NORFOLK STATE UNIVERSITY

Personal Protective Equipment (PPE)

Version	*Date*	*Comments*
1	July 2023	Initial Personal Protective Program
2		
3		
4		

PURPOSE

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

This program addresses eye, face, head, foot, and hand protection. Separate programs exist for respiratory and hearing protection since the need for participation in these programs is established through industrial hygiene monitoring.

TABLE OF CONTENTS **PAGE NUMBER**

Definitions.....2

Responsibilities.....2

Training..... 8

Appendix A.....8

Related Documents .....NA

Forms .....NA

Personal Protective Equipment (PPE)

DEFINITIONS

EHS&RM: Environmental, Health, Safety and Risk Management

Personal Protective Equipment: Specialized clothing or equipment worn by employees for protection against health and safety hazards.

Responsibilities

Supervisors have the primary responsibility for implementation of the PPE Program in their work area. This involves:

- Providing appropriate PPE and making it available to employees.
- Ensuring employees are trained on the proper use, care, and cleaning of PPE.
- Maintaining records on PPE assignments and training.
- Supervising staff to ensure that the PPE Program elements are followed and that employees properly use and care for PPE.
- Seeking assistance from EHS&RM to evaluate hazards.
- Notifying EHS&RM when new hazards are introduced or when processes are added or changed.
- Ensuring defective or damaged equipment is immediately replaced.

Employees

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

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

Environmental Health, Safety and Risk Management (EHS&RM)

Environmental, Health, Safety and Risk Management (EHS&RM) is responsible for the development, implementation, and administration of the PPE Program. This involves:

- Conducting workplace hazard assessments to determine the presence of hazards; which necessitate the use of PPE.
- Conducting periodic workplace reassessments as requested by supervisors and/or as determined by EHS&RM.
- Maintaining records on hazard assessments.

- Providing training and technical assistance to supervisors on the proper use, care, and cleaning of approved PPE.
- Providing guidance to the supervisor for the selection and purchase of approved PPE
- Periodically reevaluating the suitability of previously selected PPE.
- Reviewing, updating, and evaluating the overall effectiveness of the PPE Program.

Hazard Assessment and Equipment Selection

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

The Environmental, Health, Safety and Risk Management (EHS&RM), in conjunction with Supervisors, will conduct a walk-through survey of each work area to identify sources of hazards, including impact, penetration, compression, chemical, heat, dust, electrical sources, and material handling. Each survey will be documented using the Hazard Assessment Survey Form, which identifies the workplace surveyed, the person conducting the survey, findings of potential hazards, and date of the survey.

Once the hazards of a workplace have been identified, EHS&RM will determine the suitability of the PPE presently available and as necessary select new or additional equipment which ensures a level of protection greater than the minimum required to protect the employees from the hazards. Care will be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards will be provided or recommended for purchase.

Protective Devices

All personal protective clothing and equipment will be of safe design and construction for the work to be performed and shall be maintained in a sanitary and reliable condition. Only those items of protective clothing and equipment that meet NIOSH standards will be procured or accepted for use. Newly purchased PPE must conform to the updated NIOSH standards.

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.

Eye and Face Protection

Prevention of eye injuries requires that all persons who may be in eye hazard areas wear protective eyewear. This includes employees, visitors, researchers, contractors, or others passing through an identified eye hazard area. To provide protection for these personnel, Supervisors of such areas shall procure a sufficient quantity of goggles and/or plastic eye protectors which afford the maximum amount of protection possible. If these personnel wear personal glasses, they shall be provided with a suitable eye protector to wear over them.

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

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

Prescription Safety Eyewear

OSHA regulations require that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design, or shall wear eye protection that can be worn over the prescription lenses (goggles, faceshields) without disturbing the proper position of the prescription lenses or the protective lenses

Head Protection

Head protection will be furnished to, and used by, all employees and contractors engaged in construction and other miscellaneous work. Head protection is also required to be worn by engineers, inspectors, and visitors at construction sites when hazards from falling or fixed objects, or electrical shock are present. 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.

Foot Protection

Safety shoes or boots with impact protection should 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 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. See Appendix A for additional information (page 11).

Hand Protection

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

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.

All glove materials are eventually permeated by chemicals. However, they can be used safely for limited time periods if specific use and other characteristics (i.e., thickness and permeation rate and time) are known. EHS&RM can assist in determining the specific type of glove material that should be worn for a particular chemical. See Appendix A for additional information (page 11).

Selection and Use of PPE in Laboratories

PPE may be required to reduce the risk of exposure of an employee by contact, inhalation or ingestion of an infectious agent, toxic substance, or radioactive material. For biological agents, , EHS&RM in conjunction with the Lab Supervisor will determine the Biosafety Level for the lab and the appropriate type of PPE required to be worn while working in the lab.

Laboratory Coats and Gowns

The lab coat can be used to protect street clothing against biological or chemical spills as well as to provide some additional body protection. The specific hazard(s) and the degree of protection required must be known before selecting coats for lab personnel.

The CDC/NIH guidelines (BMBL) for biocontainment practices recommend the use of a lab coat, gown, smock, or uniform while working in BSL2 laboratories. They further recommend solid-front or wrap-around gowns, scrub suits, or coveralls.

Foot Protection

Safety shoes should be worn in any area where there is a significant risk of dropping heavy objects on the foot. For general biological lab use, comfortable shoes such as tennis shoes or nurses shoes are used extensible. Sandals and other types of open-toed shoes are not permitted in labs using biohazards or chemicals, due to the potential exposure to infectious agents or toxic materials as well as physical injuries associated with the work. See Appendix A for additional information (page 11).

Boots, shoe covers, or other protective footwear, and disinfectant footbath may be required for work in BSL3 labs.

Face shields and Eye Protection

Face shields and goggles should be worn whenever procedures with a high potential for creating aerosols are conducted. These include necropsy of infected animals, harvesting of tissues, or fluids from infected animals and manipulations of high concentrations or large volumes of infectious materials. Appropriate eye and face protection should also be worn by all personnel entering animal rooms housing non-human primates. See Appendix A for additional information (page 11).

When laser are in use, eye protection may include goggles, face shields, spectacles or prescription eyewear using filter materials or reflective coating (or a combination of both) to reduce exposure below the maximum permissible exposure. See Appendix A for additional information (page 11).

Cleaning and Maintenance

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

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

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&RM 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.

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

Recordkeeping

Written records shall be kept of the names of persons trained, the type of training provided, and the date when training occurred. The EHS&RM shall maintain employees' training records for at least three years.

REFERENCES

OSHA Standard 29 CFR 1910.132, "General Requirements"

OSHA Standard 29 CFR 1910.133, "Eye and Face Protection"

OSHA Standard 29 CFR 1910.135, "Head Protection"

OSHA Standard 29 CFR 1910.136, "Occupational Foot Protection"

OSHA Standard 29 CFR 1910.138, "Hand Protection"

RELATED DOCUMENTS
Appendix A - General Guidelines for Choosing Personal Protective Equipment

FORMS
None

APPENDIX A

General Guidelines for Choosing Personal Protective Equipment

1. **Description and Use of Eye/Face Protectors**
   a. **Safety Glasses.** Protective eyeglasses are made with safety frames, tempered glass or plastic lenses, temples and side shields which provide eye protection from moderate impact and particles encountered in job tasks such as carpentry, woodworking, grinding, scaling, etc. Safety glasses are also available in prescription form for those persons who need corrective lenses.
   b. **Single Lens Goggles.** Vinyl framed goggles of soft pliable body design provide adequate eye protection from many hazards. These goggles are available with clear or tinted lenses, perforated, port vented, or non-vented frames. Single lens goggles provide similar protection to spectacles and may be worn in combination with spectacles or corrective lenses to insure protection along with proper vision.
   c. **Welders/Chippers Goggles.** These goggles are available in rigid and soft frames to accommodate single or two eyepiece lenses.
      1. Welders' goggles provide protection from sparking, scaling, or splashing metals and harmful light rays. Lenses are impact resistant and are available in graduated shades of filtration.
      2. Chippers/Grinders goggles provide eye protection from flying particles. The dual protective eye cups house impact resistant clear lenses with individual cover plates.
   d. **Face Shields.** These normally consist of an adjustable headgear and face shield of tinted/transparent acetate or polycarbonate materials, or wire screen. Face shields are available in various sizes, tensile strength, impact/heat resistance and light ray filtering capacity. Face shields will be used in operations when the entire face needs protection and should be worn to protect eyes and face against flying particles, metal sparks, and chemical/biological splash.
   e. **Welding Shields.** These shield assemblies consist of vulcanized fiber or glass fiber body, a ratchet/button type adjustable headgear or cap attachment and a filter and cover plate holder. These shields will be provided to protect workers' eyes and face from infrared or radiant light burns, flying sparks, metal spatter and slag chips encountered during welding, brazing, soldering,

resistance welding, bare or shielded electric arc welding and oxyacetylene welding and cutting operations.

2. Head Protection

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

Protective hats are made in the following types and classes:

- Type 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.

3. Foot Protection

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

a. **Steel-Reinforced Safety Shoes**. These shoes are designed to protect feet from common machinery hazards such as falling or rolling objects, cuts, and punctures. The entire toe box and insole are reinforced with steel, and the instep is protected by steel, aluminum, or plastic materials. Safety shoes are also designed to insulate against temperature extremes and may be equipped with special soles to guard against slip, chemicals, and/or electrical hazards.
b. **Safety Boots**. Safety boots offer more protection when splash or spark hazards (chemicals, molten materials) are present:

- When working with corrosives, caustics, cutting oils, and petroleum products, neoprene or nitrile boots are often required to prevent penetration.
- Foundry or "Gaiter" style boots feature quick-release fasteners or elasticized insets to allow speedy removal should any hazardous substances get into the boot itself.
- When working with electricity, special electrical hazard boots are available and are designed with no conductive materials other than the steel toe (which is properly insulated).

4. Hand Protection

Skin contact is a potential source of exposure to toxic materials; it is important that the proper steps be taken to prevent such contact. Most accidents involving hands and arms can be classified under four main hazard categories: chemicals, abrasions, cutting, and heat. There are gloves available that can protect workers from any of these individual hazards or any combination thereof.

Gloves should be replaced periodically, depending on frequency of use and permeability to the substance(s) handled. Gloves overtly contaminated should be rinsed and then carefully removed after use.

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

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 lock-out machines or tools and disconnect the power before making repairs.
- Treat a machine without a guard as inoperative; and
- Do not wear gloves around moving machinery, such as drill presses, mills, 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:

a. **Disposable Gloves**. Disposable gloves, usually made of light-weight plastic, can help guard against mild irritants.
b. **Fabric Gloves**. Made of cotton or fabric blends are generally used to improve grip when handling slippery objects. They also help insulate hands from mild heat or cold.
c. **Leather Gloves**. These gloves are used to guard against injuries from sparks or scraping against rough surfaces. They are also used in combination with an insulated liner when working with electricity.
d. **Metal Mesh Gloves**. These gloves are used to protect hands form accidental cuts and scratches. They are used most commonly by persons working with cutting tools or other sharp instruments.
e. **Aluminized Gloves**. Gloves made of aluminized fabric are designed to insulate hands from intense heat. These gloves are most commonly used by persons working molten materials.
f. **Chemical Resistance Gloves**. These gloves may be made of rubber, neoprene, polyvinyl alcohol or vinyl, etc. The gloves protect hands from corrosives, oils, and solvents. The following table is provided as 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.