

Personal Protective Equipment (PPE)-General

Guideline

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Applies To: University employees that currently utilize PPE or have the potential to encounter hazards to the eyes, face, head, feet, hands, or conduct work involving electrical or fall hazards, as identified during the Hazard Assessment of the workplace

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The Personal Protective Equipment (PPE) Guideline has been developed to provide the University community with the necessary information to identify work situations that require the use of PPE, the proper selection and use of PPE, and documentation of this information. This information is important to help ensure the safety and health of all UM employees.

Scope

University employees that currently utilize PPE or have the potential to encounter hazards to the eyes, face, head, feet, hands, or conduct work involving electrical or fall hazards, as identified during the Hazard Assessment of the workplace, will be included under this PPE Guideline.

PPE will be selected and used to protect employees from the hazards and potential hazards that are likely to be encountered. PPE must be purchased and provided at no cost to the employee, including temporary and part time staff. Coverage for protective prescription eyewear and footwear has special requirements that are covered in the appendices.

Respiratory and hearing protection are covered under separate guidelines. Refer to the [Respiratory Protection](#) and [Hearing Conservation](#) Guidelines.

PPE should not be used as a substitute for engineering, work practices, and/or administrative controls to protect employees from workplace hazards. PPE should be used in conjunction with permanent protective measures, such as engineered guards, substitution of less hazardous chemicals, and prudent work practices.

Reference Regulations

- MIOSHA Personal Protective Equipment Standards for [General Industry Part 33](#) and [Construction Part 6](#).
- ANSI/ISEA Standards for Occupational and Educational Eye and Face Protection Z87.1-1989 or Z87.1-2010 (General Industry) and Z87.1-1991 (Construction), Protective Headwear for Industrial Workers (Z89.1-1986 or Z89.1-2009).
- ASTM International Standards: F2412-05 Standard Test Methods for Foot Protection and F2413-05 Standard Requirements for Protective Footwear

Glossary of Terms

TERM	DEFINITION
ANSI	American National Standards Institute, a nonprofit, voluntary membership organization that coordinates the U.S. Voluntary Consensus Standards System. Their standards have been adopted throughout government and industry for various types of personal protective equipment.
ASTM International	American Society for Testing and Materials, a voluntary standards development organization and a source for technical documentation for industries worldwide.

TERM	DEFINITION
Bump Cap (Hat)	A device worn on the head to protect the wearer from bumps or blows but which does not meet the requirements of class A, B, C, or D protective helmets.
Face Shield	A device worn in front of the eyes and a portion or all of the face, whose prominent function is protection of the eyes and face.
Goggle	A device with contour-shaped eyecups or facial contact with glass or plastic lenses, worn over the eyes and held in place by a headband or other suitable means for the protection of the eyes and eye sockets.
Hazard Assessment	Investigating the work environment for potential dangers that could result in an injury or illness.
Safety Data Sheet (SDS)	An informational tool developed by chemical manufacturers containing the following information for a hazardous chemical: substance identification and synonyms, hazardous components (if mixture), physical data, fire and explosion data, toxicity data, health effects and first aid, reactivity, storage and disposal procedures, spill and leak procedures, and recommended protective equipment. SDS can be obtained from the chemical suppliers and many Internet sites.
Personal Protective Equipment (PPE)	Devices worn by workers to protect against hazards in the environment. Examples include safety glasses, face shields, respirators, gloves, hard hats, steel-toed shoes, and hearing protection.
Plano (Lens)	A lens which does not incorporate correction.
Radiant Energy (or Radiation)	Three kinds of radiant energy: Ultraviolet, visible light, and infrared.
Safety Data Sheet (SDS)	An informational tool developed by chemical manufacturers containing the following information for a hazardous chemical: substance identification and synonyms, hazardous components (if mixture), physical data, fire and explosion data, toxicity data, health effects and first aid, reactivity, storage and disposal procedures, spill and leak procedures, and recommended protective equipment. SDS can be obtained from the chemical suppliers and many Internet sites.
Side Shield	A device of metal, plastic, or other material fixed to a spectacle lens frame to protect an eye from side exposure.
Spectacle	A device patterned after conventional-type spectacle eyewear, but of more substantial construction, and with plano or corrective impact resistant lenses.

Responsibility

Deans, Directors and Department Heads

- Designate and empower individuals who will be responsible for the preparation and implementation of the Personal Protective Equipment Program.
- Provide administrative and financial support for this Guideline within individual departments.

Supervisors

- Implement all aspects of this Guideline, including documentation of the hazard assessments and training. The supervisor has been designated this responsibility, as they are involved with employees on a daily basis.
- Conduct hazard assessments and ensure that employees are informed, trained, and provided with appropriate PPE to be protected from potential hazards associated with job tasks. Your EHS Representative can assist you with this hazard assessment or complete the [Certification of Hazard Assessment Form](#) for your review.
- Require employees to wear PPE as indicated on their Certification of Hazard Assessment Form.
- Follow [Occupational Health Services](#) procedures if there is an accident or injury;
- Be familiar with the applicable government regulations, safety standards, and prudent safety practices to protect themselves and their fellow employees. (Also refer to UM's Standard Practice Guide [SPG 201.45](#)).

Employees

- Comply with this Guideline and any further safety recommendations provided by supervisors and/or EHS regarding PPE.
- Conduct assigned tasks in a safe manner and properly wear all assigned PPE.
- Report any unsafe or unhealthy work conditions and job related injuries or illnesses to the supervisor immediately.

EHS

- Provide technical information, training, and assist departments in implementing an effective PPE program in their workplace.
- Review and revise the PPE program, as needed for compliance with applicable regulations.

Conduct a Hazard Assessment of the Workplace

Conducting a hazard assessment includes investigating a task and noting the hazards and potential hazards associated with the task. This allows selection of personal protective equipment that will protect the employee from the identified hazards.

A hazard assessment may be conducted on a single employee, on a single task, or on a group of employees if all the employees perform an identical task. For example, if all employees in a group are exposed to ultraviolet radiation during one type of welding, the hazard assessment could include all of the welders conducting that task. Likewise, painters using similar types of materials or laboratory workers using similar types of chemicals could be grouped under the same assessment.

The individual conducting the hazard assessment must have an intimate knowledge of each task. In some cases this may require directly observing an employee. In other instances the assessor may know all the hazards associated with a job without additional review. Your EHS Representative can complete the [Certification of Hazard Assessment Form](#) for your review and signature.

During the hazard assessment of each task, inspect the layout of the workplace and look for the following hazard sources:

- High or low temperatures
- Chemical exposures (use SDS for guidance)
- Flying particles, molten metal or other eye, face, or skin hazards
- Light radiation, e.g., welding, arc lamps, heat treatment, lasers
- Falling objects or potential for dropping objects
- Sharp objects
- Rolling or pinching that could crush the hands or feet
- Electrical hazards

Where these hazards could cause injury to employees, personal protective equipment must be selected to substantially eliminate the injury potential. A Certification of Hazard Assessment Form is located in [Appendix A](#) that supervisors can use to identify potential workplace hazards.

Certify a Hazard Assessment was Performed

By signing the Certification of Hazard Assessment Forms you and your EHS Representative will be certifying the accuracy of the information. This document helps ensure that supervisors are aware of what PPE is required for certain tasks and enables them to require their staff to wear their PPE. The forms must be maintained with departmental records. In laboratories, the forms must be kept with the laboratory's [Chemical Hygiene Plan \(CHP\)](#): in Appendix 1 – “Personal Protective Equipment (PPE) Assessment” of the CHP Notebook. Hazard Assessments completed by EHS will also be kept in the EHS electronic files.

PPE Selection Guidelines

General Considerations

For each hazard identified, select personal protective equipment that will protect the employee by creating a barrier against workplace hazards. Consider the likelihood of an accident and the seriousness of a potential accident. Personal protective equipment must be selected to protect against any hazard that is likely to occur or has a serious injury impact if it does occur.

It is important for department personnel to become familiar with the potential hazards, the type of protective equipment that is available, and the level of protection that is provided by that equipment, i.e., splash protection, impact protection, etc.

All PPE required by the Hazard Assessment must be provided at no cost to the employee according to [SPG 201.45](#). EHS has programs in place to offset the cost of the more costly items (prescription safety glasses, and respiratory protection) in general fund units. Departments are responsible for the purchase of all other PPE not provided by EHS. Departments hiring temporary, part time, or contracted labor staff may require PPE be provided by the employee if Hazard Assessment indicates the need. Auxiliary units will be recharged for any PPE provided through EHS.

The PPE selected must fit the employee it is intended to protect. Make certain that employees have the correct size of protective equipment. Whenever possible, select adjustable PPE.

Employee input in the selection process is critical. PPE that fits properly and is comfortable will more likely be worn by employees. Damaged or defective protective equipment shall be immediately taken out of service to be repaired or replaced.

- For the proper selection of PPE, please use the following resources:
- Information presented on the following pages of this document;
- [Appendix A](#): Eye and Face Protection Chart, Filter Lenses for Protection against Radiant Energy Chart;
- Technical assistance from EHS and the manufacturers of PPE;
- SDS for chemicals; and
- University [M-Marketsite](#) website (product description search).

Eye and Face Protection

The use of eye and face protection shall be used where a hazard exists due to flying objects or particles, molten metal, liquid chemicals, gases, vapors, or injurious light radiation. Select eye and face protection based on Tables I and II in [Appendix A](#).

Contact lens wearers should also be aware that dirty and/or chemical environments may present additional hazards. Chemical vapors can penetrate the lens causing damage to the eye. Proper eye protection should always be utilized instead of, or in conjunction with contact lenses. Refer to [Appendix B](#) for additional information.

If the appropriate protection is not listed in the tables, such as laser eyewear, refer to the [EHS Laser Guideline](#) or contact EHS for further assistance. All protective eye and face protection must comply with ANSI Z87.1-1989 (or ANSI/ISEA Z87.1-2010) for General Industry and ANSI Z87.1-1991 for Construction Industry. EHS will provide one pair of approved prescription safety eyewear to Ann Arbor campus employees who meet certain criteria. See [Appendix C](#) for how to obtain prescription safety glasses.

Head Protection (Hard Hats)

Protective helmets are designed to shield the head from the impact and penetration of falling objects, working in low clearance areas, and in some cases high voltage electric shock and burns. They should be worn whenever the potential exists for injuries to the head due to falling objects, or when head clearance is restricted.

For example, operations requiring head protection may include: tree trimming, construction and demolition work, electric and communication line maintenance.

Head protection is also required where there is a risk of injury from electric shock, hair entanglement, chemicals, or temperature extremes. Be certain that hard hats provided are not bump caps. To check this, inspect each hard hat to confirm that it contains the designation “ANSI Z89.1-1986” or “ANSI Z89.1-2009.” Bump caps cannot be used to protect employees from falling objects. Bump caps are used only for low clearance areas. Knowledge of potential electrical hazards is important when selecting head protection.

Three classes of hard hats are available:

CLASS	DESCRIPTION
Class A / Class G (General) helmets	In addition to impact and penetration resistance, provide electrical protection from low voltage conductors (they are proof tested to 2,200 volts).
Class B / Class E (Electrical) helmets	In addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts).
Class C helmets	Provide impact and penetration resistance (they are usually made of aluminum which conducts electricity), and should not be used around electrical hazards.

Foot Protection

Select protective footwear when employees work in areas where there is a danger of foot injuries due to falling and rolling objects, objects piercing the sole, and where employees' feet are exposed to electrical hazards. Protective footwear must comply with the provisions of ASTM (American National Standards Institute) standards F2412-05 and F2413-05, Standard Test Methods for Foot Protection and Standard Requirements for Protective Footwear.

Where a hazard is created from a process, environment, chemical, or mechanical irritant which would cause an injury or impairment to the feet by absorption or physical contact, other than from impact, footwear, such as boots, overshoes, rubbers, wooden-soled shoes, or their equivalent, shall be used.

Examples of situations which may require the use of protective footwear include:

- Handling heavy objects and/or tools that could be dropped.
- Work activities involving manual material handling carts, heavy pipes, or bulk rolls, all of which could potentially roll over an employee's feet.
- Work involving sharp objects such as nails, tacks, large staples, scrap metal, etc., which could penetrate the sole of the shoe.

Departments can purchase protective footwear through Grainger on U-M Marketsite by using a shortcode. Other options for departments would be through employee reimbursement of appropriate footwear from retail operations.

Hand Protection

Select and use the appropriate hand protection when employees' hands may be potentially exposed to the following hazard sources:

- Skin absorption of harmful substances
- Severe cuts or lacerations
- Severe abrasions
- Punctures
- Chemical burns
- Harmful temperature extremes

It is important to select the appropriate glove for a particular application and to determine how long the glove can be worn, and whether it can be reused. Chemically protective gloves should be selected

based on tested performance against specific chemicals. Glove manufacturers have developed recommendations for the proper selection and use of chemically-protective gloves.

Contact a glove manufacturer directly or EHS for assistance.

Skin Protection – Other than Hands

Skin protection should be worn when there is a possibility of chemical splashes to the body, when the atmosphere may contain contaminants that could damage the skin or be absorbed by the skin, or when contaminants could remain on the street clothes of an employee. The amount of coverage is dependent on the area of the body that is likely to be exposed. For small controlled processes, an apron may be sufficient; for work above the head, a full body coverall may be required.

The process for selecting chemically resistant clothes is similar to that for gloves. Please check the manufacturer's recommendations for the proper selection of chemically-protective clothing.

Consultation with Affected Employees

Include employees in the PPE selection process to the extent possible and provide access to the [Certification of Hazard Assessment Form](#).

Training Guidelines

Training must be provided to each employee who is required to use PPE. Each employee must be trained to know at least the following:

- When and why personal protective equipment is necessary;
- What personal protective equipment is necessary;
- How to properly don, doff, adjust and wear personal protective equipment;
- The limitations of the personal protective equipment; and
- The proper care, maintenance, useful life and disposal of the personal protective equipment.
- Laboratory personnel must be instructed to remove gloves and lab coats prior to entering common areas, e.g., hallways, elevators, eating areas, rest rooms, offices, etc. Also, secondary containers should be used for transport of potentially hazardous materials or agents. Refer to EHS's "[Guideline poster for research laboratories](#)", or the [Laboratory's Chemical Hygiene Plan \(CHP\)](#) for additional information.

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

Supervisors are responsible for providing training. Ideally, this training should be part of the Hazard Communication (HazCom) training or the Lab Safety training your employees receives. When EHS conducts these training sessions, PPE training is included.

Any training format can be used as long as a hands-on session is included. The length and complexity of training should reflect the complexity of the personal protective equipment to be used. For example, training may be an informal hands-on session only, or it may be a longer video-based session followed by hands-on training.

EHS has numerous video programs available for loan and they can be checked out from the [EHS Media Library](#). [Appendix B](#) of this Guideline is a “Supervisor’s Guide to Employee Training” which can be discussed, or distributed to employees. EHS staff members are also available to conduct training; contact the EHS Representative assigned to your area.

Training Certification

Certify in writing that the training was completed. Maintain the certification with your departmental training records. Laboratories must keep the training certification with the [Chemical Hygiene Plan](#) (CHP): Section 7 – “Employee Training” of the CHP Notebook.

The certification must verify that each affected employee has received and understood the required training. The record must be identified as a certification. A Training Certification Form is provided in [Appendix B](#).

When EHS conducts training, records of training will be kept by EHS.

Reassessment and Retraining

Reassessment of the workplace should be conducted when new equipment or processes are introduced that could create new or additional hazards. Accident records should be reviewed and the suitability of previously selected PPE be reevaluated, if warranted.

When the supervisor has reason to believe that any affected employee who has been trained does not have the understanding or skills required to use the personal protective equipment properly, the supervisor shall retrain such employees.

Retraining is also required when there have been changes in the workplace or personal protective equipment that render previous training obsolete, or when there are inadequacies in the affected employee's knowledge or use of the assigned personal protective equipment.

Technical Support

All referenced guidelines, regulations, and other documents are available through EHS (734) 647-1142.

Attachments

- Appendix A – [Certification of Hazard Assessment Form and PPE Selection Guides](#)
- Appendix B – [Supervisor’s Guide to Employee Training](#)
- Appendix C – [Obtaining Prescription Safety Glasses](#)