled or used.
- Frequency and duration of chemical contact.
- Whether the contact will involve total immersion or splash hazards.
- Concentration of the chemical(s).
- Temperature of the chemical(s).
- Abrasion or resistance requirements.
- Puncture, snag, tear, and cut resistance.
- Area to be protected and whether it involves only the hand, or if it also includes the forearm and/or arm (see section on Other Considerations).
- The amount of finger or hand dexterity that may be required to do the work.
- Grip requirements, or how well the glove needs to perform under dry, wet or oily conditions.
- Whether the glove needs to show a color change if it has become contaminated.
- Thermal protection that may be required when handling, for example, cryogenic (i.e. very cold) or superheated materials or liquids.
- Size and comfort requirements.
- The price of the glove.

Different chemicals will affect the protective qualities of a glove in different ways. Select an appropriate glove material based upon:

- Permeation or how quickly a chemical will pass through the glove materials.
- Breakthrough time, or the time it takes for the chemical to pass to the inside of the glove.
- Degradation, or how the chemical will affect the physical properties of the glove material upon contact. Degradation can lead to softening, drying, swelling, shrinkage or other undesirable side effects that could expose the employee to the chemical.

The type of chemical being used is the key factor for choosing the type of material from which the glove should be made. Some of the more common chemical-resistant glove materials are:

- Butyl. A synthetic rubber with good resistance to weathering and a wide variety of chemicals.
- Neoprene. A synthetic rubber having chemical and wear-resistance properties superior to those of natural rubber.
- Nitrile. A copolymer available in a wide range of acrylonitrile (propane nitrile) contents; chemical resistance and stiffness increases with higher acrylonitrile content.
- Polyethylene. A fairly chemical-resistant material used as a freestanding film or a fabric coating.
- Polyurethane. An abrasion-resistant rubber that is either coated into fabrics or formed into gloves or boots.
- Polyvinyl alcohol. A water-soluble polymer that exhibits exceptional existence to many organic solvents that rapidly permeates most rubbers.
- Polyvinyl chloride. A stiff polymer that is made softer and more suitable for protective clothing applications by the addition of plasticizers.
- Rubber. A highly flexible and conforming material made from a liquid tapped from rubber plants.

Disposable Gloves

Disposable gloves are typically discarded after a single wearing and are not designed to provide long term chemical protection. General types of disposable gloves are:

- Fabric gloves are usually made of cotton or nylon. These gloves will not generally provide adequate chemical protection, but function well as glove liners.
- Nitrile gloves are more chemically resistant than latex or vinyl, and offer good dexterity, elasticity, abrasion resistance and conform well to the shape of the hand.
- Latex gloves offer dexterity and conformity but should only be used in situations involving minimal chemical handling or contact. Some employees may experience an allergic reaction to latex.
- Polyethylene gloves are generally loose fitting and provide a high degree of dexterity.
- Vinyl gloves are not as flexible as latex, but offer a looser, less binding fit, and somewhat better chemical resistance than latex.

Cut and Abrasion-Resistant Gloves

General types of cut and abrasion-resistant gloves are:

- Leather gloves are used to guard against injuries from abrasions, cuts, extreme temperatures and sparks (such may occur when welding) or burn hazards. They may be used in combination with an insulated liner when working with electricity.
- Metal Mesh gloves are used to protect hands from accidental cuts and scratches from extremely sharp objects such as cutting tools or knives.
- Kevlar® gloves offers exceptional abrasion and burn resistance.
- Aluminized Gloves. Gloves made of aluminized fabric are designed to insulate your hands from intense heat. Persons working with molten materials most commonly use these gloves.
- Fabric gloves, usually made from cotton or nylon, do not offer much protection against sharp-edged objects, and may present a snag hazard. These gloves are generally used to protect from hands from minimal abrasion hazards, or contact with dirt, grease, or other contaminants.

Temperature-Resistant Gloves

General types of temperature-resistant gloves are:

- Leather is a natural insulator and offers resistance to cuts and abrasion.
- Kevlar® is cut and abrasion-resistant, and will withstand temperatures up to 600-degree F.
- Cotton terrycloth will work effectively at temperatures up to 600-degree F, though dexterity may be a factor.
- Cryogenic gloves offer protection against extremely low temperatures but are not suitable for immersion in liquid

nitrogen or for use near open flames.

- Rubber offers protection against cold temperatures but will not stand up well to heat.
- Other temperature-resistant gloves, including Nomex®, Zetec® and Flextra®, are available. The manufacturers' literature should be consulted for specific applications.

Additional Considerations

Glove Linings

Glove linings will tend to improve comfort by absorbing perspiration but may decrease dexterity. General types of linings consist of:

- Unlined gloves offer greater sensitivity and dexterity.
- Flock linings, or linings of shredded fibers, improve absorption of perspiration.
- Knit linings absorb perspiration and may improve temperature protection.
- Jersey linings are generally more comfortable and provide better cushioning than other linings.
- Foam linings may be used to improve temperature protection for hot and cold conditions.
- Wool linings are natural insulators used outdoors for warmth in cold temperatures.

Glove length

- Finger cots – worn on the fingers alone when only minimal protection is required, such as when handling small parts that do not present a hazard to the rest of the hand.
- Wrist length (9-14") – protects both the hand and wrist from exposure.
- Elbow length (14-18") – provide protection if the hand must be immersed in a liquid or extra splash protection, and also shields the forearm from heat hazards, abrasions, or chemicals.
- Shoulder length (30-31") protects the entire arm from exposure.

Cuff style

- Rolled cuffs – provide a barrier to keep chemicals on the glove from running on to your skin.
- Straight cuffs – provide extra length and a snug fit to protect from chemicals.
- Slip-on or open cuffs – make it easier to put on and take off the glove.
- Safety cuffs – provide additional wrist protection and improve cut and abrasion resistance.
- Gauntlet-style cuffs – support a looser fit, allow greater movement of the forearm to improve comfort.
- Knit wrist cuffs – improve the fit of the glove at opening to prevent materials from entering.

APPENDIX F: PROTECTIVE CLOTHING & BODY PROTECTION

Compliance with National Standards

All personal protective clothing and equipment must be of safe design and construction for the work to be performed, and it must be maintained in a sanitary and reliable condition.

Standards are not currently available for all types of protective clothing or body protection. Where such standards do exist, only those items of protective clothing and equipment that meet NIOSH, ANSI, ASTM or NEPA standards, as appropriate, may be used. Questions regarding the suitability of a specific item for a given hazard should be referred either to the manufacturer or EHSS.

General Requirements

An overview of protective clothing required for laboratory work can typically be found in the organizations Chemical Hygiene Plan or Biological Hygiene Plan.

Protective clothing that is subject to contamination with toxic or hazardous substances may not be removed from the work area and must be disposed of properly and in a manner that protects employees from exposure to the hazard.

Care should be exercised in protective clothing selection, since some protective clothing has very limited resistance to chemicals or fire.

Consult the Material Safety Data Sheet (MSDS) to determine the recommended clothing for a particular chemical or chemical mixture.

The department must provide body protection for employees if they are threatened with bodily injury while performing their jobs, and if engineering, work practice and administrative controls have failed to eliminate these hazards.

Workplace hazards that could cause bodily injury include the following:

- Exposure to intense heat or cold. Note that cold weather clothing is generally considered to be normal wear clothing and is not covered by this program.
- Splashes of very cold or very hot metals or liquids.
- Impacts from tools, machinery or materials.
- Cuts and/or abrasion.
- Exposure to hazardous chemicals.
- Contact with potentially infectious materials like blood.
- Radiation.
- Exposure to electrical arc hazards.

TYPES OF CLOTHING AND BODY PROTECTION

As with all protective equipment, protective clothing is available to protect against specific hazards. The department is required to provide personal protective clothing/equipment only for the parts of the body exposed to possible injury. The protective clothing provided must be constructed of material that will protect against the specific hazards in the workplace. Materials used in protective clothing include the following:

Paper-Like Fiber

Disposable suits made of this material provide protection against dust and varying protection against splash hazards. Disposable suits may be coated with a material to increase chemical or water resistance. Uncoated disposable suits are typically only suitable for protection from contaminations with particulate hazards (e.g., asbestos or lead).

Treated Wool and Cotton

Protective clothing made from treated wool and cotton adapts well to changing workplace temperatures and is comfortable as well as fire resistant. Treated cotton and wool clothing protects against dust, abrasions, and rough and irritating surfaces.

Duck

The closely woven cotton fabric protects employees against cuts and bruises while they handle heavy, sharp, or rough materials.

Leather

Leather protective clothing is often used to protect against dry heat and flame such as are encountered during grinding and welding operations.

Rubber, Rubberized Fabrics, Neoprene and Plastics

Protective clothing made from these materials protects against certain acids and chemicals.

Specialized

Specialized protective clothing may incorporate Kevlar for cut resistance (for example, chainsaw chaps), aluminized coatings for protection from radiant heat, and flame-retardant or resistant coatings or materials.

Electrical Hazard Clothing

Special clothing may be required for persons exposed to electrical arc hazards and/or extreme temperatures resulting from an electrical arc. This clothing is nonconductive and contains no metal hardware. Extreme exposure may necessitate use of an ultraviolet/infrared flash hood.

Cooling Vests or Jackets

Cooling vests or jackets provide protection from heat exhaustion or heat stroke when employees work in very hot environments or conditions.

Be aware that different materials will protect against different chemical and physical hazards. When chemical or physical hazards are present, check with the clothing manufacturer to make sure that the material selected will provide protection from the specific chemical or physical hazards in your workplace.

Many types of protective clothing restrict airflow and impede perspiration. The risk of heat exhaustion or heat stroke, therefore, may be greatly increased with some types of protective clothing. Employee training on the symptoms of heat stress and the use of engineering controls (e.g., increasing ventilation), administrative controls (e.g., employee rotation), and personal protective equipment (e.g., cooling vests) may be essential to assuring employee safety in hot work environments.