**LABORATORY PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**HAZARD ASSESSMENT**

**Purpose and Description**

The laboratory personal protective equipment (PPE) hazard assessment guide identifies hazards to which laboratory workers may be exposed and specifies PPE to protect against these hazards during work operations. When completed, the document and its associated training will satisfy the Department of Labor and Industries requirements for PPE as required in Washington Administrative Code (WAC) 296-800-160.

This document must be completed by the Principal Investigator (PI), Lab Manager, or their designee. This person must conduct a laboratory hazard assessment that is specific to operations in their laboratories. EH&S personnel are available to assist with the hazard assessment and can review the form. EH&S may be consulted by calling 206-543-7388. The PI’s/Lab Managers are responsible for ensuring PPE requirements are followed.

**This Hazard Assessment document consists of the following.**

Section 1: Instructions and Guidance on PPE Selection, Pages 2 and 3.

Section 2: Laboratory PPE Hazard Assessment, Pages 4 to 17.

Section 3: Certify the Hazard Assessment, Page 18.

Section 4: PPE Training Documentation, Pages 19 and 20.

**Section 1: Instructions and Guidance on PPE Selection**

The Principal Investigator, Lab Manager, or their designee will conduct and certify the hazard assessment.

1. Conduct a hazard assessment of the laboratory operations using the PPE Assessment Guide.

* Complete the section if the potentially hazardous agent is used in your laboratory: (1) chemical, (2) biohazard, (3) radioactive, (4) laser, (5) nanomaterial, and/or (6) physical.
* This guide will assist in identifying work tasks that require the use of PPE to protect lab staff from exposures to hazards. If performed, check the applicable box for “Yes”. If not, check the applicable box for “No”. As needed, add tasks to the list to customize it for your laboratory.
* For each task performed, provide additional information by marking the appropriate additional box or marking “Other PPE: Specify” and describing in the space provided the lab specific PPE designated for the work task.



**GENERAL GUIDANCE ON PERSONAL PROTECTIVE EQUIPMENT (PPE) SELECTION**

1. **Minimum Laboratory PPE.** In general, the minimum PPE that should be worn while performing laboratory work is the following:

* Safety glasses
* Disposable nitrile or other appropriate chemical resistant gloves
* Lab coat (full length) and long pants, long skirt, or equivalent leg covering (no shorts)
* Laboratory footwear (as described below)

1. **Chemical-Resistant Gloves**. Chemical-resistant gloves must be selected based on the specific chemical(s) used and manufacturer’s glove permeation and compatibility charts. Guidance is available at: <http://www.ehs.washington.edu/manuals/lsm/lsmg.pdf>
2. **Laboratory Footwear.** Laboratory footwear should fully cover the feet to protect against chemical spills. Avoid sandals, flip flops, flats, canvas/breathable fabric tops, and shoes constructed of mesh (such as athletic shoes) unless impervious chemical-resistant booties that protect the entire foot are worn over them.
3. **Airborne / Inhalation Hazard: Engineering Controls and Respiratory Protection**.

* **Chemical Fume Hood**. When materials have a potential for becoming airborne, use a chemical fume hood or other engineering control whenever possible. Activities that generate airborne contaminants or odors that are not conducted inside of a chemical fume hood or using some other engineering control (such as a local exhaust at the workbench) should be evaluated to determine if the activity presents an inhalation hazard.
* **Biosafety Cabinet Use**. Use a biosafety cabinet to minimize exposure. Activities that cannot be conducted inside of a biosafety cabinet should be separately evaluated by the EH&S Biosafety Office. For BSL-3 or ABL-3 activities, the PPE requirements will be addressed by the BSL-3 facility.
* **Respiratory Protection**. If respiratory protection is identified during the hazard assessment, a respiratory protection program must be implemented that includes a hazard assessment, medical evaluation to wear a respirator, respirator training, and respirator fit testing. Contact EH&S at 543-7388 for assistance in developing the program. Guidance is available at: <http://www.ehs.washington.edu/ohsresp/index.shtm>

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| **1.0 CHEMICAL HANDLING PROTECTION (Page 1 of 5)** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE Designated For Lab Specific Tasks** |
|  | C1. Working with solids of low or moderate toxicity. | * Skin damage * Eye damage * Toxic by skin contact | * **Eyes:** Safety glasses * **Hands:** Disposable nitrile or appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3).   **Face**: Splash or splatter may occur - Face shield  **Other PPE, Specify:** |
|  | C2. Working with small volumes (<100 ml.) of corrosive (acids or caustics) liquids or solids. | * Skin damage * Eye damage   Toxic by skin contact | * **Eyes:** Safety glasses * **Hands:** Disposable nitrile or appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3). |
|  | C3. Working with large volumes of corrosive (acids or caustics) or acutely toxic materials that may splash. | * Inhalation * Skin damage * Eye damage * Toxic by skin contact | * **Eyes:** Safety goggles * **Face:** If splash or splatter may occur – Face shield * **Hands:** Disposable nitrile or appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3).   **Body:** Chemical resistant apron.  **Inhalation:** Respiratory protection. *Contact EH&S for respiratory protection program assistance.*  **Other PPE, Specify:** |
|  | C4. Working with small volumes (<100 ml.) of flammable solvents or materials. | * Skin damage * Eye damage * Toxic by skin contact | * **Eyes:** Safety glasses * **Hands:** Disposable nitrile or appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3). |
|  | C5. Working with large volumes (>100 ml.) of flammable solvents. Source of heat or ignition is nearby. | * Inhalation * Skin damage * Eye damage * Toxic by skin contact * Fire | * **Eyes:** Safety glasses * **Hands:** Disposable nitrile or appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3).   **Face**: Splash or splatter may occur - Face shield  **Inhalation:** Respiratory protection. *Contact EH&S for respiratory protection program assistance.*  **Other PPE, Specify:** |

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| **1.0 CHEMICAL HANDLING PROTECTION (Page 2 of 5)** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | C6. Working with chemicals of high acute toxicity (e.g. hydrogen fluoride, hydrogen cyanide). | * Inhalation * Skin damage * Eye damage * Toxic by skin contact | * **Eyes:** Safety glasses * **Hands:** Disposable nitrile or appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3).   **Eyes**: Safety goggles  **Face**: Splash or splatter may occur - Face shield  **Inhalation:** Respiratory protection. *Contact EH&S for respiratory protection program assistance.*  **Other PPE, Specify:** |
|  | C7. Working with particularly hazardous agent such as:   * Human carcinogen. * Mutagen. * Antineoplastic. * Reproductive toxin. | * Inhalation * Skin damage * Eye damage * Toxic by skin contact | * **Eyes:** Safety glasses * **Hands:** **For Carcinogens, Mutagens, and Chemotherapy/Other Hazardous Drugs**: Chemo exam gloves that are tested to meet ASTM D6978-05; Double glove * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3)   **Eyes**: Safety goggles  **Face**: Splash or splatter may occur - Face shield  **Inhalation:** Respiratory protection. *Contact EH&S for respiratory protection program assistance.*  **Other PPE, Specify:** |
|  | C8. Working with an apparatus with contents under pressure or vacuum (mm of Hg, psi, or torr). | * Skin damage * Eye damage | * **Eyes:** Safety glasses * **Hands:** Disposable nitrile or appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3)   **Face**: Face shield  **Eyes and/or Face**: For high risk activities - Safety goggles and face shield  **Body:** For chemical use, chemical-resistant apron  **Other PPE, Specify:** |

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| **1.0 CHEMICAL HANDLING PROTECTION (Page 3 of 5)** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | C9. Working with air or water reactive chemicals | * Exposure to toxic gases, heat, and/or energy * Inhalation * Skin damage * Eye damage * Fire | * **Eyes:** Safety goggles * **Hands:** Disposable nitrile or appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3).   **Face**: Splash or splatter may occur - Face shield  **Hands**: Heat resistant or chemical resistant gloves. Specify under other PPE.  **Body:** If fire hazard, flame-resistant lab coat  **Other PPE, Specify:** |
|  | C10. Working with pyrophoric materials. | * Fire * Severe burns * Inhalation * Skin damage * Eye damage | * **Eyes**: Safety goggles * **Hands**: Inner disposable nitrile or appropriate chemical resistant gloves * **Hands:** Outer heat-resistant gloves * **Body:** Flame resistant lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3) * **Body:** Synthetic clothing must not be worn when working with pyrophoric materials   **Face**: Splash or splatter may occur – Face shield  **Other PPE, Specify**: |
|  | C11. Working with potentially explosive chemicals. | * Detonation * Flying debris * Skin damage * Eye damage * Fire | * **Eyes**: Safety goggles * **Hands**: Inner disposable nitrile or appropriate chemical resistant gloves * **Hands:** Outer heat-resistant gloves * **Body:** Flame resistant lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3) * **Body:** Synthetic clothing must not be worn when working with explosive materials   **Face**: Splash or splatter may occur – Face shield  **Eyes, Face, or Body**: For high risk activities - Blast shield  **Other PPE, Specify**: |

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| **1.0 CHEMICAL HANDLING PROTECTION (Page 4 of 5)** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | C12. Working with high temperature equipment or objects. | * Burns * Fire | * **Eyes**: Safety goggles * **Hands**: Inner disposable nitrile or appropriate chemical resistant gloves * **Hands:** High temperature thermal insulated gloves * **Body:** Flame resistant lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3) * **Body:** Synthetic clothing must not be worn when working with high temperature equipment or objects   **Face**: Splash or splatter may occur – Face shield  **Other PPE, Specify**: |
|  | C13. Working with cryogenic material. | * Burns * Frostbite * Eye damage | * **Eyes**: Safety glasses * **Eyes:** For large volumes -Safety goggles * **Face**: Splash or splatter may occur - Face shield * **Hands**: Inner gloves - Disposable nitrile or appropriate chemical resistant gloves * **Hands**: Outer gloves: Cryogenic low temperature insulated gloves * **Body:** Lab coat; Long pants, skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3)   **Other PPE, Specify**: |
|  | C14. List any other particularly hazardous lab task involving chemicals. | Conduct risk assessment: Hazard depends on task and chemical properties   * Inhalation * Skin damage * Eye damage | * **Eyes:** Safety glasses * **Hands:** Disposable nitrile or other appropriate chemical resistant gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3).   **Face**: Splash or splatter may occur – Face shield  **Body**: Chemical resistant apron  **Inhalation:** Respiratory protection. *Contact EH&S for respiratory protection program assistance.*  **Other PPE, Specify:** |

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| **1.0 CHEMICAL HANDLING PROTECTION (Page 5 of 5)** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | C15. Minor (or small) spill cleanup.  Spill can be cleaned up with standard spill kit. | * Inhalation * Skin damage * Eye damage | * **Eyes**: Safety goggles * **Face**: Splash or splatter may occur - Face shield * **Hands**: Chemical-resistant gloves for spill cleanup * **Body:** Lab coat; Long pants, skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3) * As needed, contact EH&S for assistance   **Foot:** Shoes covers  **Other PPE, Specify**: |
|  | C16. Large spill cleanup.  Spill is too large or complex to clean up with standard spill kit. | * Inhalation * Skin damage * Eye damage | * **Mandatory: Follow Required Procedure** * If possible, stop or contain the release * Evacuate and secure the area * Assist injured or contaminated persons * Call 911 for assistance: Report injuries, fires, or request cleanup assistance * Call EH&S for assistance |
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| **2.0 BIOHAZARDOUS AGENT PROTECTION GENERAL** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | B1. Working with human blood, body fluids, cell lines (primary or established), tissues, or blood borne pathogens (BBP). | * Exposure to infectious material | * **Hand:** Latex or nitrile gloves * **Body:** Lab coat   **Eye:** Safety glasses  **Face:** Splatter shield on tabletop  **Face:** Face shield  **Face:** Safety glasses and a mask  **Body:** Disposable gown (optional)  **Other PPE, Specify:** |
|  | B2. Working with animal and/or human specimens preserved in fixative (such as formalin or paraformaldehyde solution)  Preserving animal and/or human specimens with fixative (such as formalin or paraformaldehyde solution) | * Exposure to fixative used to preserve specimen   If tissue is fixed, there is no longer an exposure to infectious material. | * **Eye:** Safety glasses * **Hand:** Impermeable glove for preserved specimens that is chemical-resistant to fixative used * **Body:** Lab coat   **Body:** Disposable gown  **Other PPE, Specify:** |
|  | B3. Working with radioactive human blood, body fluids, or blood borne pathogens (BBP). | * Exposure to infectious material * Cell damage * Potential spread of radioactive contaminants | * **Hand:** Latex or nitrile gloves * **Eye:** Safety glasses or safety goggles for splash hazard * **Face:** Splash or splatter may occur - Face shield * **Body:** Lab coat   **Body:** Disposable gown  **Other PPE, Specify:** |
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| **2.1 BIOHAZARDOUS AGENT PROTECTION – RISK GROUP 1, 2, 3** | | | |
| **Task Performed**  **Yes No** | **Task Description**  **(Modify wording to fit**  **your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | B4. Working with agents or recombinant DNA classified as Risk Group 1 and requiring Biosafety Level 1 (BSL-1) containment. | * Biological agents that typically pose a minimal potential for infection by injection, skin exposure, ingestion or inhalation. | * **Hand:** Latex or nitrile gloves   **Eye:** Safety glasses, for splash or other eye hazard  **Eye:** Safety goggles, splash or other eye hazard  **Body:** Lab coat  **Body:** Disposable gown  **Other PPE, Specify**: |
|  | B5. Manipulation of recombinant DNA, cell lines, viruses, bacteria, or other organisms classified as Risk Group 2 and requiring Biosafety Level 2 (BSL-2).  Perform aerosol generating procedure: Vortex, sonicate, pipette, tissue harvest | * Biological agents that pose a moderate potential for infection by injection, skin exposure, ingestion or inhalation. | * **Eye:** If not working in a BSC: Safety glasses * **Hand:** Latex or nitrile gloves * **Body:** Lab coat   **Eye:** If not working in a BSC: Safety goggles  **Body:** Surgical gown  **Other PPE, Specify**: |
|  | B6. Manipulation of infectious materials classified as Risk Group 3 but manipulated in a BSL 2 facility with BSL-3 practices (BSL 2+). | * Biological agents that pose a moderate/ serious potential for infection by injection, skin exposure, ingestion or inhalation. | * **Eye:** Safety glasses, for splash or other eye hazard * **Hands:** Nitrile gloves (double) * **Body:** Disposable gown (preferred) that ties in back * **Inhalation**:Respiratory protection as determined by risk assessment. *Contact EH&S for respiratory protection program assistance.*   **Eye:** Safety goggles, for splash or other eye hazard  **Body:** Lab coat  **Other PPE, Specify**: |
|  | B7. Manipulation of infectious materials classified as Risk Group 3 and requiring Biosafety Level 3 (BLS-3) containment. | * Biological agents that pose a serious or lethal potential for infection via injection, skin exposure, ingestion or inhalation | * **Eye:** Safety glasses, for splash or other eye hazard * **Hands:** Nitrile gloves (double) * **Body:** Full disposable coverall suit (preferred) * **Foot:** Shoe cover or dedicated shoe * **Inhalation**:Respiratory protection as determined by risk assessment. *Contact EH&S for respiratory protection program assistance.*   **Eye:** Safety goggles, for splash or other eye hazard  **Other PPE, Specify**: |

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| **2.2 BIOHAZARDOUS AGENT PROTECTION – BIOSAFETY LEVEL 1, 2, 3** | | | |
| **Task Performed**  **Yes No** | **Task Description**  **(Modify wording to fit**  **your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks**  **Follow Appropriate BSL Practices** |
|  | B8. Working with live animals: General safety concerns | * Animal bites * Exposure to animal allergens | **Animal bites:** Restraints or bite-resistant gloves  **Animal allergen:** Voluntary use of N95 respirator or PAPR. F*or allergens: Contact EH&S for respiratory protection program assistance.*  **Specific Pathogen Free (SPF) Area:** Hair bonnet, gown, shoe covers, gloves  **Other PPE, Specify**: |
|  | B9. Working with live animals: Animal Biosafety Level 1, (ABSL-1). | * Exposure to infectious material | * **Hands:** Nitrile or vinyl gloves for broken skin   **Eye:** Safety glasses, for splash or other eye hazard  **Eye:** Safety goggles, for splash or other eye hazard  **Body:** Lab coat  **Body:** Gown  **Other PPE, Specify**: |
|  | B10. Working with live animals: Animal Biosafety Level 2, (ABSL-2). | * Exposure to infectious material | * **Eye:** Safety goggles, for splash or other eye hazard * **Hands:** Nitrile or vinyl gloves * **Body:** Disposable gown   **Foot:** Shoe covers  **Other PPE, Specify**: |
|  | B11. Working with live animals: Animal Biosafety Level 2+, (ABSL-2+). | * Exposure to infectious material | * **Eye:** Safety glasses, for splash or other eye hazard   **Eye:** Safety goggles, for splash or other eye hazard   * **Hands:** Nitrile or vinyl gloves * **Body:** Disposable gown (tie in the back) * **Foot:** Shoe covers   **Other PPE, Specify**: |

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| **2.2 BIOHAZARDOUS AGENT PROTECTION – BIOSAFETY LEVEL 1, 2, 3** | | | |
| **Task Performed**  **Yes No** | **Task Description**  **(Modify wording to fit**  **your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks**  **Follow Appropriate BSL Practices** |
|  | B12. Working with live animals: Animal Biosafety Level 3, (ABSL-3). | * Exposure to infectious material * Exposure to infectious agent by airborne transmission | * **Eye:** Safety glasses, for splash or other eye hazard   **Eye:** Safety goggles, for splash or other eye hazard   * **Hands:** Nitrile or vinyl gloves   **Body:** Disposable gown   * **Foot:** Shoe covers * **Inhalation:** Mandatory use of N95 respirator or PAPR, as determined by risk assessment. *For mandatory use: Contact EH&S for respiratory protection program assistance.* * **Additional PPE, Specify:** A full body disposable coversuit is more appropriate in an animal facility. |
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| [https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcTv9juS6dczGL1JpaXyfpRBBABFEOh-LvEQ7FULqqhJLVH3Mp4XnA](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=images&cd=&cad=rja&ved=0CAQQjRw&url=http://www.bccdc.ca/healthenv/ElectromagFields/Optical/&ei=dxz5UruZHMurqQGCgoGgAQ&usg=AFQjCNHhsUQc5EGwm3lN0dbv-N1OFeXOtQ&bvm=bv.60983673,d.aWM) **3.0 RADIOACTIVE AGENT PROTECTION-- IONIZING, ULTRAVIOLET, INFRARED** | | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | R1. Working with solid radioactive material or solid radioactive waste. | * Cell damage * Potential spread of radioactive contamination | * **Eyes**: Safety glasses * **Hands**: Disposable nitrile or other appropriate radioactive material impermeable gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3) * **Work on Sealed Source:** Minimum PPE is unnecessary when working with sealed radiation sources |
|  | R2. Working with liquid radioactive material (in corrosives, flammables, aqueous liquids – including liquid radioactive waste) or radioactive powders. | * Cell damage * Potential spread of radioactive contamination * Hazards presented by the specific chemical | * **Eyes:** Safety glasses * **Hands:** Disposable nitrile or appropriate chemical resistant gloves compatible with work with radioactive materials * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3) |
|  | R3. Working with ultraviolet radiation. | * Conjunctivitis * Corneal damage * Skin burns | * **Eye:** UV face shield and/or goggles * **Hand:** Nitrile gloves if hand exposure is possible * **Body:** Lab coat |
|  | R4. Working with infrared-emitting equipment (e.g. glass blowing). | * Cataracts * Burns to cornea | * **Eye:** Appropriate polycarbonate infrared filter glasses * **Body:** Lab coat, flame resistant |
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| **4.0 LASER PROTECTION** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |

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| **OPEN BEAM** |  |

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|  | L1. Performing beam alignment.  Performing laser experiment.  Trouble-shooting or maintenance that requires working with an open laser beam, and/or defeating the interlock(s) on any Class 3b or Class 4 laser system. | * Eye damage | * **Eye:** Appropriate laser safety goggles/glasses with optical density based on individual beam parameters.   *Contact EH&S to determine appropriate optical density.* |
|  | L2. Viewing a Class 3R laser beam with magnifying optics (including eyeglasses). | * Eye damage | * **Eye:** Appropriate laser safety goggles/glasses with optical density based on individual beam parameters.   *Contact EH&S to determine appropriate optical density.* |
|  | L3. Working with a Class 3b open beam laser system with the potential for producing direct or specular (mirror-like) reflections. | * Eye damage | * **Eye:** Appropriate laser safety goggles/glasses with optical density based on individual beam parameters.   *Contact EH&S to determine appropriate optical density.* |
|  | L4. Working with infrared-emitting equipment (e.g. glass blowing). | * Cataracts * Burns to cornea | * **Eye:** Appropriate laser safety goggles/glasses with optical density based on individual beam parameters.   *Contact EH&S to determine appropriate optical density.*   * **Hands:** Nitrile gloves * **Body:** Long sleeved shirt (tightly wound fabric) * **Body:** Lab coat   *Long sleeves, lab coat, gloves, etc. required only in the NHZ (Nominal Hazard Zone)* | |
|  | L5. Handling dye laser materials, such as powdered dyes, chemicals, and solvents. | * Cancer * Fire * Explosion | * **Eyes:** Safety glasses * **Hands:** Chemical-resistant gloves * **Body:** Flame-resistant lab coat or coveralls | |
|  | L6. Maintaining and repairing power sources for Class 3B and Class 4 laser systems. | * Electrocution * Fire * Explosion | * **Eye:** Safety glasses * **Hands:** Insulated gloves * **Body:** Flame-resistant lab coat * **Body** Coveralls | |

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| **5.0 NANOMATERIAL PROTECTION** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | N1. Working with bound or wet nanomaterials | * Inhalation * Skin damage * Eye damage * Chemical exposure | * **Eyes:** Safety glasses * **Face**: Splash or splatter may occur – Face shield * **Hands**: Disposable nitrile or other appropriate chemical resistant gloves * **Hands**: Routinely replace gloves to minimize exposure and hand contamination * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3)   **Other PPE, Specify**: |
|  | N2. Working with unbound or dry engineered nanomaterials. | * Inhalation * Skin damage * Eye damage * Chemical exposure | For unbound or dry material:   * **Eyes:** Safety glasses * **Face**: Splash or splatter may occur – Face shield * **Hands**: Disposable nitrile or other appropriate chemical resistant gloves * **Hands**: Routinely replace gloves to minimize exposure and hand contamination * **Body:** Lab coat made of non-woven fabric and elastic at the wrists; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3) * **Inhalation:** Half face respirator with P100 cartridge if working with aerosolizing nanomaterials outside of a vented work enclosure. *Contact EH&S for respiratory protection program assistance.* * **Removal of PPE:** Give special attention to technique used to remove and dispose of contaminated PPE to avoid skin contact   **Other PPE, Specify**: |
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| **6.0 PHYSICAL HAZARD PROTECTION (Page 1 of 2)** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | P1. Working with cryogenic liquids. | * Skin damage * Eye damage | * **Eyes**: Safety glasses * **Face**: Face shield * **Hands**: Cryogenic, low temperature insulated gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3)   **Body:** Cryogenic apron |
|  | P2. Removing freezer cryo vials from liquid nitrogen. | * Vials may explode upon rapid warming * Cuts to face/neck and frostbite to hands | * **Eyes**: Safety glasses * **Face**: Face shield * **Hands**: Cryogenic, temperature thermal insulated gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3)   **Body:** Cryogenic apron |
|  | P3. Working with very cold equipment or dry ice. | * Frostbite * Hypothermia | * **Eyes**: Safety glasses * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3 * **Hands**: Cryogenic low temperature insulated gloves |
|  | P4. Working with hot liquids.  Heating equipment.  Open flames (autoclave, Bunsen burner, water bath, oil bath). | * Burns resulting in skin or eye damage | * **Eyes:** Safety glasses * **Hands:** Inner disposable nitrile or appropriate chemical resistant gloves * **Hands:** Outer thermal insulated gloves * **Body:** Lab coat; Long pants, long skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3) * **Eyes:** Safety goggles for work with hot liquids * **Face**: Splash or splatter may occur - Face shield * **Hands:** Autoclave gloves, impermeable insulated gloves for liquids amd steam |
|  | P5. Glassware washing. | * If glass breaks: Lacerations * Splash from cleaning agents | * **Eyes**: Safety glasses * **Hands**: Nitrile or appropriate chemical-resistant gloves * **Body:** Lab coat; Long pants, skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3)   **Face**: Face shield  **Hands:** If glass breaks, cut resistant gloves |

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| **6.0 PHYSICAL HAZARD PROTECTION (Page 2 of 2)** | | | |
| **Task Performed**  **Yes No** | **Task Performed in Lab**  **(Modify wording to fit your needs)** | **Potential Hazards** | **PPE For Lab Specific Tasks** |
|  | P6. Working with loud equipment, noises, sounds, alarms, etc. | * Potential ear damage and hearing loss | * **Hearing:** Earplugs or ear muffs, as necessary:   *Contact EH&S for noise exposure assessment.* |
|  | P7. Working with an apparatus with contents under pressure or vacuum \_\_\_\_\_\_\_\_ (mm of Hg, psi, or torr). | * Skin damage * Eye damage | * **Eyes**: Safety glasses * **Hands**: If chemicals used, nitrile or other appropriate chemical-resistant glove * **Body:** Lab coat; Long pants, skirt, or equivalent leg covering (no shorts); lab footwear (Refer to Page 3)   **Face**: Face shield  **Eyes and/or Face**: For high risk activities - Safety goggles and face shield  **Body:** If chemicals used, chemical-resistant apron  **Other PPE, Specify** |
|  | P8. Working with sharps or broken glass | * Cuts | * **For Cuts**: Use tongs for broken glass and designated sharps container for contaminated wastes * **For Cuts**: Cut resistant outer glove (Kevlar) with nitrile inner gloves |
|  | P9. Working with sharps.  Emptying a syringe used with chemicals | * Exposure to aerosols from syringe | * **For Aerosols:** Safety glasses and mask.   **Other PPE, Specify:** |
|  | P10. Working with compressed gases inside environmental chambers. | * Asphyxiation * Toxic gas exposure | * Employee is not allowed to enter and work inside of an oxygen deficient or hazardous chamber. |
|  | P11. Maintaining and repairing electrically powered equipment. | * Electrocution | * **Eyes**: Safety glasses * **Hands**: Insulated gloves * **Body:** Coveralls |
|  |  |  |  |

**Section 3: Certify the Hazard Assessment**

Please certify that the hazard assessment for the laboratory has been completed by filling out and signing this page.

**CERTIFICATION OF THE LABORATORY HAZARD ASSESSMENT AND PPE SELECTION \*\***

|  |  |  |
| --- | --- | --- |
| Principal Investigator’s (PI) Name (Print Name): | Department/Unit: | |
| Building(s): | Room(s): | |
| Lab Manager’s Name: | Lab Manager’s Phone: | |
| Completed by (Print Name): | Signature: | Date |
| Signature of PI: | | Date |

**Section 4: PPE Training Documentation**

Laboratory safety training must be conducted by the Principal Investigator, Lab Manager, or their designee. Training will identify and discuss potentially hazardous tasks performed in the lab and selection and use of lab specific PPE to protect the laboratory worker or researcher. The training content, instructor, and student attendees must be documented. To provide adequate training, the PI, Lab Manager or their designee will provide the following:

1. Identify all applicable safety training courses needed for each staff member and assure that each staff member has these courses.
2. The PI, lab manager, or their designee will review the completed Lab PPE Hazard Assessment Guide with the employee. It describes the operations in the lab where employees need PPE for protection against exposure to hazards. In this step, the hazard assessment is used as a training tool. While discussing lab operations and the associated hazards with lab staff, the manager will address the following:
   * How the lab obtains PPE
   * What types of PPE are used in the lab and for which tasks
   * Where and how the PPE is stored and maintained
   * How to inspect and what to look for to confirm PPE is in good condition before putting it on. If not, place the PPE.
   * How to put on, wear, adjust for proper fit, and remove PPE
   * How to properly use the PPE
   * How to properly decontaminate and clean reusable PPE, and how to properly dispose of single-use PPE
   * Discuss any limitations of the PPE
   * General PPE safety practices, including not wearing PPE outside of lab hazard areas (e.g. hallways and eating areas).
3. Each trained lab staff member will sign the training documentation to acknowledge that they have reviewed and been trained on the Laboratory PPE Assessment Guide.
4. Conduct refresher training whenever the hazard assessment and/or PPE selected for use is updated.

**Laboratory PPE Hazard Assessment Guide Training Acknowledgement:**

Principal Investigator: Department/Unit:

Building: Room:

Trainer: Trainer Job Title:

I have read, asked questions, and understand the PPE requirements for the activity/materials described for my work.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Name of Person Trained** | **Job Title** | **Employee or**  **Student ID Number** | **Signature** |
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