County of Henrico

Hazard Assessment for Selecting

Personal Protective Equipment



 Department of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

County of Henrico

Hazard Assessment Guide for Selecting Personal Protective Equipment

##### Purpose

The document will provide guidance for each County of Henrico department that needs to perform or update its Hazard Assessment. Ideally, it is best to eliminate recognized hazards. If that is not possible, appropriate Personal Protective Equipment (PPE) shall be selected. All affected employees shall be trained to use appropriate PPE for protection from known or anticipated hazards as determined by each department’s Hazard Assessment. For assistance, contact the Office of Emergency Management and Workplace Safety at 501-5661.

**Note:** The Personal Protective Equipment Standard (29 CFR 1910.132) **does not** cover respiratory protection, hearing conservation, bloodborne pathogens, electrical protective devices or tuberculosis.

**Authority and Reference**

Virginia Occupational Safety & Health (VOSH): 29 CFR 1910.132 – General Requirements (employee-owned equipment, design, hazard assessments and equipment selection, defective and damaged equipment and training); 29 CFR 1910.133 – Eye and Face Protection; 29 CFR 1910.135 – Head Protection; 29 CFR 1910.136 – Foot Protection; and 29 CFR 1910.138 – Hand protection.

###### Application

Protective equipment for eyes, face, head and extremities, protective clothing and protective shields and barriers, shall be provided, used, and maintained in sanitary and reliable condition. PPE may be necessary due to hazards in the environment, chemical hazards, radiological hazards or noise levels that would cause injury or impairment to an employee from absorption, inhalation or physical contact.

***Employee-purchased or owned equipment:*** Whenever an employee provides his/her own Personal Protective Equipment, the county shall be responsible for ensuring that such PPE meets all Virginia Occupational Safety & Health (VOSH) and American National Standards Institute (ANSI) requirements.

***Design:***All personal protective equipment shall be designed and constructed to protect a worker from the recognized hazard.

***Hazard Assessment:*** Department Heads, or designees, shall assess the workplace to determine if hazards are present, or likely to be present. Use the Hierarchy of Controls diagram on the following page to determine the best method of minimizing hazards before using Personal Protective Equipment to protect employees.



At the end of this document, a Hazard Assessment Form has been provided so Departments can conduct a Hazard Assessment and certify that it has been completed. Department Heads, or their designees, shall complete the Hazard Assessment form and file it with departmental records. Smaller departments may need to use only one form. Larger Departments often need several forms to complete the assessments of all sections. For example, a department may need one Hazard Assessment for a tool shop, one for a chemical storage area, one for the auto repair facility, etc.

*Training:* Once hazards are assessed and/or eliminated through the Hierarchy, the employer must provide employees with training on the proper use, maintenance, limitations and storage of PPE.

Hazard Assessment

***Requirements of the Standard***

The Personal Protective Equipment Standard requires that employers must perform a hazard assessment of the workplace to determine if hazards are present, or are likely to be present, which require the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

1. Select, provide and require the use of appropriate PPE for each affected employee.
2. Communicate PPE selection decisions to each affected employee.
3. Select and provide PPE that properly fits each affected employee.
4. Conduct and document appropriate employee training.

Examples of PPE that may be provided by employees include non-specialty safety glasses, safety shoes, and wintry weather outerwear such as that worn by construction workers. However, shoes or outerwear subject to contamination by carcinogens or other toxic or hazardous substances, which cannot be safely worn off-site, must be paid by the County.

Examples of PPE required to be provided by the County include but are not limited to:

1. Welding or wire mesh gloves.
2. Respirators.
3. Hard hats.
4. Specialty glasses and goggles such as those used for laser and ultraviolet radiation protection.
5. Specialty foot protection such as metatarsal shoes and lineman's shoes with built-in gaffs [such as those used for climbing].
6. Face shields.
7. Rubber gloves, blankets, cover-ups.
8. Hot sticks and other live-line tools used by power generation workers.

To access the need for PPE, a survey of the workplace must be conducted. The assessment must match the PPE to the hazard. The following is a **recommended** procedure for conducting a hazard assessment.

**Review Injury and Accident Data:**

Two sources of injury data can provide helpful information for assessing hazards:

1. OSHA Form 300 Log.

2. Worker's Compensation Claims.

**Inform Employees and Supervisors of the Process:**

Involve the employees and supervisors from the work areas being assessed. Review the job procedures, potential hazards and the PPE currently in use. Discuss the reasons for the new or updated assessment and the procedures being used. Point out that the assessment is *not* a review of any employee’s job performance.

**Conduct a Walk-Through Survey:**

Conduct a walk-through survey of the work areas that may need PPE. The purpose of the survey is to identify sources of hazards to workers and co-workers. Observe the following: layout of the workplace, location of the workers, work operations, hazards and places where PPE is currently used including the device and reason for use.

Consideration should be given to the following basic hazard categories:

 1. Impact (falling/flying objects)

 2. Penetration (sharp objects piercing foot/hand)

 3. Compression (roll-over or pinching objects)

 4. Chemical exposure (inhalation, ingestion, skin contact, eye contact or injection)

 5. Heat

 6. Dust

 7. Light (optical) radiation (welding, brazing, cutting, furnaces, etc.)

 8. Respiratory System

 9. Extreme Cold

 10. Noise

 11. Water (potential for drowning or fungal infections caused by dampness or humidity)

 12. Vibration

 13. Electrical

**Organize the Data:**

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

**Analyze the Data:**

Each hazard should be reviewed (see walk-through survey) 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.

PPE Determination:

Each of the basic hazards should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury. Consideration should be given to the possibility of exposure to several hazards at once. The general procedure for determining appropriate protective equipment is to:

1. Identify the potential hazards and the type of protective equipment that is available, and what protection it provides (i.e., splash protection, impact protection, etc.).
2. Compare the capabilities of several types of PPE with the hazards associated with the environment (e.g., impact velocities, masses, projectile shape, and radiation intensities).
3. Select the PPE which provides a level of protection greater than the minimum required to protect employees from the hazards.
4. Select PPE that will fit each employee properly and provides protection from the hazard.

**Selection Guidelines:**

After completing the hazard assessment, follow this process for the selection of PPE:

1. Become familiar with the potential hazards and what PPE is available and what it can do (splash protection, impact protection, etc.) to prevent injuries and illnesses.

2. Compare the hazards associated with the work environment and the capabilities of the available PPE (such as shaded lenses for welding or flying objects during a grinding operation).

3. Select the PPE which ensures a level of protection greater than the minimum required to protect employees from the hazards.

4. Fit the user with the devise and provide instruction on care, use and limitations of PPE.

**Note:** Personal protective equipment alone should **not** be relied upon to provide protection against hazards but should be used in conjunction with engineering controls, administrative controls and procedural controls.

**Fitting the Device:**

1. Careful consideration must be given to comfort and fit. Providing employees with the correct size will encourage continued use of the device.

1. Adjustments should be made on an individual basis for a comfortable fit while still wearing the PPE as intended.
2. In addition, proper fit of a hard hat is important to ensure it will not fall off during work operations. In some cases, a chin strap may be necessary to keep the hard hat on an employee's head. (If so, a chin strap should break at reasonably low force to prevent a strangulation hazard). The manufacturer's instructions should be followed carefully.

**Reassessment of the Hazards:**

Reassess the workplace as necessary by identifying and evaluation:

1. New equipment and processes.

2. Review accident records.

3. Re-evaluate the suitability of previously selected PPE.

**Eye and Face Protection:**

1. Employees must use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids, or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. Requirements for side protection, prescription lenses, filter lenses, and identification of the manufacturer are outlined in the standard.
2. Departments shall ensure employees who wear prescription lenses while engaged in operations involving eye hazards wear eye protection that incorporates the prescription in the design, or wear eye protection that can be worn over the prescription lenses without interfering with prescription lens or the protective lens wear.

1. Protective eye and face devices purchased after July 5, 1994 must comply with ANSI Z87.1-1989 or be demonstrated to be equally effective. Devices purchased before that date must comply with ANSI Z87.1-1968 or be equally effective.
2. Occupations for which eye and face protection should be routinely considered are: carpenters, electricians, machinists, lathe operators, mechanics, plumbers, pipe fitters, sheet metal workers, machine operators, welders, laborers and tree trimmers.

**Head Protection:**

1. Employees must wear appropriate hard hats when working in areas where a potential for injury to the head from falling objects exists. Hard hats designed to reduce electrical shock hazards shall be worn by affected employees when near exposed electrical conductors which could contact the head. Protective helmets purchased after July 5, 1994 shall comply with ANSI Z89.1-1986 or be equally effective. Hard hats purchased before that date shall comply with ANSI Z89.1-1969 or be equally effective.

2. Some examples of the occupations for which head protection should be routinely considered are: carpenters, electricians, mechanics, plumbers, pipe fitters, packers, welders, laborers, tree workers, stock handlers, warehouse laborers, etc.

**Foot Protection:**

1. Employees must wear protective footwear when working in areas where there is a potential for injuries from falling or rolling objects, or objects piercing the sole, or where employees' feet are exposed to electrical hazards. Protective footwear purchased after July 5, 1994 must comply with ANSI Z41-1991 or be equally effective. Protective footwear purchased before that date must comply with ANSI Z41.1-1967 or be equally effective.
2. Some examples of the occupations for which foot protection should routinely considered are: shipping and receiving clerks, stockers, carpenters, electricians, machinists, mechanics, plumbers, welders, pipe fitters, groundskeepers, etc.

**Hand Protection:**

1. Departments must select appropriate hand protection and require employees to wear it whenever employees' hands are exposed to hazards from skin absorption; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns and temperature extremes. No one type or style of glove can provide protection against ALL potential hand hazards. It is important to determine the characteristics of gloves relative to the specific hazard, how long the glove can be worn, and whether it can be reused.
2. Occupations/activities that may be exposed to these types of hazards include sheet metal fabrication, painters, welders, electricians, parts cleaning and food service.
3. The work activities of the employee should be analyzed to determine the degree of dexterity required, the duration, frequency, degree of exposure, and physical stresses that will be applied.
4. Consider the following factors for glove selection for chemical hazards:

A. Toxic properties of the chemical **must** be determined in relation to skin absorption.

B. **Safety Data Sheets** are an excellent resource for selecting the appropriate gloves.

C. For mixtures and formulated chemicals, a glove selected based on the chemical component with the shortest breakthrough time. NOTE: Breakthrough time, in the context of chemical [exposure](https://www.safeopedia.com/definition/502/short-term-exposure-gas-chemical-vapour-and-other-airborne-substances), refers to the time between when a harmful chemical liquid touches the outside of a glove or other personal protective equipment and when it breaks the surface to reach the skin. Breakthrough is said to occur when the permeation rate reaches 0.1 mg/m2/second. At this point, the gloves or other protective equipment is deemed to be inadequate protection.

D. Employees must be able to remove the gloves in such a manner as to prevent skin contamination. Ensure employees know how to remove gloves properly.

**Upper/Lower Body Protection:**

1. This PPE includes chaps, chemical aprons, Tyvek suits, and wintry weather clothing.

2. Body protection should be routinely considered for lab technicians, fire fighters, highway construction workers, welders, etc.

**Respiratory Protection:**

Departments must select and require the use of appropriate respirators in areas where employees are exposed to inhalation hazards more than the established exposure limits. Inhalation hazards may consist of exposure to gases, vapors, dusts, mists, fumes or fibers. All respirator usage shall be in accordance with the County's Respiratory Protection Program and ANSI Z88.2-1969 (Standard Practice for Respiratory Protection). See Chapter 14 of the County of Henrico Safety Manual for additional information. Departments that need to determine whether respiratory protection is needed for certain employees should contact the Office of EMWS for guidance. Occupations/activities that may be exposed to these types of hazards include abrasive blasting, spray painting, welding, chemical use and asbestos exposure.

**Cleaning and Maintenance:**

1. All PPE must be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

2. All PPE should be cleaned, inspected and maintained regularly so that the PPE provides the requisite protection.

3. Contaminated PPE that cannot be decontaminated must be disposed of in a manner that protects employees from exposure to hazards.

**Hazard Assessment Certification:**

Each PPE assessment must be documented by the issuance of a written Hazard Assessment Form and Certification (see pages 10-12 of this document). This assessment form must:

1. Identify the workplace or work area evaluated,

2. Name the individual who conducted the evaluation,

3. Record the date of the hazard assessment,

4. Identify the document as a certification of hazard assessment.

Employee Training:

After proper PPE for each process/equipment has been selected, the County shall provide PPE to employees and train them in its proper use. At a minimum, each employee using PPE must know:

1. When PPE is necessary,
2. What PPE is necessary and which PPE has been selected for each process involving the employee,
3. How to properly put on, take off, adjust and wear PPE,
4. The limitations of the PPE,
5. How to determine if PPE is too damaged to wear, or is no longer effective,
6. How to get replacement PPE,
7. How to properly care for, maintain, store, and dispose of PPE,
8. After employees have been trained, periodic assessment of the process/equipment should be conducted to ensure that the PPE is adequate and training is appropriate.
9. Retraining of employees is required whenever:
10. Changes in the workplace that make previous training out-of-date,
11. Changes in the type of PPE that makes previous training out-of-date,
12. A supervisor has observed a lapse in an employees' understanding of how to use PPE that indicates the employee needs refresher training before wearing the PPE again,
13. Departments shall verify every employee required to use PPE has received training and understands expectations. Departments shall document training on- line or by having employees sign an attendance sheet that verifies training has been completed. See page 13 of this guide for a certification of training.

### Personal Protective Equipment (PPE)

**Hazard Assessment Survey and Certification**

**Department:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

# Job Classification: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Operation/Process: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hazard Assessor (print): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Title:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| **Part of Body** | **Hazard** | **Required PPE** | **Notes** |
| **Hands** | ❑ Penetration-sharp objects❑ Penetration-animal bites❑ Penetration-rough objects❑ Chemical(s) \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_❑ Extreme cold❑ Extreme heat❑ Blood ❑ Electrical shock❑ Vibration-power tools❑ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ❑ Leather/cut resistant gloves❑ Leather/cut resistant gloves❑ General purpose work gloves❑ Chemical resistant gloves; ❑ Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_❑ Insulated gloves❑ Heat/flame resistant gloves❑ Latex or nitrile gloves❑ Insulated rubber gloves;❑ Type \_\_\_\_\_\_\_\_\_\_\_\_\_❑ Cotton, leather or anti-vibration gloves❑ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| **Eyes and Face** | ❑ Impact-flying objects, chips, sand or dirt❑ Nuisance dust❑ UV light-welding, cutting, torch brazing or soldering❑ Chemical-splashing liquid❑ Chemical-irritating mists❑ Hot sparks-grinding❑ Splashing molten metal❑ Glare/High Intensity lights❑ Laser operations❑ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ❑ Safety glasses w/side shields❑ Glasses/goggles w/face shield❑ Impact goggles❑ Welding goggles ❑ Welding helmet/shield w/safety glasses & side shields❑ Chemical goggles/ face shield❑ Chemical splash goggles❑ Safety glasses w/side shields ❑ Glasses/goggles w/face shield❑ Safety goggles w/face shield ❑ Shaded safety glasses❑ Laser spectacles or goggles❑ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| **Ears**  | ❑ Exposure to noise levels (> 85 dBA 8-hour TWA)❑ Exposure to sparks❑ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ❑ Ear muffs, plugs or  ear caps❑ Leather welding hood* Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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| --- | --- | --- | --- |
| **Part of Body** | **Hazard** | **Required PPE** | Notes |
| **Respiratory** **System**  | ❑ Nuisance dust/mist❑ Welding fumes❑ Asbestos❑ Pesticides❑ Paint spray❑ Organic vapors❑ Acid gases❑ Oxygen deficient/toxicor Immediately Dangerous to Life & Health atmosphere (IDLH)❑ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ❑ Disposable dust/mist mask❑ Welding respirator❑ Respirator w/HEPA filter❑ Respirator w/pesticide  cartridges❑ Respirator w/paint spray  cartridges❑ Respirator w/organic cartridges❑ Respirator w/acid gas cartridges❑ SCBA or Type C airline respirator❑ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| **Feet** | ❑ Impact-heavy objects❑ Compression-rolling or  pinching objects/vehicles❑ Slippery or wet surface❑ Penetration-sharp objects❑ Penetration-chemical❑ Splashing-chemical❑ Exposure to extreme cold❑ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ❑ Steel toe safety shoes❑ Leather boots or safety shoes  w/metatarsal guards❑ Slip resistant soles❑ Puncture resistant soles❑ Chemical resistant boots/covers❑ Rubber boots/closed top shoes❑ Insulated boots or shoes❑ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| **Head**  | ❑ Struck by falling object❑ Struck against fixed object❑ Electrical-contact with exposed wires/conductors❑ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ❑ Hard hat/cap ❑ Class A ❑ Class B ❑ Class C❑ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| **Body**  | ❑ Impact-flying objects❑ Moving vehicles❑ Penetration-sharp objects❑ Electrical-static discharge❑ Hot metal or sparks* Chemical(s)\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_❑ Exposure to extreme cold❑ Unprotected elevated  walking/working surface❑ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | ❑ Long sleeves/ apron/ coat❑ Traffic vest❑ Cut-resistant sleeves, wristlets❑ Static control coats/coveralls❑ Flame-resistant jacket/ pants❑ Lab coat or apron/sleeves❑ Insulated jacket, hood❑ Body harness and lanyard❑ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |

**CERTIFICATION: The signature and date below certifies that a Hazard Assessment was completed at the location specified on the first page of this document:**

Print Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

Note: If necessary, add additional Hazard Assessment forms so that all work areas in a department have assessment documentation.

**Personal Protective Equipment (PPE) Training Certification**

Dept./Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Certified by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Date of Training: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name of Trainer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| **Employee Name** | **Employee Signature** | **Type of PPE Training Received** |
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