WASHINGTON STATE UNIVERSITY HEALTH SCIENCE CAMPUS LABORATORY WORKER PERSONAL PROTECTIVE EQUIPMENT RISK ASSESSMENT TOOL

Per the WSU Laboratory Safety Manual, full length pants (or equivalent) and closed-toe/closed-heel shoes must be worn at all times by all individuals who are occupying or entering a laboratory or technical area. NOTE: Tights and pantry hose are considered undergarments.

ADJACENT AREA GENERAL GUIDELINES

The distance (radius) for the adjacent area depends on the material hazards, the lab activity, and the lab configuration. Laboratories can increases distances according to their unique situation. Suggested distances are:

For pipetting small volumes (10 microliters) of acute toxins,
the hazardous zone is 1 meter

For pipetting small volumes (1 liter) of corrosive solutions,
the splash zone is 2 meters

For working with modest volumes (4 liters) of flammable liquid,
the flash fire area is 3 meters

For working with materials under pressure,
the hazardous zone is 10 meters

For working with explosives, the danger zone is
the entire closed lab or approximately 1/3 of the open laboratory

Remember: Engineering controls are not PPE.
Fume hoods, glove boxes, biosafety cabinets, shielding, and other engineering controls are not covered in the PPE risk assessment tool

Activity Performed	Chemical Hazards			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Working with small volumes (<4 L) of corrosive liquids or solids	• Eye or skin damage • Splash hazard (low probability)	• Safety glasses • Chemical-resistant gloves • Lab coat	• Safety glasses • Lab coat
☐	Working with large volume (>4L) of corrosive liquids or solids	• Eye or skin damage • Splash hazard (high probability)	• Safety glasses • Chemical-resistant gloves • Lab coat • Chemical resistant apron	• Safety glasses • Lab coat
☐	Working with corrosive or acutely toxic liquids or other materials which create a splash hazard	• Eye or skin damage • Poisoning	• Safety goggles • Chemical-resistant gloves • Lab coat • Chemical resistant apron	• Safety glasses • Lab coat
☐	Working with small volumes (< 1 L) of flammable liquids/material when no reasonable ignition sources are present	• Fire • Eye or skin damage	• Safety glasses • Chemical-resistant gloves • Lab coat	• Safety glasses • Lab coat
☐	Working with large volumes (>1 L) of flammable solvents or materials	• Fire • Major eye or skin damage	• Lab coat (Flame resistant, NFPA 2112) • Chemical-resistant gloves (inner) • Flame-resistant gloves (outer) • Safety glasses	• Safety glasses • Lab coat
☐	Working with any quantity of flammable liquids/material where there is a risk of ignition or flammable vapors are present	• Fire • Major eye or skin damage	• Lab coat (Flame resistant, NFPA 2112) • Chemical-resistant gloves (inner) • Flame-resistant gloves (outer) • Safety glasses	All personnel in room are considered adjacent • Safety glasses • Lab coat (Flame resistant, NFPA 2112)

Activity Performed	Chemical Hazards (cont.)			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Working with toxic or hazardous chemicals including GHS H301, H302, H311, H312, H331, and H332	• Spill, splash, ingestion, inhalation, absorption • Immediate health risk	• Safety glasses or goggles for large volumes • Lab coat • Chemical-resistant gloves	• Safety glasses • Lab coat
☐	Working with acutely toxic chemicals (GHS H300, H310, H330)	• Spill, splash, ingestion, inhalation, absorption • Major immediate health risk	• Safety goggles • Chemical-resistant gloves • Lab coat • Chemical resistant apron	• Safety glasses • Lab coat
☐	Working with pyrophoric (air reactive) chemicals that when in contact with air release flammable gases (CHS H25x and H26x)	• Fire • Major eye or skin damage	Work in an inert atmosphere when possible. For work outside a glove box: • Safety glasses • Face shield • FR rated outer gloves • Chemical resistant inner gloves • Lab coat (Flame resistant, NFPA 21112)	All personnel in room are considered adjacent • Safety glasses • Lab coat (Flame resistant, NFPA 2112)
☐	Working with potentially explosive chemicals (e.g. nitrates, perchlorates, azides, nitrites, etc.)	• Splash, detonating, flying debris • Skin and eye damage • Fire	• Safety glasses • Chemical-resistant gloves • Lab coat (Flame resistant, NFPA 21112)	All personnel in room are considered adjacent • Safety glasses • Lab coat (Flame resistant, NFPA 2112)
☐	Working with known or suspect human carcinogens (GHS H350, H351)	• Splashes, spills, ingestion, inhalation, absorption • High hazard cancer causing agents	• Safety glasses • Chemical-resistant gloves • Lab coat	• Safety glasses • Lab coat
☐	Working with reproductive toxins (GHS H340, H341, H350, H351)	• Splashes, spills, ingestion, inhalation, absorption • Agents that affect reproductive capabilities, cause mutation and adversely affect fetal development	• Safety glasses • Chemical-resistant gloves • Lab coat	• Safety glasses • Lab coat

Activity Performed	Chemical Hazards (cont.)			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Working with engineered nanomaterials	• Inhalation exposure • Dermal exposure	• Chemical splash goggles • Chemical-resistant gloves • Lab coat	All personnel in room are considered adjacent • Safety glasses • Lab coat
☐	Minor chemical spill cleanup	• Skin or eye damage • Respiratory damage	• Safety glasses • Chemical-resistant gloves • Shoe covers • Chemical-resistant apron • Lab coat	• Safety glasses • Lab coat
N/A	Major chemical spill	• Multiple hazards	Call EH&S and 911	Evacuate Lab

Activity Performed	Physical Hazards			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Working with cryogenic liquids	• Major skin, tissue, or eye damage	• Safety glasses (chemical splash goggles for large volumes) • Face shield • Cryogenic protective gloves • Lab coat	• Safety glasses • Lab coat
☐	Working with very cold equipment, dry ice, or liquid nitrogen	• Frostbite, hypothermia	• Safety glasses • Cryogenic protective gloves • Lab coat (possibly warm clothing)	• Safety glasses • Lab coat
☐	Removing sealed vials from liquid nitrogen	• Vials may explode upon rapid warming • Cuts to face/neck and frostbite to hands	• Safety glasses • Face shield • Cryogenic protective gloves • Lab coat	N/A
☐	Working with scalding liquids or hot equipment (e.g., autoclave, water bath, oil bath)	• Burns resulting in skin or eye damage	• Safety glasses (chemical splash goggles for large volumes) • Thermal protective gloves (impermeable insulated gloves for liquids and steam) • Lab coat	• Safety glasses • Lab coat

Activity Performed	Physical Hazards (cont.)			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Glassware washing	• Laceration • Chemical splash	• Safety glasses • Chemical-resistant gloves • Lab coat	N/A
☐	Working with loud equipment, noises, sounds, alarms, etc.	• Potential ear damage and hearing loss	• Hearing protection (consult EH&S for SNR factor needed)	• Hearing protection (consult EH&S for SNR factor needed)
☐	Working with a centrifuge	• Imbalanced rotors can lead to broken vials, cuts, exposure	• Safety glasses • Chemical-resistant gloves • Lab coat	N/A
☐	Working with a sonicator	• Ear damage • Chemical or biological splash hazard	• Safety glasses • Chemical-resistant gloves • Hearing protection (consult EH&S for SNR factor needed) • Lab coat	• Hearing protection (consult EH&S for SNR factor needed)
☐	Working with sharps (e.g., needles, razor blades)	• Cuts • Biohard exposure	• Safety glasses • Cut resistant gloves (large blades) • Lab coat	N/A
☐	Working with an apparatus containing materials under pressure or vacuum	• Eye or skin damage	• Safety glasses • Face shield (for high risk activities) • Chemical-resistant gloves • Chemical-resistant apron (for high risk activities) • Lab coat	• Safety glasses • Lab coat

Activity Performed	Biological Hazards			
	☐ **The laboratory has a BAF that addresses all of these items. BSL-2+ work cannot be performed at WSU-Spokane**			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Working with human or non-human primate blood, body fluids, tissues, cells or other potentially infectious material (OPIM) which may contain human blood borne pathogens (BBP)	• Exposure to infections materials	• Eye and mucous membrane protection (as appropriate for operation) • Disposable gloves • Disposable lab coat impervious to fluids (large volumes)	• Safety glasses • Lab coat

Activity Performed	Biological Hazards (cont.)			
	☐ The laboratory has a BAF that addresses all of these items. BSL-2+ work cannot be performed at WSU-Spokane			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Working with microbial agents (bacteria, virus, parasites, yeast, fungi, prions), recombinant DNA and/or biological materials (cells, tissue, fluids) exposed to or likely to contain Risk Group 1 microbial agents or recombinant DNA (BSL-1)	• Eye irritation • Exposure of those who may have personal health issues to infectious materials which make them more susceptible to infection • Cross contamination of animals or extra-laboratory areas	• Safety glasses • Disposable gloves • Lab coat	• Safety glasses • Lab coat
☐	Working with microbial agents , recombinant DNA and/or biological materials (cells, tissues, fluids) exposed to or likely to contain Risk Group 2 microbial agents or recombinant DNA (BSL-2)	• Exposure to infectious materials, particularly through broken skin or mucous membranes	• Safety glasses • Double layer of disposable gloves • Lab coat	• Safety glasses • Lab coat
☐	Working with microbial agents, recombinant DNA and/or biological materials (cells, tissues, fluids) exposed to or likely to contain Risk Group 2 microbial agents or recombinant DNA for which Biosafety Level 3 practices are required (BSL-2+)	• Exposure to infectious materials with high risk via contact with skin or mucous membranes and other potential routs of entry • Increased consequences of exposure	Not possible at WSU Spokane	Not possible at WSU Spokane

Activity Performed	Radiological Hazards			
	☐ This laboratory does not work with any radiological hazards. Skip to the next section			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Working with unsealed radioactive materials including generally licensed radioactive material or devices (e.g., uranyl acetate, uranyl nitrate, thorium nitrate)	• Cell damage • Potential spread of radioactive materials	• Safety glasses • Chemical-resistant gloves • Lab coat	• Safety glasses • Lab coat

Activity Performed	Radiological Hazards (cont.)			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Working with unsealed radioactive materials in hazardous chemicals (corrosives, flammables, liquids, powders, etc.)	• Cell damage • Potential spread of radioactive materials • Specific chemical hazards	• Safety glasses (chemical splash goggles for splash hazards) • Chemical-resistant gloves • Lab coat	• Safety glasses • Lab coat
☐	Working with sealed radioactive sources or devices containing sources of radioactive materials (e.g., gas chromatographs/electron capture detectors, static elimination, etc.)	• If sealed source is compromised due to removal from equipment or physical abuse: cell damage, potential spread of radioactive materials	• PPE is not necessary under normal operating conditions	N/A

Activity Performed	Laser Hazards			
	☑ **This laboratory does not work with any laser hazards. Skip to the next section**			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual 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	• Optical density and wavelength specific safety glasses based on individual beam parameters	All personnel in room are considered adjacent • Optical density and wavelength specific safety glasses based on individual beam parameters
☐	Open Beam - viewing a Class 3R laser beam with magnifying optics	• Eye damage	• Optical density and wavelength specific safety glasses based on individual beam parameters	N/A
☐	Open Beam - working with a Class 3B laser open beam system with the potential for producing direct or specular reflections	• Eye damage	• Optical density and wavelength specific safety glasses based on individual beam parameters • Lab coat or appropriate clothing	All personnel in room are considered adjacent • Optical density and wavelength specific safety glasses based on individual beam parameters

Activity Performed	Laser Hazards (cont.)			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☐	Open Beam - working with a Class 4 laser open beam system with the potential for producing direct, specular or diffuse reflections	• Eye damage • Skin damage	• Optical density and wavelength specific safety glasses based on individual beam parameters • Lab coat or appropriate clothing	• Optical density and wavelength specific safety glasses based on individual beam parameters • Lab coat or appropriate clothing
☐	Non-Beam - handling dye laser materials such as dyes, chemicals and solvents.	• Cancer • Explosion or fire	• Gloves • Safety glasses • Lab coat (flame-resistant, NFPA 2112) or coveralls	• Safety glasses • Lab coat
☐	Non-Beam - maintaining and repairing power sources for large Class 3B and Class 4 lasers	• Electrocution • Explosion or fire	• Electrical isolation mat • Electrical protection lab coat (NFPA 70E) or coveralls	N/A
☐	Enclosed Beam - using a Class 1 device housing a Class 3B or Class 4 enclosed or embedded laser with the potential for beam exposure during a Service Event	• Eye damage • Skin damage	• Optical density and wavelength specific safety glasses based on individual beam parameters • Lab coat or appropriate clothing	All personnel in room are considered adjacent • Optical density and wavelength specific safety glasses based on individual beam parameters

Activity Performed	Non-Ionizing Radiation Hazards			
	☐ **This laboratory does not work with any non-ionizing radiation hazards. Skip to the next section**			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
☑	Working with sources of ultraviolet radiation (e.g., uv lights, gel imagers)	• Conjunctivitis • Corneal damage • Skin redness	• UV face-shield • Gloves • Lab coat	Adjacent individuals have direct line of site: • UV face-shield • Lab coat
☐	Working with infrared emitting equipment (e.g., glass blowing)	• Cataracts • Burns to the cornea	• Appropriately shaded glasses • Lab coat	Adjacent individuals have direct line of site: • Appropriately shaded glasses • Lab coat

Activity Performed	Unique or Lab Specific Hazards			
	☐ This laboratory does not work with any unique or lab specific hazards. Skip to the next section If this laboratory conducts any additional or unique activities that are not listed above, identify the potential hazards and appropriate PPE.			
	Activity in Lab	**Potential Hazards**	**Active Researcher PPE**	**Adjacent Individual PPE**
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PPE RISK ASSESSMENT TRAINING DOCUMENTATION

I certify that I have read the PPE Risk Assessment and will comply with the requirements.

Name	Initials	Date