

Occupational Safety Program

Personal Protective Equipment (PPE) Program Manual

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Table of Contents

Purpose	1
Scope	1
Definitions	1
Responsibilities	1
Introduction	2
Applicable Regulations	3
Procedure	3
A. Program Activities	3
B. Cleaning, Storage, & Maintenance	10
C. Inspection Procedures & Use Precautions.....	10
D. Training	11
References	12
Appendix A: Eye & Face Protection Selection Chart	13
Appendix B: Glove Type and Chemical Use	15
Appendix C: Personal Protective Equipment Guideline for TU Employees	19
Appendix D: PPE Certification of Hazard Assessment	20
Appendix E: OSHA Personal Protective Standards - 29 CFR 1910.132, 1910.133, 1910.135, 1910.136, and 1910.138	22

Purpose

The purpose of this program is to establish procedures for wearing Personal Protective Equipment (PPE) by all Towson University employees, contractors and visitors on campus.

Scope

This program supports compliance with the Occupational Safety and Health Administration (OSHA) standards that cover PPE, specifically, 29 CFR 1910.132, 1910.133, 1910.135, 1910.136 and 1910.138. This program applies to all University employees, contractors and visitors who work in areas that contain hazards to the eyes, face, head, hands and feet. Respiratory and noise hazards are covered in the TU Respiratory Protection Program and the TU Hearing Conservation Program, respectively.

Definitions

ANSI (*American National Standards Institute*): A nonprofit organization that approves national safety standards.

Ophthalmologist: A physician/surgeon who specializes in diagnosing and treating eye diseases and disorders.

Optician: A skilled technician who, when given a medical prescription, is qualified to make, fit and dispense eyeglasses and contact lenses, either in an optical laboratory or for retail sale to the public; opticians do not examine patients or write prescriptions.

Optometrist: A licensed primary eye-care provider who performs eye examinations, prescribes and dispenses eyeglasses and contact lenses and performs some diagnostic work, such as screening for glaucoma or cataracts.

Plano: A common term for nonprescription safety glasses.

PPE: Personal Protective Equipment

Responsibilities

A. The Program Administrator

The TU PPE Program Administrator is the Manager of Environmental Safety, Environmental Health & Safety. Responsibilities include:

1. Issuing and administering this program and ensuring that it satisfies all applicable federal, state, and local PPE requirements; and
2. Identifying hazards to the eyes, head, hands and feet, prescribing appropriate PPE; and,
3. Ensuring that employees receive initial and annual training (if required) on PPE use; and,

4. Maintaining training records for all employees included in the training sessions; and,

B. Deans, Directors, and Department Heads

Deans, Directors, and Department Heads are responsible for:

1. Designating and empowering individuals who must participate in and who will be responsible for the preparation and implementation of the PPE Program.
2. Providing administrative and financial support for this program within individual departments.
3. Ensuring the PPE Program is implemented and maintained within the department.

C. Managers and Supervisors

Managers and Supervisors are responsible for:

1. Knowing the hazards in their areas that require PPE.
2. Assuring that safe operations are maintained within their departments to prevent injuries to the eyes, face, head, hands, and feet.
3. Enforcing PPE use in the areas in which it is required.
4. Immediately notifying the PPE Program Administrator of any new job hazards that requires new or different types of PPE.
5. Issuing PPE to their employees.

D. Employees

Employees are responsible for:

1. Using PPE in accordance with manufacturers' instructions wherever the hazard exists on campus.
2. Properly maintaining PPE in accordance with manufacturer's recommendations.
3. Immediately notifying their Supervisor if their job exposes them to any new job hazards, which require a different type of PPE, and needs to be assessed.
4. Immediately contacting their departments to replace lost, stolen, damaged or worn PPE.

Introduction

Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests, and full body suits. Hearing protection and respiratory protection are covered under the Hearing Conservation Program and Respiratory Protection Program, respectively, and will not be discussed further in this manual.

All personal protective equipment should be safely designed and constructed, and it should be maintained in a clean and reliable fashion. It should fit comfortably, encouraging worker use. If the personal protective equipment does not fit properly, it can make the difference between being safely covered or dangerously exposed. When engineering, work practice, and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective equipment to their workers and ensure its proper use. Employers are also required to train each worker required to use personal protective equipment to know:

- When it is necessary
- What kind is necessary
- How to properly put it on, adjust, wear and take it off
- The limitations of the equipment
- Proper care, maintenance, useful life, and disposal of the equipment

Protective equipment for eyes, face, head, and extremities, protective clothing, feet, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary. Use conditions and environment including hazards mentioned prior that cause injury or impairment are pertinent. Any such condition that affects the function of any part of the body through any route of exposure requires wearing PPE. The following program addresses the hazards present; the selection, maintenance, and use of PPE; the training of employees; and monitoring of the program to ensure its ongoing effectiveness.

Applicable Regulations

- 29 CFR 1910.132 - General Requirements
- 29 CFR 1910.133 - Eye and Face Protection
- 29 CFR 1910.135 - Head Protection
- 29 CFR 1910.136 - Foot Protection
- 29 CFR 1910.138 - Hand Protection
- 29 CFR 1910 - Subpart 1 Appendix B - Compliance Guidelines for Hazard Assessment and Personal Protective Equipment Selection
- 29 CFR 1910.1450 - Occupational Exposure to Hazardous Chemicals in Laboratories

Procedure

A. Program Activities

1. General
 - a) Eye, face, head, hand, and foot hazards will be assessed on campus by Supervisors based upon a review of employee job descriptions and job duties, and the appropriate protection will be provided for all affected employees. See Appendix D, "PPE Certification of Hazard Assessment." Employees are required to use PPE wherever hazards exist. Consult EHS if additional expertise is needed.
 - b) Head protection, non-prescription eyewear/face protection, and hand protection will be obtained from the employee's department at no charge to the employee. The individual's Department will reimburse

for foot protection (specifically safety shoes). Each TU employee is required to have PPE under this program. It is the employee's responsibility to maintain accountability of his/her PPE and to ensure it is maintained in accordance with manufacturer's recommendations.

- c) Damaged or worn PPE will be exchanged through their department at no cost to the employee. The damaged or worn PPE must be returned to their department before replacement equipment is issued. Lost or stolen PPE will be replaced by their department at no cost to the employee on a case-by-case basis.
- d) 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 (National Institute for Occupational Safety and Health) 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.
- e) 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. Employees will be given the opportunity to try on different sizes of PPE to ensure a proper fit.

2. Eyewear

Prevention of eye injuries requires that all persons who may be in eye hazard areas wear protective eyewear. This includes employees, visitors, researchers, contractors, or others passing through an identified eye hazard area. To provide protection for these personnel, Supervisors of such areas shall provide a sufficient quantity of goggles and/or plastic eye protectors that 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. 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.

Contact lenses wearers must also wear appropriate eye and face protection devices in a hazardous environment. Contact lenses offer NO eye protection & may absorb liquid or gaseous chemical contaminants that may cause permanent eye damage or blindness. Contact lenses are NOT to be worn in hazardous work environments.

a) Description and Use of Eye/Face Protectors

i. *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.

ii. *Safety Goggles*

Vinyl framed goggles of soft pliable body design provides adequate eye protection from many hazards. These goggles are available with clear or tinted lenses, perforated, port vented or non-vented frames. Safety goggles can be impact resistant or chemical protective. The appropriate goggle will be worn for the hazard present.

iii. *Welders/Chippers Goggles*

These goggles are available in rigid and soft frames to accommodate single or two eyepiece lenses. 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. Chippers/grinders goggles provide eye protection from flying particles. The dual protective eyecups house impact resistant clear lenses with individual cover plates. Welding/chippers goggles will be worn in all instances where welding or lasers are used including, but not limited to, the Art Department, Auto Shop, Chemistry, Physics, or Biology Lab or anywhere this hazard exists.

iv. *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.

v. *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. Welding Shields will be worn in all instances where welding or lasers are used including, but not limited to, the Art Department, Auto Shop, Chemistry, Physics, or Biology Lab or anywhere this hazard exists.

vi. *Prescription Safety Glasses*

- 1) Employees who wear prescription glasses and work in areas that may contain eye hazards are required to wear either prescription safety glasses or non-prescriptive safety glasses over their personal glasses. All safety glasses will be equipped with side shields.*
- 2) Employees who wish to wear prescription safety glasses may either purchase their own through their own optician entirely at their own expense or they may purchase them through their departments at reduced expense. No matter where the safety glasses are purchased, it is the employee's responsibility to ensure his/her safety glasses meet ANSI Standard Z87.1-1989, **American National Standard Practice for Occupational and Educational Eye and Face Protection**. In addition, all safety glasses must have side shields.*
- 3) Employees who choose to obtain prescription safety glasses through their department will obtain eye exams and copies of their written prescription from their own doctors at their expense. Departments will contribute the first \$50 towards the purchase of one (1) pair of prescription safety glasses every year. Employees are responsible for any prescription eyewear costs above \$50.*

3. Safety Shoes

Safety shoes shall be worn in the shops, maintenance areas, and other areas as determined by EHS or where the hazard exists. All safety footwear shall comply with ANSI Z41-1991, "American National Standard for Personal Protection - Protective Footwear."

Safety shoes or boots with impact protection are required to be worn in work areas where carrying or handling materials such as packages,

objects, parts or heavy tools, which could be dropped; and for other activities where objects might fall onto the feet. Safety shoes or boots with compression protection are required for work activities involving skid trucks (manual materials handling cars) or other activities in which materials or equipment could potentially roll over an employee's feet. Safety shoes or boots with puncture protection are required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal etc., could be stepped on by employees causing a foot injury.

There are many types and styles of protective footwear, and it is 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.

- **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. These boots will be worn in the following areas including, but not limited to, the shops and maintenance areas.
- **Safety Boots.** Safety boots offer more protection when splash or spark hazards (chemicals, molten materials) are present:
 - o When working with corrosives, caustics, cutting oils, and petroleum products, neoprene or nitrile boots are often required to prevent penetration. These types of boots are worn by Landscape Services when applying certain pesticides.
 - o 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).
- **Purchasing Procedures.** The employee's departments will contribute the first \$100 toward the purchase of one (1) pair of safety shoes per year. The employee should purchase his/her own safety shoes and bring the receipt to their Supervisor for reimbursement.

4. Gloves

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.

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. Chemicals eventually permeate all glove materials. 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. EHS can assist in determining the specific type of glove material that should be worn for a particular chemical.

- a) Only gloves that are designated for the particular task will be worn.
- b) To prevent employees from getting caught on equipment, loose fitting gloves will not be worn in operations around moving machinery.

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 types of glove materials to be used in these situations include leather, welder's gloves, aluminum-backed gloves, and other types of insulated glove materials.

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 hands from injury due to contact with moving parts, it is important to:

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

- **Disposable Gloves.** Disposable gloves, usually made of lightweight plastic, can help guard against mild irritants. Disposal gloves are used in a variety of areas on campus including, but not limited to, the Health Center and the Power Plant.

- **Fabric Gloves.** Made of cotton or fabric blends are generally used to improve grip when handling slippery objects. They also help insulate hands from mild heat or cold. Material Management uses fabric gloves to protect their hands when moving equipment on campus.
- **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. The TU Electric Shop uses special gloves to protect against high voltages. These gloves are sent back to the manufacturer for inspection every 6 months.
- **Metal Mesh Gloves.** These gloves are used to protect hands from accidental cuts and scratches. Persons working with cutting tools or other sharp instruments use them most commonly.
- **Aluminized Gloves.** Gloves made of aluminized fabric are designed to insulate hands from intense heat. Persons working molten materials most commonly use these gloves.
- **Chemical Resistance Gloves.** These gloves may be made of rubber, neoprene, polyvinyl alcohol, nitrile, vinyl, etc. The gloves protect hands from corrosives, oils, and solvents. The table in Appendix B, "Glove Type and Chemical Use" provides a guide to the different types of glove materials and the chemicals they can be used against. When selecting chemical resistance gloves, be sure to consult the manufacturers' recommendations, especially if the gloved hand will be immersed in the chemical. Chemical resistive gloves are used by the following departments including, but not limited to, the Grounds Shop, HVAC Department and Maintenance Shops on special projects.

5. Hard Hats

Head protection will be furnished to, and used by, all employees and contractors engaged in construction and other miscellaneous work. Head protection must also be worn by engineers, inspectors and visitors at sites when hazards from falling or fixed objects, or electrical shock are present. Hard hats must also be worn in environments where low hanging equipment, pipes, machinery, ect may cause injury from standing or walking. Bump caps/skull guards will be issued and worn for protection against scalp lacerations from contact with sharp objects. However, they will not be worn as substitutes for safety caps/hats because they do not afford protection from high impact forces or penetration by falling objects. Hard hats must be used according to manufacturer's instructions and cannot be altered in any way.

Protective hats are made in the following types and classes:

- Type I - 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.

EHS recommends Type I, Class A hard hats in all construction type uses.

6. General Workplace Safety

Hair length (head, facial, body etc.) and jewelry (rings, watches, bracelets, earrings, necklaces, etc.) should be a length that does not pose a threat of entanglement in machinery, immersion in chemicals or any other obstruction of work duties. If such a length cannot be achieved, then any long hair and jewelry must be restrained or removed so that these threats no longer exist. Jewelry such as rings, bracelets, watches, etc. pose a threat of electrocution when working with electrical equipment. If not safely covered, jewelry must be removed.

B. Cleaning, Storage, & 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 required 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 that cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.

All PPE will be stored out of the contaminated area to protect from chemicals depositing on the inside of the protective device where the individual may become exposed.

C. Inspection Procedures and Use Precautions

1. Hard Hats

- a) Before & after use, inspect hard hats for cracks, loose/torn straps, stitches, rivets, lugs, etc. or other defects.
- b) Wash hat, especially sweatbands and suspension in warm, soapy water.
- c) Immediately replace any unserviceable hard hat.
- d) Never remove the suspension from hard hats.
- e) Never carry or store anything in the hard hat.

- f) Never store a hard hat in adverse conditions such as direct sunlight or extreme cold.
 - g) Inspect your hard hat before each use. Replace damaged components.
 - h) Never wear your hard hat backwards.
2. Eye/Face Protection
- a) Inspect equipment before & after use for cracks, scratches and other surface damage.
 - b) Make sure equipment is adjustable and fits properly.
 - c) Immediately replace any defective eyewear.
 - d) Make sure eye protection is comfortable and fits well.
 - e) Side shields should always be worn around flying objects.
 - f) Contact lenses offer NO eye protection & may absorb liquid or gaseous chemical contaminants that may cause permanent eye damage or blindness.
 - g) Contact lenses are NOT to be worn in hazardous work environments.
3. Gloves
- a) Before and after use, inspect gloves for tears, breaks, leaks or other signs of wear.
 - b) When wearing gloves for chemical protection, regularly check for signs of breakdown including: loss of color, cracking, sponginess or stickiness.
 - c) Immediately replace defective gloves.
 - d) Make sure the glove fits properly.
 - e) When handling chemicals, make sure the cuffs are taped to protective clothing, cuffed or folded to catch drips.
 - f) Never wear metal reinforced gloves around electricity.
4. Foot Protection
- a) Before & after use, inspect shoes/boots for tears, breaks, leaks or other signs of wear.
 - b) When wearing boots for chemical protection, check for signs of breakdown (see gloves above).
 - c) Immediately replace defective shoes/boots.
 - d) Have worn soles replaced.
 - e) Make sure the shoes/boots fit properly and are comfortable.
 - f) Replace safety shoes if steel toe is exposed.
 - g) Replace soles when worn.

D. Training

Any worker required to wear PPE shall receive training in the proper use and care of PPE. Periodic retraining shall be offered by EHS to both the employees and the supervisors, 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.

Training will be assigned virtually through Vector Solutions SafeColleges found at the following URL: <https://towsonehs-md.safecolleges.com/training/home>. Workers shall request training by emailing safety@towson.edu or by calling the Environmental Health & Safety (EHS) office at 410-704-2949.

References

American National Standards Institute, ANSI Z41-1991, "Personnel Protection - Protective Footwear".

American National Standards Institute, ANSI Z87.1-1989, "Practice for Occupational and Educational Eye and Face Protection".

American National Standards Institute, ANSI Z89.1-1986, "Safety Requirements for Industrial Head Protection".

Occupational Safety & Health Administration, Personal Protective Equipment Overview. <https://www.osha.gov/personal-protective-equipment/> Retrieval Date: 6/12/2024.

Appendix A: Eye and Face Protection Selection Chart

Eye and Face Protection Selection Chart		
Source	Assessment of Hazard	Protection
IMPACT - 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.
CHEMICALS - Acid and chemicals handling	Splash	Goggles, eyecup and cover types. For severe exposure, use face shield over primary eye protection Special-purpose goggles
	Irritating mists	
DUST - Woodworking, buffing, general dusty conditions	Nuisance dust	Goggles, eyecup and cover types.
HEAT	Hot Sparks	Face shields, goggles, spectacles with side protection. For severe exposure, use face shield.
	Splash from molten metals	Face shields worn over goggles.
	High Temperature Exposure	Screen face shields, reflective face shields
LIGHT and/or RADIATION Welding - electric arc Welding - gas Cutting, torch brazing, torch soldering Glare	Optical radiation	Welding helmets or welding shields. Typical shades: 10-14
	Optical radiation	Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4
	Optical radiation	Spectacles or welding face shield. Typical shades: 1.5-3
	Poor vision	Spectacles with shaded or special-purpose lenses, as suitable.

Notes:

- o Care should 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 should be provided. Protective devices do not provide unlimited shaded lenses are not filter lenses unless they are marked or identified as such protection.
- o Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.
- o Face shields should only be worn over primary eye protection (spectacles or goggles).
- o As required by the standard, persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear.
- o Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
- o Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
- o Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.
- o Welding helmets or face shields should be used only over primary eye protection (spectacles or goggles).

- Non-side shield spectacles are available for frontal protection only, but are not acceptable protection for the sources and operations listed for "impact".
- Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from the splash entry.
- Protection from light radiation is directly related to filter lens density. See note above. Select the darkest shade that allows task performance.

Appendix B: Glove Type and Chemical Use

Table Key:

*Limited service	VG= Very Good	G= Good	F=Fair	P=Poor (not recommended)
Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
*Acetaldehyde	VG	G	VG	G
Acetic acid	VG	VG	VG	VG
*Acetone	G	VG	VG	P
Ammonium hydroxide	VG	VG	VG	VG
*Amyl acetate	F	P	F	P
Aniline	G	F	F	P
*Benzaldehyde	F	F	G	G
*Benzene	F	F	F	P
Butyl acetate	G	F	F	P
Butyl alcohol	VG	VG	VG	VG
Carbon disulfide	F	F	F	F
*Carbon tetrachloride	F	P	P	G
Castor oil	F	P	F	VG
*Chlorobenzene	F	P	F	P
*Chloroform	G	P	P	P
Chloronaphthalene	F	P	F	F
Chromic Acid (50%)	F	P	F	F
Citric acid (10%)	VG	VG	VG	VG
Cyclohexanol	G	F	G	VG
*Dibutyl phthalate	G	P	G	G

Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
Diesel fuel	G	P	P	VG
Diisobutyl ketone	P	F	G	P
Dimethylformamide	F	F	G	G
Diethyl phthalate	G	P	F	VG
Dioxane	VG	G	G	G
Epoxy resins, dry	VG	VG	VG	VG
*Ethyl acetate	G	F	G	F
Ethyl alcohol	VG	VG	VG	VG
Ethyl ether	VG	G	VG	G
*Ethylene dichloride	F	P	F	P
Ethylene glycol	VG	VG	VG	VG
Formaldehyde	VG	VG	VG	VG
Formic acid	VG	VG	VG	VG
Freon 11	G	P	F	G
Freon 12	G	P	F	G
Freon 21	G	P	F	G
Freon 22	G	P	F	G
*Furfural	G	G	G	G
Gasoline, leaded	G	P	F	VG
Gasoline, unleaded	G	P	F	VG
Glycerine	VG	VG	VG	VG
Hexane	F	P	P	G
Hydrochloric acid	VG	G	G	G
Hydrofluoric acid (48%)	VG	G	G	G
Hydrogen peroxide (30%)	G	G	G	G

Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
Hydroquinone	G	G	G	F
Isooctane	F	P	P	VG
Isopropyl alcohol	VG	VG	VG	VG
Kerosene	VG	F	F	VG
Ketones	G	VG	VG	P
Lacquer thinners	G	F	F	P
Lactic acid (85%)	VG	VG	VG	VG
Lauric acid (36%)	VG	F	VG	VG
Linoleic acid	VG	P	F	G
Linseed oil	VG	P	F	VG
Maleic acid	VG	VG	VG	VG
Methyl alcohol	VG	VG	VG	VG
Methylamine	F	F	G	G
Methyl bromide	G	F	G	F
*Methyl chloride	P	P	P	P
*Methyl ethyl ketone	G	G	VG	P
*Methyl isobutyl ketone	F	F	VG	P
Methyl methacrylate	G	G	VG	F
Monoethanolamine	VG	G	VG	VG
Morpholine	VG	VG	VG	G
Naphthalene	G	F	F	G
Naphthas, aliphatic	VG	F	F	VG
Naphthas, aromatic	G	P	P	G
*Nitric acid	G	F	F	F
Nitromethane (95.5%)	F	P	F	F

Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
Nitropropane (95.5%)	F	P	F	F
Octyl alcohol	VG	VG	VG	VG
Oleic acid	VG	F	G	VG
Oxalic acid	VG	VG	VG	VG
Palmitic acid	VG	VG	VG	VG
Perchloric acid (60%)	VG	F	G	G
Perchloroethylene	F	P	P	G
Petroleum distillates (naphtha)	G	P	P	VG
Phenol	VG	F	G	F
Phosphoric acid	VG	G	VG	VG
Potassium hydroxide	VG	VG	VG	VG
Propyl acetate	G	F	G	F
Propyl alcohol	VG	VG	VG	VG
Propyl alcohol (iso)	VG	VG	VG	VG
Sodium hydroxide	VG	VG	VG	VG
Styrene	P	P	P	F
Sulfuric acid	G	G	G	G
Tannic acid (65%)	VG	VG	VG	VG
Tetrahydrofuran	P	F	F	F
*Toluene	F	P	P	F
Toluene diisocyanate	F	G	G	F
*Trichloroethylene	F	F	P	G
Triethanolamine	VG	G	G	VG
Tung oil	VG	P	F	VG
Turpentine	G	F	F	VG
*Xylene	P	P	P	F

Appendix C: Personal Protective Equipment Guidelines

For TU Employees

Tasks	Potential Hazard	PPE Recommended
Automobile/Heavy Equipment Mechanic Work	Flying particles, petroleum solvents and wastes	Safety glasses, chemical resistant gloves
Locksmith Work	Flying particles	Safety glasses, face shield when using high speed tools
Wood Working Work (Shop)	Noise, flying particles, lifting/carrying, rough surfaced materials	Hearing protection, safety glasses, face shield for high-speed tools, puncture/cut resistant gloves, safety shoes
Metal Working Work (Shop/Art Dept.)	Noise, flying particles, lifting/carrying, rough surfaced materials, metal working chemicals	Hearing protection, safety glasses, face shield for high speed tools, puncture/cut resistant gloves, safety shoes
Painting (Shop)	Vapors, mists, solvents and chemicals, flammable	Organic vapor respirator w/paint pre-filter, chemical resistant gloves
Carpentry Work (Shop)	Solvents, glues, punctures	Chemical resistant gloves
Working with small volumes of corrosive liquids < 1 liter	Skin and eye damage	Safety glasses, goggles splash hazard Light chemical resistant gloves, lab coat, closed shoe, pants
Working with large volumes of corrosive liquids >1 liter, acutely toxic corrosives or work which may create a splash hazard	Large surface area skin and eye damage, great potential for eye and skin injury or poisoning through skin absorption.	Safety glasses and face shield Appropriate heavy resistant gloves, clothes, and chemical resistant apron
Working with small volume of organic solvents, <1 liter	Skin and eye damage Slight poisoning potential through skin absorption	Safety glasses, goggles splash hazard Light chemical resistant gloves Lab coat, closed shoe, pants
Working with large volumes of organic solvents, >1 liter, very dangerous organic solvents or work which may create a splash hazard	Major skin and eye damage Potential poisoning through skin absorption	Safety glasses and face shield Appropriate heavy resistant gloves, clothes and chemical resistant apron
Operating hand saw, chainsaw, and wood chipper	Impact Noise, flying particles, cuts	Impact-approved safety glasses/goggles and face shield for high speed tools, hearing protection, puncture/cut resistant gloves, safety shoes
Manual Materials Handling	Falling or rolling objects Cuts, scrapes	Steel-toed boot with metatarsal coverage and cotton or leather gloves.
Health Center	Potentially infectious body materials	Latex gloves, lab coat and if needed, face mask.
Snow Removal – Grounds	Temperature Extremes	Insulated headgear, footwear, and gloves. As well as coat/pants.
Trimming activities in, under, or around trees	Falling or rolling objects Splinters, cuts and abrasions	Hard hat and safety boot Leather palm gloves

Appendix D: PPE Certification of Hazard Assessment

Building/Area: _____ Room #: _____

Job Description: _____

Assessor: _____ Date: _____

Head Hazards: Such as working below other workers who are using tools/materials which could fall, working on energized electrical equipment, working with chemicals, and working under machinery/processes which might cause objects/materials to fall.

Check the appropriate box for each hazard

Description of Hazard

Burns	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Chemical Splash	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Electrical Shock	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Impact	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____

Eye Hazards: Such as working with chemicals, chipping, grinding, furnace operations, sanding, welding and woodworking.

Check the appropriate box for each hazard

Description of Hazard

Chemicals	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Harmful Dusts	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Heat	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"/>	_____

Hand Hazards: Such as cutting materials, working with chemicals, and working with hot objects.

Check the appropriate box for each hazard

Description of Hazard

Burns	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Chemical Exposure	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Cuts/Abrasions	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Punctures	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____

Foot Hazards: Such as carrying or handling materials that can be dropped, performing manual materials handling and working with chemicals.

Check the appropriate box for each hazard

Description of Hazard

Compression	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Chemical Exposure	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Punctures	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____
Impact	Yes <input type="checkbox"/>	No <input type="checkbox"/>	_____

Based upon the hazard assessment above the following PPE is required for this job:

HEAD HAZARD

JOB DESCRIPTION

PPE

EYE HAZARD

JOB DESCRIPTION

PPE

HAND HAZARD

JOB DESCRIPTION

PPE

FOOT HAZARD

JOB DESCRIPTION

PPE

OTHER HAZARD

JOB DESCRIPTION

PPE

Appendix E: OSHA Personal Protective Standards

29 CFR 1910.132: General Requirements

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.132>

29 CFR 1910.133: Eye and Face Protection

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.133>

29 CFR 1910.135: Head Protection

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.135>

29 CFR 1910.136: Foot Protection

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.136>

29 CFR 1910.135: Hand Protection

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.138>