This form must be completed by the PI, Lab Supervisor, or their designee to conduct a laboratory hazard assessment specific to activities in their laboratories. The laboratory hazard assessment identifies hazards to employees and specifies personal protective equipment (PPE) to protect employees during work activities. The person conducting the assessment must verify that it is complete and that training has been conducted.

**This assessment consists of four sections and serves as a step in satisfying PPE requirements.**

**Section 1: Lab Information**

**Section 2: Laboratory Hazard Assessment**

**Section 3: Conduct PPE Training**

**Section 4: PPE Training Verification**

EHS personnel are available to assist you with completing this form or with reviewing it after you have completed it. EHS may also be consulted by calling EHS at **330-672-4347**.

# Section 1: Lab Information

|  |  |
| --- | --- |
| **Department** |  |
| **Lab location(s) with building & room number(s)** |  |
| **Principal Investigator** |  |
| **Laboratory Safety Coordinator** |  |
| **Name & title of person conducting assessment** |  |
| **Phone number** |  |
| **Email address** |  |
| **Date assessment completed** |  |
| **Signature** |  |

# Section 2: Laboratory Hazard Assessment

**In this section, you will**:

* **Conduct a hazard assessment of the laboratory to identify activities when PPE is needed to protect the lab staff from exposure to hazards.**
* **Certify the hazard assessment for the laboratory by signing in Section 1.**
* **List Unique or Lab Specific Activities – If the lab conducts any additional or unique activities that are not listed in the checklist then identify those activities and potential hazards along with the appropriate PPE in this section.**

The following checklists are an overview of common lab activities and associated potential hazards and applicable PPE. Check each box that describes activities performed by lab personnel.

| **Are the following activities performed in the lab?** | **Chemical Hazards** |
| --- | --- |
| **Yes** | **No** | **Activity** | **Potential Hazard** | **Applicable PPE[[1]](#footnote-1)** |
|  |  | **Working with small volumes (<4 liters) of corrosive liquids.** | **Eye or skin damage.** | **Safety glasses or goggles.****Light chemical-resistant gloves.****Lab coat.** |
|  |  | **Working with large volumes (>4 liters) of corrosive liquids, small to large volumes of acutely toxic corrosives, or work which creates a splash hazard.****[[2]](#footnote-2)** | **Poisoning, increased potential for eye and skin damage.** | **Safety goggles.****Heavy chemical-resistant gloves.****Lab coat and chemical-resistant apron.** |
|  |  | **Working with small volumes (<4 liters) of organic solvents or flammable organic compounds.** | **Skin or eye damage, potential poisoning through skin contact.** | **Safety glasses or goggles.****Light chemical-resistant gloves.****Lab coat.** |
|  |  | **Working with large volumes (>4liters) of organic solvents, small to large volumes of very dangerous solvents, or work which creates a splash hazard.2** | **Major skin or eye damage, potential poisoning through skin contact. Fire.** | **Safety goggles.****Heavy chemical-resistant gloves.****Flame-resistant lab coat (e.g. Nomex).** |
|  |  | **Working with toxic or hazardous chemicals (solid, liquid, or gas).****2****[[3]](#footnote-3)** | **Skin or eye damage, potential poisoning through skin contact.** | **Safety glasses (goggles for large quantities).****Light chemical-resistant gloves.****Lab coat.** |
|  |  | **Working with acutely toxic or hazardous chemicals (solid, liquid, or gas).2,3,[[4]](#footnote-4)** | **Increased potential for eye or skin damage, increased potential poisoning through skin contact.** | **Safety goggles. Heavy chemical resistant gloves. Lab coat.** |
|  |  | **Working with an apparatus with contents under pressure or vacuum.** | **Eye or skin damage.** | **Safety glasses or goggles, face shield for high risk activities. Chemical-resistant gloves. Lab coat, chemical-resistant apron for high risk activities.** |
|  |  | **Working with air or water reactive chemicals.** | **Severe skin and eye damage. Fire.** | **Work in inert atmosphere, when possible. Safety glasses or goggles. Chemical resistant gloves. Lab coat, flame resistant lab coat for high risk activities (e.g. Nomex). Chemical-resistant apron for high risk activities.** |
|  |  | **Working with potentially explosive chemicals.** | **Splash, detonation, flying debris, skin and eye damage. Fire.** | **Safety glasses, face shield, and blast shield. Heavy gloves. Flame-resistant lab coat (e.g. Nomex).** |
|  |  | **Working with low and high temperatures.** | **Burns, splashes. Fire.** | **Safety glasses. Lab coat. Thermal insulated gloves, when needed.** |
|  |  | **Minor chemical spill cleanup.** | **Skin or eye damage, respiratory damage.** | **Safety glasses or goggles. Chemical resistant gloves. Lab coat. Chemical resistant apron and boot/shoe covers for high risk activities. Respirator as needed. Consider keeping Silver Shield gloves in the lab spill kit.** |

| **Are the following activities performed in the lab?** | **Biological Hazards** |
| --- | --- |
| **Yes** | **No** | **Activity** | **Potential Hazard** | **Applicable PPE** |
|  |  | **Working with human blood, body fluids, tissues, or blood borne pathogens (BBP).****[[5]](#footnote-5)** | **Exposure to infectious material.** | **Safety goggles with face shield or facemask plus goggles, latex or nitrile gloves, lab coat or gown.** |
|  |  | **Working with preserved animal and/or human specimens.** | **Exposure to infectious material or preservatives.** | **Safety glasses or goggles, protective gloves such as light latex or nitrile for unpreserved specimens (select protective glove for preserved specimens according to preservative used), lab coat or gown.** |
|  |  | **Working with radioactive human blood, body fluids, or blood borne pathogens (BBP).** | **Cell damage, potential spread of radioactive contaminants, or potential BBP exposure.** | **Safety glasses (goggles for splash hazard), light latex or nitrile gloves, lab coat or gown.** |
|  |  | **Working with agents or recombinant DNA classified as Biosafety Level 1 (BSL-1).** | **Eye or skin irritation.** | **Safety glasses or goggles for protection from splash or other eye hazard, light latex or nitrile gloves for broken skin or skin rash, lab coat or gown.** |
|  |  | **Manipulation of cell lines, viruses, bacteria, or other organisms classified as Biosafety Level 2 (BSL-2). 5** | **Exposure to infectious material, particularly through broken skin or mucous membranes.** | **Safety glasses or goggles for protection from splash or other eye hazard, light latex or nitrile gloves, lab coat or gown.** |
|  |  | **Manipulation of infectious materials classified as Biosafety Level 2 facility with BSL-3 practices (BSL-2+).** | **Exposure to infectious materials with high risk of exposure by contact or mucous membranes.** | **Safety glasses or goggles for protection from splash or other eye hazard, light latex or nitrile gloves (double), lab coat or disposable gown (preferred), surgical mask.** |
|  |  | **Manipulation of infectious materials classified as Biosafety Level 3 (BLS-3).** | **Exposure to infectious materials with high risk of exposure, particularly through the inhalation route.** | **Safety glasses or goggles for protection from splash or other eye hazard, light latex or nitrile gloves (double), full disposable gown or Tyvek suite (preferred), respirator, shoe cover or dedicated shoe.** |
|  |  | **Working with live animals (Animal Biosafety Level 1, ABL- 1).5** | **Animal bites, allergies.** | **Safety glasses or goggles for protection from splash or other eye hazard, light latex, nitrile or vinyl gloves for broken skin or skin rash, lab coat or gown.****Consider need for wire mesh glove.** |
|  |  | **Working with live animals (Animal Biosafety Level 2, ABL- 2).5** | **Animal bites, exposure to infectious material, allergies.** | **Safety glasses or goggles for protection from splash or other eye hazard, light latex, nitrile or vinyl gloves, lab gown, hair cover, shoe covers, surgical mask. Consider need for wire mesh glove.** |

| **Are the following activities performed in the lab?** | **Radiological Hazards** |
| --- | --- |
| **Yes** | **No** | **Activity** | **Potential Hazard** | **Applicable PPE** |
|  |  | **Working with solid radioactive materials or waste.** | **Cell damage, potential spread of radioactive materials.** | **Safety glasses, impermeable gloves, lab coat.** |
|  |  | **Working with radioactive materials in hazardous chemicals (corrosives, flammables, liquids, powders, etc.).** | **Cell damage or spread of contamination plus hazards for the specific chemical.** | **Safety glasses (or goggles for splash hazard), light chemical-resistant gloves, lab coat. Note: Select glove for the applicable chemical hazards above.** |
|  |  | **Working with ultraviolet radiation.** | **Conjunctivitis, corneal damage, skin redness.** | **UV face shield and goggles, lab coat.** |
|  |  | **Working with infrared emitting equipment (e.g. glass blowing).** | **Cataracts, burns to cornea.** | **Appropriate shaded goggles, lab coat.** |

| **Are the following activities performed in the lab?** | **Laser Hazards[[6]](#footnote-6)** |
| --- | --- |
| **Yes** | **No** | **Activity** | **Potential Hazard** | **Applicable PPE** |
|  |  | **Open Beam** |
|  |  | **Performing alignment, trouble-shooting or maintenance that requires working with an open beam and/or defeating the interlock(s) on any Class 3 or Class 4 laser system.** | **Eye damage.** | **Appropriately shaded goggles/glasses with optical density based on individual beam parameters.** |
|  |  | **Viewing a Class 3R laser beam with magnifying optics (including eyeglasses).** | **Eye damage.** | **Appropriately shaded goggles/glasses with optical density based on individual beam parameters.** |
|  |  | **Working with a Class 3B laser open beam system with the potential for producing direct or specular reflections.** | **Eye damage, skin damage.** | **Appropriately shaded goggles/glasses with optical density based on individual beam parameters, appropriate skin protection.****[[7]](#footnote-7)** |
|  |  | **Working with a Class 4 laser open beam system with the potential for producing direct, specular, or diffuse reflections.** | **Eye damage, skin damage.** | **Appropriately shaded goggles/glasses with optical density based on individual beam parameters, appropriate skin protection.7** |
|  |  | **Non-Beam** |
|  |  | **Handling dye laser materials, such as powdered dyes, chemicals, and solvents.** | **Cancer, explosion, fire.** | **Gloves, safety glasses, flame-resistant lab coat or coveralls.** |
|  |  | **Maintaining and repairing power sources for large Class 3B and Class 4 laser systems.** | **Electrocution, explosion, fire.** | **Electrical isolation mat, flame-resistant lab coat or coveralls.** |

| **Are the following activities performed in the lab?** | **Physical Hazards** |
| --- | --- |
| **Yes** | **No** | **Activity** | **Potential Hazard** | **Applicable PPE** |
|  |  | **Working with cryogenic liquids.** | **Major skin, tissue, or eye damage.** | **Safety glasses or goggles for large volumes, impermeable insulated gloves, lab coat.** |
|  |  | **Removing freezer vials from liquid nitrogen** | **Vials may explode upon rapid warming. Cuts to face/neck and frostbite to hands.** | **Face shield, impermeable insulated gloves, lab coat.** |
|  |  | **Working with very cold equipment or dry ice.** | **Frostbite, hypothermia.** | **Safety glasses, insulated gloves (possibly warm clothing), lab coat.** |
|  |  | **Working with hot liquids, equipment, open flames (autoclave, Bunsen burner, water bath, oil bath).** | **Burns resulting in skin or eye damage.** | **Safety glasses or goggles for large volumes, insulated gloves (impermeable insulated gloves for liquids, steam), lab coat.** |
|  |  | **Glassware washing.** | **Lacerations.** | **Heavy rubber gloves, lab coat.** |
|  |  | **Working with loud equipment, noises, sounds, alarms, etc.** | **Potential ear damage and hearing loss.** | **Earplugs or ear muffs as necessary.** |
|  |  | **Working with a centrifuge.** | **Imbalanced rotor can lead to broken vials, cuts, exposure.** | **Safety glasses or goggles, lab coat, latex, vinyl, or nitrile gloves.** |
|  |  | **Working with a sonicators.** | **Ear damage, exposure.** | **Safety glasses or goggles, lab coat, latex, vinyl, or nitrile gloves, ear plugs.** |
|  |  | **Working with sharps.** | **Cuts, exposure.** | **Safety glasses or goggles, lab coat, latex, vinyl, or nitrile gloves.** |

|  |  |
| --- | --- |
| **Are the following activities performed in the lab?** | **Nanomaterial Hazard** |
| **Yes** | **No** | **Activity** | **Potential Hazard** | **Applicable PPE** |
|  |  | **Working with engineered nanomaterials.[[8]](#footnote-8)** | **Inhalation, exposure, dermal exposure.** | **Goggles, gloves, lab coat.** |
| **Unique or Lab Specific Activities** |
| **Activity Description** | **Potential Hazard** | **PPE Required** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# Section 3: Conduct PPE Training

PPE training consists of two parts: **Part 1 is a general online presentation** and **Part 2 is site specific training** conducted by the lab supervisor. Verification is required to document that training has been conducted (see the following page).

## Step 1

The PI or lab supervisor assures that the employees review the online Personal Protective Equipment <https://flashtrain.kent.edu/Public/Login.aspx>. [[9]](#footnote-9)

## Step 2

1. The PI, lab manager, or their designee reviews the **completed** *Hazard Assessment Tool* (this document) with the employee. It describes the tasks in the lab when employees need PPE to protect themselves from exposure to hazards. In this step, the hazard assessment is used as a training tool.

2. While discussing lab activities and the associated hazards with lab staff, the supervisor will address how their 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 properly use the PPE, and discuss any limitations of the PPE. The supervisor should also discuss general PPE safety practices, including not wearing PPE outside of lab hazard areas (e.g. hallways and eating areas).

## Step 3

When the supervisor believes the employee has demonstrated understanding, the employee(s) and the supervisor then sign the following *Verification of PPE Training* form (next page) to document that PPE training has been conducted. A copy of this signed form is to be maintained in the Chemical Hygiene Plan.

## Step 4

Repeat or conduct a refresher training whenever the hazard assessment is updated (at least annually).

1. Chemical-resistant gloves are to be selected based on the specific chemical(s) used. [↑](#footnote-ref-1)
2. Use a chemical fume hood or other engineering control whenever possible. Activities not conducted inside a chemical fume hood or with another engineering control (such as a local exhaust at the workbench) should be evaluated to determine if the activity presents a respiratory hazard. In this case a respirator may be required and a respiratory protection program must be in place per the EHS Respiratory Protection Program. Guidance can be found at <https://www.kent.edu/sites/default/files/respiratory-protection-brochure.pdf>. In addition to engineering controls and PPE, consider personal clothing that provides adequate skin coverage. [↑](#footnote-ref-2)
3. Dusty solids should be separately evaluated for the need to use respiratory protection [↑](#footnote-ref-3)
4. For a list of acutely toxic chemicals, visit <https://www.kent.edu/compliance/laboratory-safety> [↑](#footnote-ref-4)
5. Use a Biosafety cabinet to minimize exposure. Activities that cannot be conducted inside Biosafety cabinet should be separately evaluated by the Institutional Biosafety Officer. [↑](#footnote-ref-5)
6. Flow Cytometry System (FACS) machines, laser copiers, and laser pointers are not currently subject to general or specific. [↑](#footnote-ref-6)
7. Appropriate skin protection can include lab coat, gloves, sun block, barrier cream [↑](#footnote-ref-7)
8. Working with dry engineered nanomaterials (e.g. synthesizing, storage) should be separately evaluated for respiratory protection. [↑](#footnote-ref-8)
9. See the EHS website and navigate to Flashtrain under Laboratory Safety Training. [↑](#footnote-ref-9)