

This form is used by the PI, Lab Supervisor or their designee to accomplish two requirements of the Iowa Occupational Safety and Health (IOSH) Personal Protective Equipment (PPE) regulations.

1. Laboratory Hazard Assessment

The laboratory hazard assessment identifies hazards to employees and specifies PPE to protect employees during work activities. The person conducting the assessment must sign and date that it is complete.

2. Two Part Lab Staff Training on PPE Use.

At the UI, PPE training consists of two parts, **Part 1 is a general online course** and **Part 2 is site-specific training** conducted by the lab supervisor or designee. The supervisor and employee must sign the "Record for PPE Training".

EHS personnel are available to assist you with completing your lab hazard assessment for PPE or with reviewing it after you've completed it. EHS may also be consulted for specific questions such as chemical-resistant glove selection and limitations of various PPE. Contact Rick Byrum (richard-byrum@uiowa.edu, 5-9379).

Laboratories that require an eyewash or an emergency shower must, at a minimum, require all lab personnel working in the lab to wear the following: closed toed shoes that cover the feet, long pants or skirt that reaches the top of the shoes.

Requirement #1 - Laboratory Hazard Assessment

- Conduct a hazard assessment of the laboratory to identify activities where PPE is needed to protect the lab staff from exposure to hazards.
- Specify the PPE to be used by the staff to protect from the hazards identified.
- Sign and date the hazard assessment for the laboratory.

Step 1 – Conduct the Hazard Assessment and specify PPE to be used

Survey the lab to determine the activities that may involve health or physical hazards. For each category in the **attached checklists beginning on page 3 (Chemical, Biological, Radiological, Physical)**, review the common lab activities listed and their associated potential hazards and recommended PPE. Indicate whether or not the activity is conducted by your lab employees by selecting the box "Yes" or "No" box next to an activity.

Step 2 – Unique or Lab Specific Activities

If your lab conducts any additional or unique activities that are not listed in the checklists beginning on page 3, identify the potential hazards and appropriate PPE then add these activities to the Unique or Lab-Specific Activities section below. If a lab activity is similar to but somewhat different than one of the common activities listed, include it in this section as well.

	Activity Description	Potential Hazard	Activity PPE
A.			
B.			

	Activity Description	Potential Hazard	Activity PPE
C.			
D.			
E.			

Step 3 - Hazard Assessment Record

All information must be completed below. This documents that you have conducted the hazard assessment. Maintain a copy of the signed hazard assessment (this document) in the lab safety records.

Department _____

Lab Location(s) [building and room numbers] _____

Principal Investigator _____

Name and title of person conducting assessment _____

Signature: _____ Title: _____

Date assessment completed: _____

Step 4 - Review/Update

Review/update the hazard assessment when hazards or PPE changes. Review and update it at least annually to capture any changes or confirm it is still accurate. Annual reviews may be documented here by the reviewer:

Reviewed and approved by: _____ Date: _____

Requirement # 2 – Train Lab Staff on PPE Use

At the UI, PPE training consists of two parts, **Part 1 is a general online course** and **Part 2 is site-specific** training conducted by the lab supervisor.

Step 1

The PI or lab supervisor assures that the employees take the general online PPE course “Personal Protective Equipment Awareness for Research Laboratories” (ICON course accessed through the EHS website).

Step 2

- A. The PI, lab supervisor, or their designee reviews the **completed** “Research Laboratory Hazard Assessment Tool” (this document) with the employee. It describes the tasks in the lab where employees need PPE to protect them from exposure to hazards. In this step the hazard assessment is used as a training tool.
- B. While discussing the tasks to be done in the lab and the associated hazards (chemical, biological, radiological, physical) with personnel, 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 lab hazard areas (such as hallways and eating areas).

Step 3

When the supervisor believes the employee has demonstrated understanding, the employee(s) and the supervisor then sign the “Record for PPE Training” form on page 7 to document that PPE training part 2/site-specific training has been conducted. A copy of this signed form is to be maintained in the lab safety or training records.

Step 4

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

Chemical Use Hazards				
Indicate if Activity Applies	Activity	Potential Hazard	Activity PPE	
Yes	No			
<input type="checkbox"/>	<input type="checkbox"/>	Working with small volumes of corrosive liquids (< 4 liters).	Eye or skin damage	Safety glasses or goggles. Light chemical-resistant gloves. Lab coat. Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes.
<input type="checkbox"/>	<input type="checkbox"/>	Working with corrosive or acutely toxic liquids, or work that creates a splash hazard ¹	Significant eye and skin damage, poisoning	Safety goggles and face shield Chemical-resistant gloves Lab coat Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes. Chemical-resistant apron if a greater potential for splashing exists
<input type="checkbox"/>	<input type="checkbox"/>	Working with large volumes of corrosive liquids (> 4 liters), small to large volumes of toxic corrosives, or work that creates a splash hazard ¹	Significant eye and skin damage, poisoning	Safety goggles and face shield Heavy chemical-resistant gloves Lab coat Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes. Chemical-resistant apron if a greater potential for splashing exists
<input type="checkbox"/>	<input type="checkbox"/>	Working with small volumes of organic solvents (< 4 liters).	Skin or eye damage, poisoning potential through skin contact	Safety glasses or goggles Chemical-resistant gloves. Lab coat. Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes.
<input type="checkbox"/>	<input type="checkbox"/>	Working with large volumes of organic solvents (> 4 liters), small to large volumes of very dangerous solvents, or work that creates a splash hazard ¹	Significant skin or eye damage; potential poisoning through skin contact; Fire	Safety goggles and face shield; Heavy chemical-resistant gloves; Lab coat. Chemical-resistant apron if a greater potential for splashing exists; Wear cotton or flame-retardant fabric lab coat (not synthetic) when there is potential for fire; if there is a significant fire potential, use flame-resistant coat such as Nomex. Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes.
<input type="checkbox"/>	<input type="checkbox"/>	Working with toxic or hazardous chemicals (solid, liquid, gas). ^{1, 2}	Eye or skin damage; potential poisoning through skin contact.	Safety glasses (goggles for larger quantities) Chemical-resistant gloves Lab coat. Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes.
<input type="checkbox"/>	<input type="checkbox"/>	Working with acutely/highly toxic chemicals (solid, liquid, gas). ^{1, 2}	Potential immediate and/or severe eye or skin damage or poisoning through skin contact.	Safety goggles, chemical-resistant gloves (upon review, double light nitrile may be determined appropriate for small quantities), chemical-resistant gloves for solids, lab coat. Evaluate need for gown and shoe covers. Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes.
<input type="checkbox"/>	<input type="checkbox"/>	Working with an apparatus with contents under pressure or vacuum ¹	Eye or skin damage	Safety glasses or goggles (add face shield for higher risk task), chemical-resistant gloves, lab coat (add chemical-resistant apron for higher risk task).
<input type="checkbox"/>	<input type="checkbox"/>	Working with air or water reactive chemicals or other reactive chemicals	Severe skin and eye damage; Fire	Work in inert atmosphere. Safety glasses or goggles; Chemical-resistant gloves; Lab coat; if there is a significant fire potential, use flame-resistant coat such as Nomex; Chemical resistant apron for higher risk tasks. Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes.

<input type="checkbox"/> <input type="checkbox"/>	Working with potentially explosive compounds (PECs)	Skin and eye damage due to splash or flying debris caused by detonation; Fire	Safety glasses/goggles with face shield; Chemical-resistant gloves; Lab coat; if there is a significant fire potential, use flame-resistant coat such as Nomex; Chemical-resistant apron for higher risk tasks; use a safety/blast shield. Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes.
<input type="checkbox"/> <input type="checkbox"/>	Working with engineered nanomaterials inside a fume hood ¹	Dermal exposure	Goggles, gloves, lab coat
<input type="checkbox"/> <input type="checkbox"/>	Working with dry engineered nanomaterials outside of the fume hood ¹	Inhalation exposure, dermal exposure	N95 or better respirator, goggles, gloves, lab coat, evaluate for disposable clothing
<input type="checkbox"/> <input type="checkbox"/>	Minor chemical spill cleanup.	Skin or eye damage, respiratory damage.	Safety glasses or goggles, appropriate chemical-resistant gloves, lab coat (consider chemical-resistant apron and boots or shoe covers). Keep Silver Shield gloves in the lab spill kit. Seek assistance if a respiratory hazard exists. Closed toed shoes that cover the feet. Long pants or skirt that reaches the top of the shoes.

Biological Hazards

Indicate if Activity Applies	Activity	Potential Hazard	Activity PPE
<input type="checkbox"/> <input type="checkbox"/>	Working with human blood, body fluids, tissues, or blood borne pathogens (BBP). ³	Exposure to infectious material	Safety goggles with face shield or facemask plus goggles for protection from splash, latex or nitrile gloves, lab coat or gown.
<input type="checkbox"/> <input type="checkbox"/>	Working with animal specimens (preserved and unpreserved).	Exposure to infectious material or preservatives.	Safety glasses or goggles for protection from splash or other eye hazard, 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.
<input type="checkbox"/> <input type="checkbox"/>	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, lab coat or gown.
<input type="checkbox"/> <input type="checkbox"/>	Manipulation of cell lines, viruses, bacteria, or other organisms classified as Biosafety Level 2, (BSL-2). ³	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.
<input type="checkbox"/> <input type="checkbox"/>	Manipulation of infectious material determined appropriate for work in a BSL2 facility using BSL3 practices (BSL2+).	Exposure to infectious materials with high risk of exposure by contact or mucous membranes.	Safety glasses or goggles for protection from splashes or other eye hazards, light latex or nitrile gloves (double), lab coat or disposable gown (preferred), N95 respirator (depending on the agent and activity; pre-use evaluation required).
<input type="checkbox"/> <input type="checkbox"/>	Manipulation of infectious materials classified as Biosafety Level 3 (BSL3).	Exposure to infectious materials with high risk of exposure, particularly through the inhalation route.	Safety glasses or goggles for protection from splashes or other eye hazards (not required if a PAPR is worn), light latex or nitrile gloves (double), full disposable gown, scrubs or Tyvek suit (preferred), respirator, shoe covers or dedicated shoes.
<input type="checkbox"/> <input type="checkbox"/>	Working with live animals (Animal Biosafety Level 1, ABL-1).	Animal bites, allergies	Safety glasses or goggles for protection from splash or other eye hazard, light latex, nitrile or vinyl gloves, lab coat or gown. Consider need for wire mesh glove
<input type="checkbox"/> <input type="checkbox"/>	Working with live animals (Animal Biosafety Level 2, ABL-2) ³	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 coat or gown. Consider need for wire mesh glove.

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.

Radiological Hazards

Indicate if Activity Applies
Yes No

Activity

Potential Hazard

Activity PPE

Working with solid radioactive materials or waste.

Cell damage, potential spread of radioactive materials.

Safety glasses, impermeable gloves, lab coat.

Working with radioactive 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 radiation producing equipment.

Cell damage.

Protective lead aprons and eyewear as appropriate.

Working with ultraviolet radiation.

Skin cancer, conjunctivitis, corneal damage, skin redness.

UV face shield and goggles, lab coat.

Working with infrared emitting equipment (i.e. glass blowing).

Cataracts, burns to cornea.

Appropriate safety goggles, lab coat.

Laser Hazards

Indicate if Activity Applies
Yes No

Activity

Potential Hazard

Activity PPE

Open Beam Hazards

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.

Laser safety glasses/goggles that provide sufficient protection specific to the laser wavelength(s), intensity and other use parameters used.

Viewing a Class 3R laser beam with magnifying optics (including eyeglasses).

Eye damage.

Laser safety glasses/goggles that provide sufficient protection specific to the laser wavelength(s), intensity and other use parameters used.

Working with a Class 3B laser open beam system with the potential for producing direct or specular reflections.

Eye damage, skin damage.

Laser safety glasses/goggles that provide sufficient protection specific to the laser wavelength(s), intensity and other use parameters used. Appropriate skin protection.

Working with a Class 4 laser open beam system with the potential for producing direct, specular, or diffuse reflections.

Eye damage, skin damage.

Laser safety glasses/goggles that provide sufficient protection specific to the laser wavelength(s), intensity and other use parameters used. Appropriate skin protection.

Non-Beam Hazards

Handling dye and other laser-related materials such as chemicals and solvents ¹

Adverse health effects due to toxicity from inhalation or skin absorption, explosion, fire

Safety glasses or goggles, heavy chemical-resistant gloves or double light nitrile gloves, lab coat (flame-resistant lab coat or coveralls for increased fire risk).

Laser high voltage supplies.

Electrocution.

Use properly grounded equipment and tools.

Physical Hazards

Select All That Apply <u>Yes</u> <u>No</u>	Activity	Potential Hazard	Activity PPE
<input type="checkbox"/> <input type="checkbox"/>	Working with cryogenic liquids.	Major skin, tissue, or eye damage.	Safety glasses or goggles for large volumes, impermeable insulated gloves, lab coat. Consider face shield.
<input type="checkbox"/> <input type="checkbox"/>	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.
<input type="checkbox"/> <input type="checkbox"/>	Working with very cold equipment or dry ice.	Frostbite, hypothermia.	Safety glasses, insulated gloves (possibly warm clothing), lab coat.
<input type="checkbox"/> <input type="checkbox"/>	Working with hot liquids, equipment, open flames (autoclave, Bunsen burner, water bath, oil bath).	Burns resulting in skin or eye damage. Fire.	Safety glasses or goggles for large volumes, insulated gloves (impermeable insulated gloves for liquids, steam), lab coat.
<input type="checkbox"/> <input type="checkbox"/>	Glassware washing. Working with or handling sharps.	Lacerations; exposures	Safety glasses or goggles, protective gloves (use heavier rubber gloves for glassware washing), lab coat. Evaluate cut-resistant gloves for sharps handling.
<input type="checkbox"/> <input type="checkbox"/>	Accessing electrical panels (Hazard Category 0) to reset tripped circuit breakers.	Arc flash, electrocution, electrical burns	Ear plugs, protective gloves (leather or natural rubber) safety glasses, leather shoes, long sleeve shirt, long pants
<input type="checkbox"/> <input type="checkbox"/>	Accessing electrical panels (Hazard Category 1) to reset tripped circuit breakers.	Arc flash, electrocution, electrical burns	Ear plugs, arc flash gloves, hard hat, fire resistant coveralls HRC2 or better safety glasses, leather shoes, long sleeve shirt, long pants.
<input type="checkbox"/> <input type="checkbox"/>	Accessing electrical panels (Hazard Category 2) to reset tripped circuit breakers.	Arc flash, electrocution, electrical burns	Ear plugs, arc flash gloves, hard hat, fire resistant coveralls HRC2 or better, safety glasses, leather shoes, long sleeve shirt, long pants, balaclava hood (meets NFPA 70E), face shield.
<input type="checkbox"/> <input type="checkbox"/>	Working with machinery that requires safeguarding of moving parts; rotating points of operation	Cuts and abrasions	Safety glasses
<input type="checkbox"/> <input type="checkbox"/>	Working with machinery that requires safeguarding of moving parts; non-rotating points of operation	Cuts and abrasions	Safety glasses, cut-resistant gloves
<input type="checkbox"/> <input type="checkbox"/>	Working with loud equipment, noises, sounds, or alarms, etc.	Potential ear damage and hearing loss.	Earplugs or ear muffs as necessary.

¹ 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.*

² Extremely dusty solids should be separately evaluated for the need to use respiratory protection.

³ Use a biosafety cabinet to minimize exposure. Activities that cannot be conducted inside the biosafety cabinet should be separately evaluated. For BSL-3 or ABL-3 activities, the PPE requirements will be addressed by the BSL-3 facility. Consult the UI Biosafety Manual or contact Haley Sinn at 5-9553 for additional requirements.

RECORD FOR PPE TRAINING

The following employees of _____ (department) received training in the following:

1. When PPE is necessary;
2. What PPE is required;
3. How to properly don, doff, adjust, and wear PPE;
4. The limitations of the PPE; and
5. The proper care, maintenance, useful life and disposal of the PPE.

<u>EMPLOYEE NAME</u>	<u>EMPLOYEE SIGNATURE</u>	<u>Date of Review</u>

As a part of this training, employees were informed of the personal protective equipment selected by this facility for their use. My signature and those of the employees listed above indicate each employee has demonstrated his/her understanding of this training.

(Signature of Trainer)

(Date)