COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

Environmental Health & Safety

Personal Protective Equipment (PPE) Hazard Assessment Tool for Laboratory Activities

Principal Investigator:_____UNI:_____
Person Completing Document:_____UNI:_____
Department:_____Building:_____
Affiliated Lab(s) & Support Area(s):_____

The PPE Hazard Assessment Tool is a complement to the Policy for Personal Protective Equipment in Research Laboratories (PPE Policy) and is designed to help identify potential hazards to laboratory personnel and assist in appropriate PPE selection. This document is to be used for all laboratory activities performed in Columbia University laboratories and laboratory support areas.

PPE selection should be based on known and/or reasonably anticipated risk(s) posed by hazardous materials used in the laboratory, in conjunction with the procedures, processes, tasks and equipment in which they are used. The hazard assessment must also take into consideration where the material will be used and the duration of use; all in consultation with the PI, Lab Supervisor or designated PPE Responsible Party. EH&S Research Safety Specialists are available to work directly with laboratory staff in completing a PPE Hazard Assessment and in consulting on specific issues, such as choosing the most appropriate chemical-resistant gloves.

Please note: The PPE Hazard Assessment does not supplant the use of administrative or engineering controls as primary methods to mitigate hazards encountered in the laboratory. PPE is your last line of defense and whenever feasible administrative and engineering controls must be applied before PPE selections are made.

As a general rule, proper work attire is required at all times in the laboratory. In accordance with the University's PPE Policy, shorts or short skirts, sandals or open-toed shoes must not be worn in the laboratory. Good laboratory practices require that personal clothing or the equivalent, such as scrubs, should cover all exposed skin. It is also important to avoid loose hair, dangling jewelry or clothing that may get caught in equipment or make incidental contact with hazardous materials. It is strongly recommended that laboratory personnel have a change of clothes and shoes at work to be used as needed.

The following are steps that must be taken to ensure proper PPE selection.

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

- Survey the laboratory to determine activities that may pose health or physical hazards.
- For each category in the attached checklist beginning on page 2 (Chemical, Biological, Radiological, and Physical) review the common laboratory activities listed and their associated hazards and recommended PPE.
- Check the box next to an activity performed by your laboratory personnel.

Chemical					
Select All That Apply	**Activity**	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
					Note that chemical-resistant gloves must be selected based on the specific chemical(s) used. See Chemical-Resistant Glove Information at the end of this document or http://www.ehs.columbia.edu/ppeNew.html
☐	Working with corrosive liquids with a ph > 2 or < 12.5	Eye or skin damage	Work with material on a bench top in a laboratory with adequate air exchanges or inside a certified fume hood lined with absorbent material.	Use solutions buffered as close to neutral as the protocol will allow.	• Safety glasses or goggles • Chemical resistant gloves • Lab coat
☐	Working with corrosive liquids with a ph < 2 or >12.5	Large surface area skin or eye damage, poisoning	Work with material on a bench top in a laboratory with adequate air exchanges or inside a certified fume hood lined with absorbent material.	Purchase pre-diluted acids. Use solutions buffered as close to neutral as the protocol will allow.	• Safety goggles and face shield • Corrosion- resistant gloves• Lab coat and chemical resistant apron

☐	Working with acutely toxic corrosive liquids including any amount of hydrofluoric acid and any concentration perchloric acid.	Large surface area skin or eye damage, poisoning.	Work with material in a certified acid resistant fume hood.	Purchase pre-diluted acids. Use solutions buffered as close to neutral as the protocol will allow. Follow University's policy for Hydrofluoric Acid and Chemical Fume Hood use.	• Safety goggles and face shield • Corrosion-resistant gloves • Lab coat and chemical resistant apron
☐	Working with small volumes (<1L) of organic solvents, oxidizers or non-acutely toxic liquids	Skin or eye damage; low poisoning potential through skin absorption, inhalation, and/or ingestion	Work with material on a bench top in a laboratory with adequate air exchanges or inside a certified fume hood lined with absorbent material.	Substitute with less hazardous chemicals when possible. Order prepared solutions.	• Safety glasses or goggles • Chemical resistant gloves • Lab coat
☐	Working with large volumes (>1L) of organic solvents, oxidizers or non-acutely toxic liquids	Major skin or eye damage; potential poisoning through skin absorption, inhalation, and/or ingestion	Work with material inside a certified fume hood lined with absorbent material.	Substitute with less hazardous chemicals when possible. Just in time ordering. Do not stockpile.	• Safety goggles and face shield • Chemical resistant gloves • Lab coat and chemical resistant apron.
☐	Working with pyrophoric liquids, air and/or water reactive liquids in any quantity	Skin or eye damage, flash fire hazards to skin, clothing and nearby combustible materials is significant	Work with material inside a certified fume hood or in an inert atmosphere glove bag or glove box	Follow the University's safe use of Pyrophoric reagents Guide tohttp://www.ehs.columbia.edu/pyrophorics.pdf	• Safety goggles without holes, face shield • Chemical resistant gloves • Fire resistant lab coat (such as Nomex). •
☐	Working with acutely toxic or hazardous chemicals including organic mercury compounds (solid or liquid)	Increased potential for eye or skin damage; increased potential for poisoning through skin absorption	Work with material on a bench top in a laboratory with adequate air exchanges or inside a certified fume hood lined with absorbent material. Work with material inside an inert atmosphere.	Substitute with less hazardous chemicals when possible.	• Safety goggles • Substantial chemical resistant gloves • Lab coat and gown

☐	Any quantity of potentially explosive material. (example: Nickel hydrazine perchlorate)	Detonation, flying debris, sign and eye damage, flash fire hazard, extreme pressure release, chemical splash and burns	Work with material inside a certified fume hood or glove box	Substitute with less hazardous chemicals when possible. Develop and follow laboratory established protocols & SOP's.	• Chemical resistant gloves, leather gloves may be required depending on the blast potential• Safety goggles without holes worn under a face shield • Fire resistant lab coat (such as Nomex).• Lexan or blast resistant shield
☐	Lab works with a chemical(s) that have an OSHA specific standards.	Various acute and systemic effects	Work with material inside a certified fume hood	Contact EH&S for Risk Assessment; Follow OSHA specific standard by contacting EH&S for assistance in developing and following lab specific SOP.	• Safety glasses or goggles • Chemical resistant gloves • Lab coat • Additional PPE to be determined after Risk Assessment and in consultation with EH&S.
☐	Lab has devices that contain elemental mercury.	Damage or injury to the brain and kidneys. Allergic reactions.	Because of the spill potential work with equipment on a bench top in a laboratory with adequate air exchanges.	Substitute mercury thermometers with alcohol thermometers. Please register device(s) with EH&S.	• Safety glasses or goggles • Chemical resistant gloves • Lab coat
Biological					
Select All That Apply	**Activity**	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
☐	Working with or human or primate blood, body fluids, unfixed tissue, cell lines, or blood borne pathogens (BBP)	Exposure to blood borne pathogens	Work in a certified biological safety cabinet; Use engineered sharps	Medical surveillance; Immunization and Chemoprophylaxis where possible. Follow BPP Exposure Control Plan.	• Safety goggles with face shield or facemask plus goggles• Nitrile gloves • Lab coat or gown
☐	Working with animal specimens (preserved and unpreserved)	Exposure to blood borne pathogens and chemical preservatives.	Work in a certified biological safety cabinet or fume hood when appropriate;	Medical surveillance	• Safety glasses or goggles • Nitrile gloves for unpreserved specimens; Appropriate chemical resistant glove for preserved specimens • Lab coat or gown
☐	Working with live animals (Animal Biosafety Level 1, ABSL-1)	Animal bites, allergies	Use Animal restraints; Use Engineered sharps	Develop & follow task specific SOPs	• Safety glasses or goggles • Nitrile, or vinyl gloves • Consider a need for wire mesh glove • Lab coat or gown

☐	Working with live animals (Animal Biosafety Level 2, ABSL-2)	Animal bites, exposure to infectious material, allergies	Work in a certified biological safety cabinet or fume hood when appropriate; Use engineered sharps	Medical surveillance. Substitute with attenuated or non-pathogenic agents.	• Safety glasses or goggles • Nitrile, or vinyl gloves; lab coat or gown • Consider need for wire mesh gloves.
☐	Working with live animals (Animal Biosafety Level 3, ABSL-3)	Animal bites, exposure to infectious material, allergies	Work in a certified biological safety cabinet; Use engineered sharps; Directional one pass air.	Medical surveillance. Enrollment into Respiratory Protection Program. EH&S at biosafety@columbia.edu.	• Safety glasses or goggles • Nitrile (doubled), or vinyl gloves; Tyvek coveralls or yellow gown; Consider mesh gloves; Disposable N95 respirator.
☐	Working with radioactive human blood, body fluids, or blood borne pathogens (BBP)	Cell damage, potential spread of radioactive contaminants, or potential BBP exposure	Work in a certified biological safety cabinet. Shielding may be required.	Medical surveillance. Refer to Standard operating Procedure for specific isotope. http://www.ehs.columbia.edu/RadiationInfoMC.html	• Safety glasses or goggles • Nitrile gloves • Lab coat or gown
☐	Working with recombinant DNA, cell lines, viruses, bacteria, or other agents as Biosafety Level 1 (BSL-1)	Eye or skin irritation	Use engineered sharps	Follow BSL Level 1 protocols. Register rDNA work with Institutional Biosafety Committee through RASCAL Appendix A. https://www.rascal.columbia.edu/	• Safety glasses or goggles •Nitrile gloves for broken skin or skin rash • Lab coat or gown
☐	Manipulation of recombinant DNA, viral vectors, cell lines, viruses, bacteria, or other agents classified as Biosafety Level 2 (BSL-2)	Exposure to infectious materials, particularly through broken skin or mucous membranes	Use engineered sharps	Medical surveillance. Follow BSL Level 2 Protocols. Register rDNA work with Institutional Biosafety Committee through RASCAL Appendix A. https://www.rascal.columbia.edu/	• Safety glasses or goggles • Nitrile gloves • Lab coat or gown
☐	Manipulation of potentially infectious material classified as Biosafety Level 2 facility with BSL-3 practices (BSL-2+)	Exposure to infectious materials with high risk of exposure by contact of mucous membranes	Work with material in certified biosafety cabinet	Contact EH&S at biosafety@columbia.edu for lab specific risk assessment. Medical surveillance. Do not use sharps per the no-sharps policy.	• Safety glasses or goggles for protection from splash or other eye hazard• Nitrile gloves (double)• Lab coat or disposable gown (preferred) • Surgical mask

☐	Manipulation of potentially infectious materials classified as Biosafety Level 3 (BSL-3)	Exposure to infectious materials with high risk of exposure, particularly through the inhalation	Work in a certified biological safety cabinet; Use engineered sharps; Directional one pass air.	Contact EH&S at biosafety@columbia.edu. Immunization; Do not use sharps per the no-sharps policy. Enrollment in Respiratory Protection Program.	• Safety glasses or goggles for protection from splash or other eye hazard• Nitrile gloves (double) • Rear closing disposable gown or Tyvek suit (preferred) • Respirator (N-95 or PAPR) • Shoe covers or dedicated shoes
☐	Working with toxins of biological origin	Exposure to toxic material through ingestion, absorption, or inhalation of aerosols or powders; exposure to mucous membranes; percutaneous injury or needle stick	Work with material in certified biosafety cabinet. Use Engineered sharps	Immunizations. Follow University policies where applicable. Work with EH&S to develop and follow lab specific SOP.	• Safety glasses or goggles • Nitrile gloves • Lab coat or gown
☐	Working with FACS (Fluorescence Activated Cell Sorting) equipment	Exposure to aerosols	Work with material in certified biosafety cabinet	Aerosol Management System. Proper characterization of samples/requisition form; Only use fixed agents; Use a dedicated sorting room.	• Safety glasses or goggles • Nitrile gloves • Lab coat or gown

Radiological					
Select All That Apply	**Activity**	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
☐	Working with sealed radioactive sources	Cell damage; Potential spread of radioactive materials.	Work with material in a lab or lab support area with adequate air exchanges. Shielding may be required.	Leak test sources every 6 months; Participate in dosimetry program; Refer to Standard Operating procedures for specific isotopes. http://www.ehs.columbia.edu/RadiationInfoMC.html	• Safety glasses • Nitrile gloves • Lab coat

☐	Working with unsealed radioactive materials (including RAM waste)	Cell damage, potential spread of radioactive materials	Work with material on a bench top in a laboratory with adequate air exchanges. Work with volatile isotopes in a certified fume hood lined with absorbent materials. Shielding may be required.	Participate in dosimetry & bioassay programs, where applicable. Survey areas for contamination before, during and after work is completed. Refer to Standard operating Procedure for specific isotope. http://www.ehs.columbia.edu/RadiationInfoMC.html	• Safety glasses or goggles • Chemical resistant gloves (select gloves for the applicable chemical hazard) • Lab coat
☐	Working with X-ray emitting equipment	Cell Damage	Use interlocks	Participate in dosimetry program. Equipment should be tested annually.	Standard lab attire • Lab coat
☐	Working with ultraviolet radiation	Conjunctivitis, corneal damage, skin redness	Use light-tight cabinets and enclosures (including dedicated rooms) enclosed with opaque materials or UV radiation absorbing glass and plastic shielding and fail-safe interlocks.	Warning signs, lights and labeling of equipment that emit UV radiation. Develop & follow task specific SOP	• UV face shield and goggles • Lab coat • UV protective gloves •
☐	Working with infrared emitting equipment (i.e.-glass blowing)	Corneal burns, cataracts, conjunctivitis, erythema.	Work behind safety barriers.	Warning signs, lights and labeling of potential equipment that emit infrared radiation. Develop & follow task specific SOP. Use pre-manufactured equipment.	• Shaded (IR filter) glasses, goggles, or visor appropriate to the wavelength(s) and to potential for exposure. • Lab coat
Laser					
Select All That Apply	**Activity**	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended 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	Use barriers, curtains, and beam stops; closed doors when LASER is in use; Ground Fault Interrupters.	Restricted access; procedural controls; LASER "on" sign; restricted operation; warning signs and labels; Do not wear metallic objects	• Appropriate protective eyewear, wavelength and optical density based on individual beam parameters

☐	Open Beam - Viewing a Class 3R laser beam with magnifying optics (including eyeglasses)	Eye damage	Use barriers, curtains, and beam stops; closed doors when LASER is in use; Ground Fault Interrupters.	Restricted access; procedural controls; LASER "on" sign; restricted operation; warning signs and labels; Do not wear metallic objects	• Appropriate protective eyewear, wavelength and 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	Use barriers, curtains, and beam stops; closed doors when LASER is in use; Ground Fault Interrupters.	Restricted access; procedural controls; LASER "on" sign; restricted operation; warning signs and labels; Do not wear metallic objects	• Appropriate protective eyewear, wavelength and optical density based on individual beam parameters•
☐	Non-Beam - Handling dye laser materials, such as powdered dyes, chemicals, and solvents	Cancer, explosion, fire	Prepare dyes in a certified chemical fume hood.	Leak test LASER; Use secondary containment under pumps and reservoirs	• Gloves • Safety glasses • Flame resistant lab coat or coveralls
☐	Non-Beam - Maintaining and repairing power sources for large Class 3B and Class 4 laser systems	Electrocution, explosion, fire	• Install Ground Fault Interrupters (GFI) in laboratories in which lasers are used. • Provide enclosures to prevent accidental contact with terminals, cables, and exposed electrical contacts. Provide a grounded metal enclosure that is locked/interlocked.	• Restricted access; procedural controls; LASER "on" sign; restricted operation; warning signs and labels; Do not wear metallic objects• Never handle electrical equipment when hands, feet, or body are wet or perspiring or when standing on a wet floor• Remove nearby flammable/combusti-ble materials	• Electrical isolation mat • Flame resistant lab coat or coveralls
☐	Enclosed Beam - Using a Class 1 device housing a Class 3B or Class 4 enclosed or embedded laser with the potential for beam.	Eye damage, skin damage	Use protective housing; interlocked housing	Do not remove housing	• Appropriate protective eyewear, wavelength and optical density based on individual beam parameters • Appropriate skin protection

Physical					
Select All That Apply	**Activity**	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
☐	Working with cryogenic liquids	Major skin, tissue, or eye damage	Store and work with material in a laboratory or laboratory support areas with adequate air exchanges.	Oxygen monitor if greater than 60 gallons of liquid nitrogen present.	• Safety glasses or goggles for large volumes • Heavy impermeable insulated gloves; lab coat • Consider a face shield
☐	Removing freezer vials from liquid nitrogen	Extreme cold can result in frostbite. Rapid expansion of liquid cryogens can rupture vials, releasing the contents or creating a projectile. Vials may explode upon rapid warming; cuts to face/neck and frostbite to hands	Store and work with material in a laboratory or laboratory support areas with adequate air exchanges. • Always use vials with a gasket (O-ring) designed for safe liquid storage. • Remove sample vials to an enclosure, such as a certified biological safety cabinet or fume hood for thawing.	Move vials from liquid phase storage to vapor phase storage for 12-24 hours to allow any liquid cryogenics in the sample vials to evaporate safely.	• Face shield• Impermeable insulated gloves• Lab coat
☐	Working with any compressed gas cylinders	Uncontrolled pressure release can cause personal injury or property damage	Store and work with material in a laboratory or laboratory support areas with adequate air exchanges. Secure compressed gas cylinders to a wall or bench by using a mounting bracket.	Keep regulators in good condition; cap cylinders that are not in use or attached to equipment; keep upright	• Safety glasses should be worn when operating a regulator or when using compressed air for cleaning/dusting
☐	Working with hazardous compressed gas cylinders (flammable, toxic, highly toxic, corrosive, air reactive, pyrophoric, those without good physiological warning properties)	Uncontrolled pressure release can cause personal injury or property damage; Fire or explosion; poisoning; severe respiratory, eye, and skin irritation.	Store and work with material in a laboratory or laboratory support areas with adequate air exchanges. Secure compressed gas cylinders to a wall or bench mounted bracket; Use and store in a certified chemical fume hood or vented gas cabinet.	Purchase the lowest concentration of the gas as possible; Keep flammable gases away from ignition sources. Keep regulators in good condition; cap cylinders that are not in use or attached to equipment; keep upright. Use a gas detection and alarm system.	• Safety glasses should be worn when operating a regulator or when using compressed air for cleaning/dusting

☐	Working with very cold equipment or dry ice	Frostbite, Hypothermia	Work with material or equipment in a laboratory or laboratory support areas with adequate air exchanges. Allow Dry Ice to sublimate in certified fume hood or glove box	Develop & follow task specific SOP. • Do not store dry ice in cold rooms	• Safety glasses or goggles for large volumes • insulated gloves (possibly warm clothing) • Lab coat
☐	Working with hot liquids, equipment, or open flames (autoclave, Bunsen burners, water or oil bath)	Burns resulting in skin or eye damage	Work with material in a laboratory or laboratory support areas with adequate air exchanges.	Develop & follow task specific SOPs • Use & maintain equipment as per manufactures guide. • Do not use mercury containing thermometers • Do not heat liquids above flash point.	• Safety glasses or goggles for large volumes• Insulated gloves (impermeable insulated gloves for liquids, steam)• Lab coat
☐	Glassware washing	Lacerations	Work in a laboratory or laboratory support areas with adequate air exchanges.	Develop & follow task specific SOPs Use plastic disposable ware when possible.	• Heavy rubber gloves • Lab coat
☐	Working with loud equipment, noises, sounds, or alarms, etc.	Potential ear damage and hearing loss	Lubricate machinery and equipment • Place a barrier between the noise source and employee (i.e. sound walls or curtains) • Consider vibration isolation system.	Develop & follow task specific SOPs Limit workers' exposures through techniques such as using job-rotation schedules that reduce the time an individual may be exposed.•Operating noisy machines during shifts when fewer people are exposed. Restricting worker presence to a suitable distance away from noisy equipment.	• Earplugs or ear muffs in consultation with EH&S Occupational Safety
☐	Laboratory has autoclave	Burns; cuts	Work in a laboratory or laboratory support areas with adequate air exchanges. • Ensure that autoclave door is closed and locked.	Follow the task specific SOPs provided by the manufacturer. • Task specific training • Never exceed the maximum operating temperature.	• Thermal gloves • Lab coat • Protective eyewear when loading and unloading • Rubber Apron •

☐	Laboratory uses a centrifuge	Cuts; ocular hazards	Work with equipment in a laboratory or laboratory support area with adequate air exchanges. • Use door latch.	Ensure door latch is in working order before using centrifuge. Inspect tubes for cracks and ensure that all caps are closed; Only open centrifuge after rotor has stopped • Maintain equipment as per manufactures guide.	• Appropriate gloves • Eyewear • Lab coat
☐	Laboratory has a sonicator	Hearing damage; ingestion of aerosols	Work with equipment in a laboratory or laboratory support areas with adequate air exchanges. Use barriers, vibration isolation system or enclosures.	• Allow sonicated material to sit for 5 minutes to prevent ingestion of aerosols. • Maintain equipment as per manufactures guide.	Hearing protection as determined in consultation with EH&S Occupational Safety.
Nanomaterial (Structures with at least one dimension in approximately the 1-100 nanometer range)					
Select All That Apply	**Activity**	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
☐	Handling nanomaterial in a bound substrate or matrix; water-based liquid suspensions or gels. Non-destructive handling of nanomaterial. No potential for airborne release when handling.	Inhalation, ingestion, ocular, and dermal exposure are possible. Acute irritation and chronic respiratory illness are possible.	• Local exhaust ventilation • Certified chemical hood (with HEPA-filtered exhaust) • HEPA-filtered exhausted enclosure (Glove box) • Biological safety cabinet class II type A1, A2, vented via thimble connection, or B1 or B2	• Maintain a clean work area by using wet wiping method or vacuum with HEPA filtration after each use. • Limit workers' exposures through techniques such as using job-rotation schedules that reduce the time an individual may be exposed. • Develop and follow task specific SOP.	• Safety glasses with side shields • Laboratory coat • Disposable gloves to match any associated chemical hazards

☐	Handling nanomaterial in powder of pellet form, in volatile liquid suspensions or gels. Heating materials, stirring or agitating liquid suspensions or gels, weighing or transferring powders or pellets. Moderate potential for release into air during handling.	Inhalation, ingestion, ocular, and dermal exposure are possible. Acute irritation and chronic respiratory illness are possible.	• Local exhaust ventilation • Certified chemical hood (with HEPA-filtered exhaust) • HEPA-filtered exhausted enclosure (Glove box) • Biological safety cabinet class II type A1, A2, vented via thimble connection, or B1 or B2	• Maintain a clean work area by using wet wiping method or vacuum with HEPA filtration after each use. • Limit workers' exposures through techniques such as using job-rotation schedules that reduce the time an individual may be exposed. • Develop and follow task specific SOP.	• Safety goggles• Laboratory coat made from non-woven fibers• Disposable shoe covers • Disposable gloves to match any associated chemical hazards
☐	Generation or manipulation nanomaterial in a powder or gaseous phase with high potential for airborne release.	Inhalation, ingestion, ocular, and dermal exposure are possible. Acute irritation and chronic respiratory illness are possible.	• Glove box or other sealed enclosure with HEPA-filtered exhaust. • Appropriate equipment for monitoring toxic gas (e.g., CO)	• Maintain clean work area use wet wiping method or vacuum with HEPA filtration after each use. • Limit workers' exposures through techniques use job-rotation schedules that reduce the time an individual may be exposed. • Develop and follow task specific SOP.	• Safety goggles• Laboratory coat made from non-woven fibers• Disposable shoe covers • Disposable gloves to match any associated chemical hazards
Shop					
Select All That Apply	**Activity**	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
☐	Laboratory has machinery where work performed on material, such as cutting, shaping, boring or forming of stock.	Cut or entrapment hazard. Damage to eye due to flying debris.	Use machine guarding and locate emergency stop.	Must comply with Academic Machine Shop Policy and training requirements. Loose hair, jewelry, ID badges and loose clothing must be secured to prevent entanglement.	PPE that is form fitting - no work gloves. Eye protection, hearing protection where necessary.

☐	Laboratory has machinery with components which transmit energy to the part of the machine performing work. These components include flywheels, pulleys, belts, connecting rods, couplings, cam, spindles, chains, cranks and gears.	Entrapment and/or entanglement hazard. Damage to eyes due to flying debris.	Use machine guarding and locate emergency stop.	Must comply with Academic Machine Shop Policy and training requirements. Loose hair, jewelry, ID badges and loose clothing must be secured to prevent entanglement.	PPE that is form fitting - no work gloves. Eye protection, hearing protection where necessary.
☐	All parts of the machine moves while the machine is in operation. This can include reciprocating, rotating & transverse moving parts, as well as feed mechanisms and auxiliary parts of the machine.	Entanglement and/or entrapment hazard.	Use machine guarding and locate emergency stop.	Must comply with Academic Machine Shop Policy and training requirements. Loose hair, jewelry, ID badges and loose clothing must be secured to prevent entanglement.	PPE that is form fitting - no work gloves. Eye protection, hearing protection where necessary.
☐	Laboratory has powered hand tools, such as drill or powdered hand saw.	Laceration hazard; electrical hazard; potential eye damage due to flying debris or tool parts.	Use safety shields.	Inspect power cord prior to use; Unplug when not in use and when changing bits and blades. Must comply with Academic Machine Shop Policy and training requirements.	Protective eyewear. Cut proof gloves when appropriate.

Step 2: Specify Unique or Laboratory Specific Activities

If your laboratory conducts any additional or unique activities that are not listed above, identify the potential hazards and appropriate PPE, then add these activities to the Unique or Laboratory-Specific Activities section below. If a laboratory activity is similar to, but somewhat different than, one of the common activities listed; include it in this section as well. Slight variations in a process or procedure can present personnel with different and/or increased hazards.

	Procedure/Task Activity Description	Location Building & Room(s)	Potential Hazard(s)	Recommended PPE
A.				
B.				
C.				
D.				

PPE Selection Adjustments

Please note this document is intended to address the PPE requirements for the vast majority of research activities at Columbia University, however, there will likely be laboratory-specific scenarios in which the standard guidance will need to be adjusted to accommodate specific laboratory needs. If the PI or PPE Responsible Party deems it appropriate to apply PPE requirements for a particular procedure, process, task or equipment that differ from the standard selections determined by the initial PPE Hazard Assessment, whether more protective or less protective, please indicate these adjustments below. PPE adjustments must be accompanied by a written explanation of need for and appropriateness of the adjustment, with particular emphasis on how adequate protection will be assured.

	Procedure/Task Activity Description	Location Building & Room(s)	PPE Adjustment (Upgrade or Downgrade)	Basis for PPE Adjustment
A.				
B.				
C.				
D.				

Step 3: Specify Glove Selections for Specific Chemical Hazards

Determine chemical handling activities that require a specific type of glove material to protect from chemical exposure. Not all glove materials offer equal protection. For this section, select more commonly used chemicals (corrosives, organic solvents, toxic chemicals) or particularly hazardous chemicals (carcinogens, mutagens, reproductive hazards, etc.). List the chemical, the work activity and the specific glove type.

NOTE: Use the space below to document glove selections for specific chemical hazards found in the research laboratory.

	Chemical	Procedure/Task Activity Description	Location Building & Room(s)	Glove Type
A.	Example: Formaldehyde (HCHO)	Tissue processing with potential for skin contact with liquid formaldehyde solution	HHSC 1120 & 1121	Nitrile, neoprene or butyl rubber; light gloves may be used for activities with incidental contact; a heavier glove is recommended for moderate or greater contact.
B.				
C.				
D.				

Attach additional page(s) if necessary

If you are unable to submit the document electronically by clicking the submit button, please save a copy of the edited PPE Hazard Assessment Tool to your desktop and email the document to labsafety@columbia.edu as an attachment.

Reset Form Submit