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1. Introduction

Purpose

This manual incorporates the requirements for the use of Personal Protective Equipment (PPE) for employees of East Carolina University, to ensure the greatest possible protection, where other forms of controls are not feasible or being implemented.

Scope

This manual shall apply to employees of the University who, by reason of their job duties, are exposed to chemical, physical and biological hazards, in a manner capable of causing injury, illness, or impairment in the function of any part of the body through absorption, inhalation, or physical contact.

Applicable regulation

Occupational Safety and Health Administration (OSHA) 29 CFR 1910.132

2. Acronyms

ANSI American National Standards Institute
ASTM American Society for Testing and Materials
EH&S Environmental Health and Safety
NIOSH National Institute for Occupational Safety and Health
OSHA Occupational Safety and Health Administration
PRR Policies Rules and Regulations
PPE Personal Protective Equipment
DB Decibels

3. Requirements

To satisfy the minimum requirements for the provision of PPE, OSHA demands that the following basic elements be included as part of the PPE program. This is to ensure the greatest possible protection for employees and in maintaining a safe and healthy work environment. The elements are:

- a. Performance of hazard assessment
- b. Identification and provision of appropriate PPE
- c. Training in the use and care of PPE
- d. Maintenance
- e. Review and evaluation

4. Hazard assessment
The identification of workplace hazards as to eliminate or control them forms the basis of a hazard assessment process. The Office of Environmental Health and Safety shall perform hazard assessment to identify physical and health hazards. Supervisors and department heads shall also conduct specific hazard assessment and report concerns to the EH&S office. Some physical hazards of interest include moving objects, fluctuating temperatures, high intensity of lighting, rolling or pinching objects, electrical connections, and sharp edges etc.; while health hazards include exposure to harmful dust, chemicals or radiation. When the hazard assessment process is complete, EH&S shall recommend the right PPE selection and type for that specific hazard.

Whenever there are changes after the conduct of initial hazard assessment, affected department(s) shall contact EH&S or perform a reassessment to determine the introduction of possible hazards by such changes. Any changes in conditions, equipment or operating procedures shall be considered a reason to perform a reassessment. Hazard assessments for each location shall be properly documented with a written certification from supervisor or whosoever that conducted the assessment. The documentation should capture location evaluated, name of assessment personnel, date of assessment and certification information.

5. Identification, selection and provision of PPE

EH&S shall recommend appropriate PPE for affected employee based on characteristics such as design, reliability, fitness, comfortability, and suitability for the assign task. Departments and supervisors shall contact EH&S to ensure PPE provided is such that offers a level of protection greater than the minimum required to protect employees from the identified hazards.

According to the personal protection equipment standard, PPE that meet or are equivalent to regulatory standards developed by ANSI, NIOSH or ASTM and others, shall constitute the basic criteria for PPE selection and purchase. For PPE that do not have recommended standard, like hand protection, EH&S shall recommend the best selection based on OSHA personal protection standard.

6. Responsibilities:

Environmental Health and Safety (EH&S)

a. Conduct or review hazard assessments to determine the need for protective equipment, if other implemented controls do not provide suitable protection;

b. Conduct periodic training for employee using protective equipment and document same;

c. Assist affected departments in the selection of appropriate protective equipment;


Office of Prospective Health

a. Review medical requests for the use of alternative protection than conventional ones where necessary;

b. Maintain health related records;

c. Support the PPE program from medical perspectives.

Department heads and supervisors
a. Perform hazard assessment for the use of PPE;
b. Ensure PPE is available, provided and documented;
c. Conduct hazard specific training for the use of protective equipment;
d. Establish inspection, maintenance and replacement procedures to make sure damaged PPE is not used;
e. Provide protective equipment at no cost to employee;
f. Contact the EH&S office when hazard or process has changed which may render previously used PPE ineffective.

Employees

a. Use protective equipment as provided;
b. Inspect PPE before use, and ensure proper maintenance;
c. Notify supervisors when PPE is damaged and needs to be replaced;
d. Participate in quarterly training for the use and maintenance of PPE;
e. Comply with PPE policies as required and support the PPE program as necessary.

7. Eye and Protection

Appropriate eye or face protection will be provided to employees that are exposed to eye or face hazards such as: flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. The minimum acceptable eye protection requires the use of hardened glass or plastic spectacles meeting the most recent version of the American National Standards Institute (ANSI)/ISEA Z87.1-2010 requirements. Other eye protection, such as goggles and face shields, may be required when significant splash hazards exists.

Employees that wear prescription will be provided eye protection that incorporates the prescription in its design, or made to use protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses. Procedures for the acquisition, use, replacement and return of prescription safety glasses shall be according to the University’s policy, rules and regulations (PRR) contained in the eye and face PRR.

Employees issued safety protection will be required to wear them at all times, except when working in an office setting performing office duties that do not require the use of safety glasses, during lunch time or other approved areas where the eye/face hazards do not exist. Approved face shields will be required to be worn in addition to safety glasses or goggles, where potential hazards exist that can affect other facial area not protected by safety glasses or goggles. At no time must face shields be worn alone for protection.

Whenever compressed gas welding, oxy-cutting, electric arc welding and other related activity are to be performed, proper welding goggles, welding face shield with safety glasses or welding hood must be used. Selected protection must have lenses that comply with OSHA filter lenses for protection against radiant energy. Affected departments should contact the Office of Environmental Health and Safety for selection and guidance in the use of such protection.
Housekeepers will not be issued safety glasses, except when it is established that they are potentially exposed to eye/face hazards which require them to wear face shields and/or goggles.

8. **Hearing Protection**

Hearing protection shall be used when employee exposure is at or above 85 decibels (dBA) as measured on the A-scale slow response. Hearing protectors shall have noise reduction rating sufficient to reduce the noise level below the OSHA action level of 85dBA. A dual hearing protection may be required in areas where noise levels are at or above 100 decibels. For full details of the University’s standard for hearing protection and conservation, please refer to the EH&S hearing conservation program (insert link to website here).

9. **Foot Protection**

To ensure the safety of employees, appropriate protective footwear must be worn by all persons when working in areas where there are dangers of foot injuries due to falling or rolling objects, objects piercing the sole, and where such employee's feet are exposed to electrical hazards. Protective footwear shall comply with ASTM standards: F2412-2005 “Standard Test Methods for Foot Protection” and F2413-2005 “Standard Specification for Performance Requirements for Foot Protection.” For full details of the University’s foot protection program, refer to the EH&S standard operating procedures on safety shoes (insert link to website here).

10. **Respiratory Protection**

To control occupational diseases caused by breathing contaminated substances such as harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, etc., the use of acceptable engineering controls measures shall be the first priority. When such controls are not feasible, or while they are being implemented, suitable respirators will be used to protect employee from breathing contaminated air. All respirators must be NIOSH complaint and suitable for the required job. For optimum performance, respirators must be properly selected, used and maintained. Users should always ensure a good fit is obtained (for tight fit respirator) at all time. Employee or department should contact EH&S for selection of respirator before use. For details of this requirement, please refer to the EH&S respiratory protection program (insert link to website here).

11. **Hand Protection**

Hand protection shall be provided when employees are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; chemical burns; and harmful temperature extremes. Typically, gloves are recommended for protection, but selection and use should be based on prior evaluation of the performance characteristics of the hand relative to the task(s) to be performed, conditions present, duration of use, and potential hazards identified. The following are some hand protection gloves tailored to specific hazard:

- Approved disposable or latex gloves for protection against mild irritants;
- Approved fabric gloves for protection and insulation against heat or cold;
- Approved leather gloves for protection against injuries from sparks or scraping rough surfaces;
- Approved leather gloves for general welding, electric arc welding equipment;
- Approved chemical resistance gloves for protection against chemical exposure;
Personal Protective Equipment

f. Approved metal mesh for protection against cuts and scratches especially in handling sharp instruments;
g. Approved aluminized fabric for insulation against intense heat especially with handling of molten materials;
h. Approved dielectric gloves as required for electric power-related work.

The EH&S office shall be contacted for the selection of any specialized gloves for protection against specific job hazard.

12. Head protection

Head protection shall be worn by employee working in areas with potential head injury or impact due to falling or flung objects. For employee exposed to electrical hazards, appropriate protective helmet designed to reduce electrical shock shall be worn. Head protection must comply with ANSI Z89.1-2014, "American National Standard for Industrial Head Protection."

13. Protective clothing

This shall be provided and used whenever it is necessary to protect against environmental hazards such as intense heat; cuts; hazardous chemical; splashes from hot metal and other liquids; contact with potentially infectious materials, like blood; radiation; impacts from tools, machinery and materials; mechanical objects; fire hazard; or that which may cause injury or illness through absorption or physical contact. The following are some protective clothing tailored to specific hazards:

a. Approved disposable sleeves for protection against particulates
b. Approved disposable gowns for protection against biohazards and animals
c. Approved scrubs for clinical, medical and surgical operations
d. Approved Tyvek coverall or gowns for protection against chemicals, biohazards, animal or airborne particulates
e. Approved safety (visibility) vest for construction sites, traffic hazard areas, emergency response
f. Approved Lab coats for working with physical, chemical, biological (e.g human blood, fluids blood borne pathogens), and radiation hazards
g. Approved flame resistant coveralls for protection against reactive chemicals, welding operations, explosive and electrical systems
h. Approved leather apron, jacket, coverall and sleeves for operations characterized with sparks or projectiles
i. Approved aprons: “Flame resistant” for flammable solvents, welding or electrical systems; “Rubber-coated wash” and “Neoprene” for working with apparatus under pressure and splashes from hazardous liquids.

14. Fall protection
Appropriate personal fall protection must be used whenever employee is required to perform any activity at a height where there is risk of falling which could result in bodily harm or injury. OSHA requires that protection are provided at elevations of four feet or more. In addition, it requires that fall protection be provided when employee are working over dangerous equipment and machinery, regardless of the fall distance.

A full body harness with lanyard and shock absorber or a full body harness with self-retracting life line is required for personal fall protection. Safety belts shall be used only for positioning work or work at slopes not greater than 45° where there is risk of rolling down. They shall never be used to protect from falls from one work level to another. For guardrail system, dimensions and other fall protection requirement, the OSHA fall protection standard must be referenced.

15. Inspection, Use and Maintenance of PPE

PPE shall be inspected, cleaned and maintained by employee as necessary. It shall be inspected for damage and defects before each use. Employee must not use defective or damaged PPE at any time. Whenever equipment becomes contaminated, torn or worn, it shall be disposed of appropriately. PPE that are contaminated, especially those used in clinical or medical environment shall be disposed of according to regulatory standard to avoid secondary contamination.

All PPE shall be inspected before each use for conditions such as cuts, cracks, holes, loose property, punctures etc., and any identified signs must be reported by employee.

At no time shall PPE be modified. The EH&S office shall be consulted for any PPE malfunctioning or complaints. PPE shall be adequate for the specific job, fits its wearer and must not hinder the performance of the job.

PPE shall be worn and maintained as recommended by manufacturer. Employee shall not deliberately expose PPE to harsh conditions such as extreme temperatures, contact with chemical or other conditions that could diminish its protective properties.

Department heads and supervisors shall ensure that PPE meet all applicable standards. PPE not approved by ANZI, ASTM, NIOSH or other regulatory agencies as required must not be acquired. The EH&S office shall be consulted for this purpose.

16. Training

As demanded by OSHA, the Office of Environmental Health and Safety shall perform initial training for employee whose job duties require the use of personal protective equipment. Refresher training will be performed by EH&S for all new and existing employee as necessary. Contents of training shall at least cover:

When PPE is necessary;
What PPE is necessary;
How to properly don, doff, adjust and wear PPE;
The limitations of the PPE; and
The proper care, maintenance, useful life and disposal of the PPE

Each affected employee shall demonstrate an understanding of the aforementioned training and the ability to use PPE properly, before being allowed to perform work requiring the use of such PPE.
Periodic or repeated training

When there is reason to believe that any affected employee who has already been trained does not have the understanding and skill as stated in this manual, the Office of Environmental Health and Safety shall retrain such employee. Circumstances where retraining is required include, but are not limited to, situations where:

a. Changes in the workplace render previous training obsolete;
b. Changes in the types of PPE to be used render previous training obsolete; or
c. Inadequacies in an affected employee’s knowledge or use of assigned PPE indicate that the employee has not retrained the requisite understanding or skill.

17. Recordkeeping and Program Review

The Office of Environmental Health and Safety shall document all training conducted relating to this program. Training information shall be stored for as long as employee continues to use protective equipment, and shall capture employee name and date of training.

This program shall be reviewed any time there are changes in specific regulations for the use of PPE.
# Personal Protective Equipment

## Hazard Evaluation Form

<table>
<thead>
<tr>
<th>Contact Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Location/Address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Job Task(s)

<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Frequency of task

- Daily ☐
- Weekly ☐
- Monthly ☐
- Emergency only ☐
- Other (Please specify)

### Please list potential hazards associated with this task (e.g. physical, mechanical: noise, fall, poor lighting etc.):

1. 2. 3. 4. 5. 6. 7. 8. 9.

### Please list potential health hazards associated with this task (inhalation, skin irritation, respiratory issues etc.):

1. 2. 3. 4. 5. 6. 7. 8. 9.

### Please list types of contaminants or hazards:

<table>
<thead>
<tr>
<th>Particulate contaminants (e.g. dust, fumes, mist etc)</th>
<th>Chemical contaminants (e.g. aerosols, gas, liquid, vapor etc)</th>
<th>Biological contaminants (e.g. molds, fungi, bacteria, bloodborne pathogens etc)</th>
<th>Physical risk (e.g. noise, temperature)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
</tr>
</tbody>
</table>
4. 4. 4. 4.

What engineering controls are in place?
1. 
2. 
3. 

What other engineering controls could be added to reduce exposure?
1. 
2. 
3. 

What personal protective equipment are currently being used?
1. 
2. 
3. 

What other personal protective equipment is required for this task?
1. 
2. 
3. 

Any other comments or recommendations

EH&S Use Only

<table>
<thead>
<tr>
<th>Contaminants/Hazards</th>
<th>Gas</th>
<th>Vapor</th>
<th>Physical</th>
<th>Radioactive</th>
<th>Mist</th>
<th>Dust</th>
<th>Biological</th>
<th>Ergonomic</th>
<th>Fumes</th>
<th>Other Particulates</th>
<th>Chemical</th>
<th>Carcinogenic</th>
</tr>
</thead>
</table>

PEL:  
STEL:  
TLV:  
IDLH:  
Recommendations:

Name:  
Signature:
HAZARD ASSESSMENT FOR PERSONAL PROTECTIVE EQUIPMENT

Instructions: The department must complete this written hazard assessment of the employee’s workplace to determine required personal protective equipment. A copy should be forwarded to the Office of Environmental Health and Safety for review and inclusion in the PPE database. The Office of Environmental Health and Safety will be available to assist departments in completion of the hazard assessment and selection of appropriate personal protective equipment.

Area: _____________________ Job Classification: _____________________

Assessor: _____________________ Date: ______________________________

Eye and Face Protection - appropriate eye and/or face protection is required when employees are in areas where there is exposure to eye and face hazards from flying particles, molten metal, liquid chemicals, acids, caustic liquids, chemical gases or vapors or potentially injurious light radiation. All eye protection must be ANSI approved.

Check the appropriate box for each hazard; provide description of hazard and PPE selected:

☐ Chemicals ______________________________________________________

☐ Dust __________________________________________________________

☐ Heat __________________________________________________________

☐ Impact _________________________________________________________

☐ Light/Radiation _________________________________________________

☐ Other _________________________________________________________

Respiratory Protection - appropriate respiratory protection is required when employees are in areas where effective engineering controls are not feasible to protect the health of the employee from harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors. All required respirators must be NIOSH/MSHA approved. All employees who wear respirators must participate in the ECU Respiratory Protection Program. Respirator use must be pre-approved by EH&S.

Check the appropriate box for each hazard; provide description of hazard and PPE selected:

☐ Chemicals ______________________________________________________

☐ Dust __________________________________________________________
Head Protection - appropriate head protection is required when employees are in areas where there is a potential for injury to the head from falling or moving objects or when they are exposed to electrical conductors which could be contacted by the head. All head protection must be ANSI approved.

Check the appropriate box for each hazard; provide description of hazard and PPE selected:

☐ Burn/Heat
☐ Chemical
☐ Impact
☐ Electric Shock
☐ Other

Foot Protection - appropriate foot protection is required when employees are in areas where there is danger of foot injuries due to falling and rolling objects, slip hazards or objects piercing the sole, and where employees are exposed to electrical hazards. All foot protection must be ASTM approved.

Check the appropriate box for each hazard; provide description of hazard and PPE selected:

☐ Chemicals
☐ Compression
☐ Puncture
☐ Impact
☐ Other

Electrical Protective Devices - appropriate electrical protective devices in the form of insulating blankets, matting, covers, line hose, gloves, and sleeves made of rubber are required when employees are in areas where there may be exposure to substantial electrical voltage. Arc flash protection including, but not limited to, flame resistant clothing, arc face shield and arc flash hoods must be provided accordingly.

Check the appropriate box for each hazard; provide description of hazard and PPE selected:

☐ Energized work ≥50 volts
Hand Protection - appropriate hand protection is required when employees are in areas where their hands are exposed to skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns or harmful temperature extremes. Appropriate gloves are dependent upon the type of chemical contaminant or physical hazard. Special care must be taken when selecting gloves for chemical exposure to assure glove is resistant to the chemical in question.

**Check the appropriate box for each hazard; provide description of hazard and PPE selected:**

- [ ] Chemicals
- [ ] Burns/Heat
- [ ] Cuts/Abrasions
- [ ] Puncture
- [ ] Other

Hearing Protection - appropriate hearing protection is required when employees are in areas where there is exposure to excessive noise levels. Protection is not required unless the employee’s time weighted average exposure exceeds 85 decibels (db) for an 8 hour exposure. However it is recommended that appropriate hearing attenuators are provided to employees for use in all high noise areas (mechanical rooms, boiler rooms, etc.) as a precautionary measure.

**Check the appropriate box for each hazard; provide description of hazard and PPE selected:**

- [ ] High noise area

Fall Protection - appropriate fall protection is required when employees are at risk of falling from an elevated position, as a general rule, anytime a working height of six feet or more is reached. Appropriate fall protection must also be utilized at any height when employees are in aerial lifts, powered platforms and similar devices.

**Check the appropriate box for each hazard; provide description of hazard and PPE selected:**

- [ ] Working Height > 6 feet
- [ ] Aerial lift/similar devices

**Additional Comments**

______________________________________________________________________________

______________________________________________________________________________
Guidelines for Hazard Assessment and Personal Protective Equipment Selection

1. Controlling hazards. PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound work practices and administrative controls.

2. Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers.

3. Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.

4. Analyze data. Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the area. The possibility of exposure to several hazards simultaneously should be considered.

5. Selection guidelines. The general procedure for selection of protective equipment is to:

   (a) Identify engineering controls or work practice changes that could eliminate or reduce the hazard.

   (b) Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.;

   (c) compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment;

   (d) select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards; and

   (e) fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.
6. Fitting the device. Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

7. 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.