Occupational Safety Program

Personal Protective Equipment (PPE) Program

Manual

Department of Environmental Health & Safety
Phone: (410) 704-2949
Fax: (410) 704-2993
Email: safety@towson.edu
Website: https://www.towson.edu/public-safety/environmental-health-safety/
Emergency: 911
TUPD: (410) 704-4444

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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.
2. Identifying hazards to the eyes, head, hands and feet, prescribing appropriate PPE.
3. Ensuring that employees receive initial and annual training (if required) on PPE use.

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

B. Deans, Directors, and Department Heads

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 require 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

Selecting the most suitable protection for employees should take into consideration the following elements: the ability to protect against specific workplace hazards; proper fit and reasonable comfort; the ability to provide unrestricted vision and movement; durability and ability to be cleaned; and allowance of unrestricted functioning of any other required PPE. 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). 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 employee'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 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. <u>Eye & Face Protection</u>

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

1) 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

1) 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.

2) Safety goggles can be impact-resistant or chemical protective. The appropriate goggles will be worn for the hazard present.

iii. Welders/Chippers Goggles

1) These goggles are available in rigid and soft frames to accommodate single or two eyepiece lenses. Welding goggles provide protection from sparking, scaling, or splashing metals and harmful light rays. Lenses are impact resistant and are available in graduated shades of filtration.

2) Chippers/grinders goggles provide eye protection from flying particles. The dual protective 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

1) *These normally consist of an adjustable headgear and face shield of tinted/transparent acetate or polycarbonate materials, or wire screen.*
2) *Face shields are available in various sizes, tensile strength, impact/heat resistance and light ray filtering capacity.*
3) *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 Helmets/Shields

1) *These helmet/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.*
2) *These helmet/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.*
3) *Welding Helmets/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
   a) 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."
   b) 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.
   c) 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.
   d) 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.
      i. ***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.*

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

1) *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.*
2) *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).*

iii. ***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. <u>Gloves</u>
   a) Suitable gloves shall be worn when hazards from chemicals, cuts, lacerations, abrasions, punctures, burns, biologicals, and harmful temperature extremes are present.
   b) 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.
      i. *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.*
      ii. *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.*
      iii. *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.*
   c) Only gloves that are designated for the particular task will be worn.
   d) Skin contact is a potential source of exposure to toxic materials; it is important that the proper steps be taken to prevent such contact.
      i. *Most accidents involving hands and arms can be classified under four main hazard categories: chemicals, abrasions, cutting, and heat.*
      ii. *There are gloves available that can protect workers from any of these individual hazards or any combination thereof.*
   e) Gloves should be replaced periodically, depending on frequency of use and permeability to the substance(s) handled.

f) Gloves overtly contaminated should be rinsed and then carefully removed after use.
g) Gloves should also be worn whenever it is necessary to handle rough or sharp-edged objects, and very hot or very cold materials.
    i. *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.*

h) Careful attention must be given to protecting your hands when working with tools and machinery.
    i. *To prevent employees from getting caught on equipment, loose fitting gloves will not be worn in operations around moving machinery.*
    ii. *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:*
        1) Ensure that guards are always in place and used.
        2) Always lockout machines or tools and disconnect the power before making repairs.
        3) Treat a machine without a guard as inoperative.
        4) Do not wear gloves around moving machinery, such as drill presses, mills, lathes, and grinders.

i) The following is a guide to the most common types of protective work gloves and the types of hazards they can guard against:
    i. ***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.*
    ii. ***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.*
    iii. ***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.*

iv. ***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.*

v. ***Aluminized Gloves****. These gloves made of aluminized fabric are designed to insulate hands from intense heat. Persons working molten materials most commonly use these gloves.*

vi. ***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.*

vii. ***Autoclave Gloves****. These gloves are made from terrycloth and are often colored white or bright orange for visibility. The gloves are resistant to dry heat from ovens, typically autoclaves, where hot objects and related equipment are concerned and are used to prevent burns from these hazards. The gloves tend to have large fingers and extend beyond the wrist to part of the lower forearm. These gloves are replaced over time as their protection may degrade.* ***Note: The gloves are <u>not resistant</u> to steam leaks or hot liquids, if splashed. Always use dry gloves to prevent burns.***

viii. ***Cryogenic Gloves****. These gloves are made from multi-layered fabrics, and are waterproof or water-resistant, thickly insulated, and colored blue. The gloves are resistant to low-temperature environments and cold stress, protect against splashes, and are typically used for dry ice, liquid nitrogen, and other cryogens. The gloves tend to have large fingers and extend beyond the wrist to part of the lower forearm to prevent burns or frostbite.*

5. <u>Head Protection/Hard Hats</u>
   a) 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.
   b) Head protection may include hard hats, protective helmets/safety helmets, and bump caps/skull guards.

c) Hard hats must be worn in environments where low hanging equipment, pipes, machinery, etc. may cause injury from standing or walking.
d) 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.
e) Hard hats and protective helmets must meet ANSI Z89.1-2009 requirements.
f) Hard hats must be used according to manufacturer's instructions and cannot be altered in any way.
g) Protective helmets/hard hats are made in the following types and classes:
    i. *Types*
        1) *Type 1 - Helmets with a full brim. Type 1 provides protection against vertical impacts and penetration that lead to a blow to the top of the head.*
        2) *Type 2 - Brimless helmets with a peak extending forward from the crown. Type 2 provides protection of Type 1 in addition to protection from blows to the side of the head (back, front, side). The related hazards are from direct impacts or falling/flying objects.*
    ii. *Classes*
        1) *Class G (formerly Class A) - General service, limited voltage protection (rated up to 2,200 volts). Intended for protection against impact hazards. Used in mining, construction, and manufacturing.*
        2) *Class E (formerly Class B) - Utility service, high voltage protection (rated up to 20,000 volts, phase-to-ground). Used by electrical workers.*
        3) *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. This class often features vents on the headwear for comfort. Suitable for nonconductive or electrical hazard-free environments. Vented hard hats do not provide complete protection from hazards through vents (e.g. chemical, electrical, fire, heat, etc.)*
h) There is no stipulation on whether 4-point or 6-point suspension is required, but 6-point should be more comfortable as there is better weight distribution on the head, with more suspension points.

Note: EHS recommends Type 1, Class G hard hats in all construction-type uses.

6. Body Protection
    a) Body protection refers to clothing which is used to protect the torso, possibly the neck, arms to the wrist, and/or legs to the ankle of the body. The hazards may be biological, chemical, or physical
    b) Common forms of body protection include aprons; coveralls, which often includes the head, torso, arms, and legs; gowns; laboratory coats; scrubs, and smocks. Specialized types of these garments may be used for specific operations or hazards (e.g. welding apron, cryogenic apron, polymeric coveralls used for lead and asbestos removal).
    c) Safety vests and reflective clothing are considered a type of personal protective equipment as they increase visibility of the wearer to prevent accidents. Its materials may reflect in low-light or poor visibility conditions.
    d) Long sleeve shirts and long pants may also be considered body protection from some physical hazards.

7. General Workplace Safety & Other PPE
    a) 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.
    b) 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. These items may also caught in machinery, an entanglement hazard.
    c) Protective equipment used for hearing and breathing may be found in the Hearing Conservation Program and Respiratory Protection Program, respectively.
    d) Lanyards and body harnesses for use in fall protection are also considered personal protective equipment, and further information will be found in the Fall Protection Program.
    e) Laser glasses/goggles used with laser equipment are considered personal protective equipment, and further information will be found in the Laser Safety Program.
    f) Worn cooling devices in high-heat environments are considered personal protective equipment, and further information will be found in the Heat Stress and Heat Illness Prevention Program.

B. Cleaning, Storage, & Maintenance

1. 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.
2. PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the required protection.

3. 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 by departments.
4. 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.
5. 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. Body Protection
   a) Before and after use, inspect protective clothing for tears, breaks, leaks or other signs of wear.
   b) When wearing body protection for chemical protection, regularly check for signs of breakdown including loss of color, cracking, sponginess, stickiness, or any absorption. It must be intact to protect the user.
   c) Immediately replace defective garments or suits.
   d) Ensure that the body protection fits properly and is properly secured/fastened.
   e) If the items are reusable, ensure that it is properly laundered or cleaned prior to reuse; otherwise, properly dispose of the item.

5. Foot Protection
   a) Before and 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.

Resources

A. ANSI

1. American National Standards Institute, ANSI Z41-1991, "Personnel Protection - Protective Footwear".
2. American National Standards Institute, ANSI Z87.1-2020, "Practice for Occupational and Educational Eye and Face Protection".
3. American National Standards Institute, ANSI Z89.1-1986, "Safety Requirements for Industrial Head Protection".

B. OSHA

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

Appendix A: Emergency Contact Telephone Numbers

FIRE - RESCUE - EMERGENCY MEDICAL SERVICE : 911

At the emergency blue-light and yellow phones located around campus, press the emergency button to be connected to the University Police who can contact 911 for you, or dial 911 on the keypad to be connected directly to the 911 Center. Give the dispatcher all of the requested information.

Towson University Police Department [TUPD]: (410) 704-4444
For Other Emergencies

Department of Environmental Health and Safety: (410) 704-2949

Concentra Urgent Care [Timonium, MD]: (410) 252-4015
For Occupational Health, Medical Consultation and Evaluation

Facilities Management - Work Control Center: (410) 704-2481

Appendix B: First Aid & Reporting Instructions

Note: The following are suggested medical care facilities. Individuals may choose their own providers for medical care.

For major, immediate illness/injuries: Call 911 and/or go to the nearest hospital (UMD St. Joseph Medical Center, 7601 Osler Dr, Towson, MD 21204)

For minor injuries/illnesses and chronic/ongoing work-related injuries:
Employees: Concentra Occupational Health is open on Monday-Friday, 7:30AM-6:00PM (Concentra Occupational Health, 1830 York Road, Suite F, Timonium, MD 21093). Complimentary transportation is available for work-related injuries. You may also make a telemedicine visit: by visiting Concentra Telemed.

Students: TU Health Center is open on Monday-Friday, 8:00AM-5:00PM. (Ward West, University Avenue; TU Shuttle Bus service stops here, check schedule for times/stops). Please note that when Towson University is closed, the Health Center is also closed. There is an after-hours answering service and on-call physician available when the center is closed.

Other Nearby Medical Facilities:
MedStar Urgent Care Facility (MHUC) at the following locations:

- Towson at Hillside Avenue is open on Monday-Friday, 8:00AM-8:00PM (MedStar Urgent Care, 7825 York Road, Towson, MD 21204; Phone: 855-910-3278)
- Towson at Anneslie is open on Monday-Friday, 8:00AM-8:00PM (MedStar Urgent Care, 6317 York Road, Towson, MD 21212; Phone: 833-735-1958)

Please see next page for First Aid & Reporting Instructions table.

	Hazard Class:	Biological, Chemical	Biological, Chemical	Biological	Biological, Chemical	Chemical Physical	Chemical, Physical, Radiological	Biological		All	
Personnel Action	**Incident Type:**	Severe Allergic Reaction, Anaphylaxis	Accidental Ingestion	Animal Contact (Bite, Scratch, Other Contact) Biotoxin/ Venom	Accidental Inhalation	Burns/ Contact Exposure	Burns > 3 inch diam., deep/ all skin layers; covers hands, feet, face, groin, buttocks, or major joint/ encircles arm or leg	Injection Needlestick, Sharps Exposure		*If victim is unconscious/ not breathing/ no pulse:	**If victim is conscious, but not breathing normally:
	Severity:	Major	Major	Major	Major	Minor	Major	Minor	Major	Major	Major
Reduce Danger		Stop work immediately.								Stay with victim, if safe to do so. Ensure area is secure.	
		Exit the area, if possible. Seek fresh air.								Keep calm.	
Contact Emergency Medical Services		Call 911 or TUPD at (410) 704-4444					Call 911 or TUPD at (410) 704-4444		Call 911 or TUPD at (410) 704-4444		
		Consult Poison Control Center at 1-800-222-1222 or Safety Data Sheets (SDS) for the chemical [find Section 4: First Aid Measures].							Consult Poison Control Center at 1-800-222-1222 or Safety Data Sheets (SDS)		
Use First Aid		Use EpiPen/ equivalent. *See Right **See Right	Wash affected area (foaming soap & water, or for chemicals – use water only; 15-minute minimum) and/or use eyewash/shower (15-minute minimum) Flush splashes to the nose, mouth, or skin with water. Do not induce vomiting unless instructed.							*Use CPR/AED until assistance arrives.	**Use CPR only.
		If bleeding, apply firm pressure and wrap. Dry, use first aid kit for ointment and bandage as required, and/or mark area for post-exposure identification/treatment.									
Alert Others		Warn/seek assistance from other personnel, if necessary. Notify Supervisor or have other personnel do so, after commencing first aid.									
Seek Immediate Medical Treatment		Minor Incident: Students – TU Health Center during the times, dates, and address listed. Employees – Concentra Occupational Health during the times, dates, and address listed. Other nearby providers are listed, if the above are not available. Major Incident: UMD St. Joseph Medical Center, Emergency Room, 24 hours/day, 7 days/week.								**Drive self, drive other(s), or request transport.**	
Report Injury/Incident		File a First Report of Injury with Human Resources, and submit an Environmental Health & Safety Incident Report Form within 24 hours of the injury (or your Supervisor may do this on your behalf). For fatal accident or hospitalization, report to EHS within 8 hours (or TUPD at 410-704-4444 after office hours).									
Seek Post-Exposure Care		Seek medical advice from your primary care physician after initial treatment and advise them that you work with animals. Employees may go to Concentra for follow-up, post-exposure treatment as required.									

Appendix C: 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 1910.138: Hand Protection
https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.138

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

Notes:

- 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.
- Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.
- Face shields should only be worn over primary eye protection (spectacles or goggles).

- 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.
- 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.
- Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
- Atmospheric conditions and the restricted ventilation of the protector can case lenses to go. Frequent cleansing may be necessary.
- 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 E: 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
Dioctyl 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

Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
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
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 F: 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 G: 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 ☐	No ☐	_____
Chemical Splash	Yes ☐	No ☐	_____
Electrical Shock	Yes ☐	No ☐	_____
Impact	Yes ☐	No ☐	_____

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 ☐	No ☐	_____
Harmful Dusts	Yes ☐	No ☐	_____
Heat	Yes ☐	No ☐	_____
Impact	Yes ☐	No ☐	_____
Light Radiation	Yes ☐	No ☐	_____

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 ☐	No ☐	_____
Chemical Exposure	Yes ☐	No ☐	_____
Cuts/Abrasions	Yes ☐	No ☐	_____
Punctures	Yes ☐	No ☐	_____

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 ☐	No ☐	_____
Chemical Exposure	Yes ☐	No ☐	_____
Punctures	Yes ☐	No ☐	_____
Impact	Yes ☐	No ☐	_____

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