General Laboratory PPE Assessment Tool

Scope

This document is intended to aid professors and lab mangers in selecting appropriate PPE for tasks and areas in the laboratory per section 4.2 of the U of T "Lab Coat Guidelines". *Note that all activities shown below assume that legs are covered to the socks and shoes that cover the toes and foot are worn.* The table contains a partial list of activities with recommended PPE. The professor or lab manager can use these recommendations to complete the right hand column with the PPE that is required for the specific tasks conducted in the lab. Note that the lab specific PPE can take into account mitigating factors such as microliter quantities, low concentrations, use of glove boxes and other factors that may inherently reduce the risk of a particular activity. Conversely an exacerbating factor like unusually large quantities or an unlisted hazard such as the use of a pressure vessel may cause the specific PPE to exceed the recommendation. PI's should train lab members on the "Required PPE".

Please note that this document does not forego the responsibility to adhere to specific obligations contained in laws, regulations and applicable University of Toronto Programs such as but not limited to: the Occupational Health and Safety Act, Human Pathogens and Toxins Act, UofT Radiation Policies and Procedures Manual etc. If you have queries regarding compliance for your lab please contact your Health and Safety Officer or ehs.office@utoronto.ca.

Please post this document prominently in the lab as applicable.

Activity	Risk Mitigated	Recommended PPE for Direct Use	Recommended PPE for Bystander	Applies? (check) YES	NO	Lab Specific PPE required
Use of organic* and flammable solvents 5ml to 4L.	Local skin absorption of solvent or solute, burns in case of flammable ignition, fires, inhalation of solvent vapours.	100% cotton lab coat, safety glasses and gloves. Use in fume hood.	Lab coat, safety glasses.			

Activity	Risk Mitigated	Recommended PPE for Direct Use	Recommended PPE for Bystander	Applies? (check) YES	NO	Lab Specific PPE required
Use of flammable solvents >4L (Note does not include 4L supplier bottle).	Whole body skin absorption of solvent, severe burns in case of flammable ignition, fires, inhalation of solvent vapours.	Nomex lab coat, face shield, heavy weight gloves.	Lab coat, safety glasses.			
Use of WHMIS corrosives. Acids and bases. Typically pH<2 or >11.5.	Acid burns to eyes/skin.	Any non-disposable lab coat, gloves and goggles or face shield.	Lab coat, safety glasses.			
Use of phenol solutions.	Severe deep burns to skin/eyes.	Double nitrile gloves with frequent changes (or butyl/Viton), lab coat, face shield.	Lab coat, safety glasses.			
Use of WHMIS irritants.	Irritation of eyes or skin.	Any non-disposable lab coat, safety glasses and gloves.	Lab coat, safety glasses.			
Use of pyrophorics and other highly reactive	Severe burns to skin or eyes, ignition of nearby flammables/ combustibles.	Nomex lab coat, face shield, gloves.	Lab coat, safety glasses.			

Activity	Risk Mitigated	Recommended PPE for Direct Use	Recommended PPE for Bystander	Applies? (check) YES	NO	Lab Specific PPE required
Use of non-flammable organic* solvents >4L.	Whole body skin absorption of solvent/solute, inhalation of solvent vapours.	Any non-disposable lab coat, face shield, heavy weight gloves.	Lab coat, safety glasses.			
Use of cryogenic liquids <100ml.	Frostbite, eye damage.	Any non-disposable lab coat, nitrile gloves, safety glasses.	Lab coat, safety glasses.			
Cryogenic liquids > 100ml <240L.	Frostbite, eye damage.	Any non-disposable lab coat, nitrile gloves, face shield. For a transfer station add an oxygen monitor.	Lab coat, safety glasses.			
Use of explosive or potentially explosive materials.	Burns, impact injuries, fire.	Nomex lab coat, face shield, heavy gloves, consider blast shield or specialized enclosure depending on scale.	Lab coat, safety glasses.			

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Activity	Risk Mitigated	Recommended PPE for Direct Use	Recommended PPE for Bystander	Applies? (check) YES	NO	Lab Specific PPE required
Biological Work						
Use of biological material or toxins	Exposure to potentially infectious material or toxins	Lab coat, gloves. Eye/face protection if chance of splash or flying debris. Use in Biological Safety Cabinet if indicated.	Lab coat, gloves Eye/face protection if chance of splash or flying debris.			
Use of animals	Exposure to potentially infectious material, scratches, bites	Follow PPE requirements as indicated by animal facility.	Follow PPE requirements as indicated by animal facility.			
Use of flame and flammable solvent (e.g. ethanol)	Burns to skin due to fire.	Flame resistant lab coat, safety glasses.	Lab coat, safety glasses.			
Work With Ionizing and Non-Ionizing Radiation Including Lasers						
Work with open radioactive sources	Contamination of personnel	Lab coat, gloves, safety glasses, work behind shielding if high energy beta or gamma emitters are used	Lab coat, safety glasses			

Activity	Risk Mitigated	Recommended PPE for Direct Use	Recommended PPE for Bystander	Applies? (check) YES	NO	Lab Specific PPE required
Work with open beam class 3B or class 4 laser	Eye and skin hazard	Laser goggles with correct OD for the wavelengths involved. Skin must be covered if work with open class 4 UV laser	Laser goggles with correct OD for the wavelengths involved. Skin must be covered if work with open class 4 UV laser			
Work open UV radiation source	Eye and skin hazard	UV protective goggles. Skin must be covered	UV protective goggles. Skin must be covered			
Open beam X- ray	Ionizing radiation	Lead apron and lead gloves	Lead apron and lead gloves			

*The degree of precaution required with organic solvents would depend on the ability of the solvent to be absorbed through the skin and the nature of any other materials in solution. Some solvents such as DMSO can carry chemicals into the skin that would not normally be absorbed.

Form Completed by (if not completed by professor) _____

Name of Professor _____ Signature of Professor _____

Date _____ **Please post this document prominently as applicable.**

References

Columbia University Environmental Health and Safety, “Personal Protective Equipment Hazard Assessment Tool”, no date, internet Sept. 2015

Tufts Environmental Health and Safety, “Assessing the Need for Personal Protective Equipment in the Laboratory”, April 2010, internet Sept. 2015

Yale University Environmental Health and Safety, Appendix A: Laboratory PPE Hazard Assessment Tool, March 24, 2014, internet Sept 2015

University of B.C. Environmental Health and Safety Risk Management Services, “Chemical Hazards”, found on http://riskmanagement.ubc.ca/health-safety/laboratory-safety/personal-protective- equipment, accessed Sept. 2015

University of California Regents, “Laboratory Hazard Assessment Tool”, version 11, no date, internet Sept. 2015

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