Personal Protective Equipment Guidance for Research

Supplemental Guide: PPE Selection

This documents complements the EH&S Personal Protective Equipment (PPE) Policy and summarizes common PPE that can be used in research. Please note that this is not an all-encompassing list and PPE requirements are dependent on the hazards, risks, and existing control measures in place. Please consult with EH&S as needed on PPE requirements for your workspace.

Eye and Face Protection – Eye protection is required in all UF laboratories where chemical, biological, radiological and physical hazards are present.	
Item	Applicable Hazards
 Safety Glasses	When working with a low risk of splash or droplets, lower risk for impact hazards, flying particles, or working with small amounts of chemicals or biological material that will not cause eye injuries.
 Safety Goggles	For use with a higher risk of splashes, contact with aerosols, gases or vapors or when working with chemicals that can damage the eye (e.g. formaldehyde or corrosives).
 Laser Safety Glasses/Goggles	For use with class 3B and class 4 lasers.

 UV Safety Glasses/Goggles	For use with UV lights (light with wavelength < 400 nm).
 Face Shield	Worn in situations where significant splashing or exposure to the entire face is likely. Type of shield will depend on the hazard (check the rating). Face shields can provide protection for a variety of hazards such as flying debris, chemical or biological splashes, arc flash, UV radiation, and extreme heat. Common applications include dispensing cryogens or using strong corrosives. Face shields must be worn with eye protection. Face shields must always be worn in combination with goggles or safety glasses to protect the eyes from chemical splashes and flying particles, respectively.

Body Protection	
Item	Applicable Hazards
 Standard Cotton/Polyester Lab Coat	General use: chemical, biological, radiation, and physical hazards. Not appropriate for highly flammable solvent use.

 Flame Resistant Lab Coat	Working with water or air reactive chemicals, large volumes of organic solvents, and potentially explosive chemicals when fire/combustion is a risk.
 Disposable Gown or Barrier Coat	Working with human blood, body fluids, tissues, cells or other potentially infectious materials. Suitable for the protection against animal allergens.
 Tyvek Suit	Working in environments where there are aerosols, hazardous dry particles, and pathogens that may bond to clothing. Also appropriate for dangerous liquid splashes.
 Protective Sleeves	Type of sleeve will depend on hazard: handling large/heavy materials that may cause friction, scrapes or pinching. Reaching into bins with rough or uneven edges. Reaching in or around machinery. Chemical splash protection. Heat protection.

Hand Protection

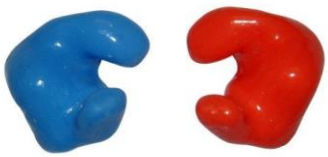
- Hand protection must be worn when working with harmful substances, around hot surfaces and in cases where there is the potential to experience cuts, lacerations, severe abrasions, and punctures.
- The type of gloves used must be determined through the hazard assessment. In the case of handling a chemical product, the type of glove required can be found on the Safety Data Sheet (SDS).
- Gloves have limited protection based on the exposure time and chemical's concentration. Please consult the glove manufacturer's compatibility/selection chart to ensure the glove provides the protection you need.
  - Examples include:
    - Ansell Glove Selection Database (includes disposable gloves)
    - North Chemical Resistance guide (
- Disposable nitrile gloves are the minimum protective gloves for laboratories and provide limited protection for incidental exposure only.
- Avoid latex gloves. Latex gloves provide poor protection against chemicals and can cause allergic reactions in some individuals

Item	Applicable Hazards
 Disposable Latex/Nitrile/Neoprene	Appropriate for protection from biological materials and animal allergens. Intended to be used only as a physical barrier against brief contact with chemicals (small incidental splashes). Always consult the supplier's chemical resistance chart prior to selecting the appropriate glove for chemical use. Some applications may require double gloves.
 Reusable Chemical Resistant Gloves	Materials include nitrile, neoprene, and viton/butyl. Provide good chemical protection and are rated to be immersed in solvent (always check the specifications and chemical compatibility charts).

 Cryogenic Gloves	Protection against dry ice, cryogens and ultra-cold environments. Not to be confused with heat-resistant gloves.
 Heat Resistant Gloves	General heat protection. To be used with autoclaves, ovens, furnaces, welding.
 Cut Resistant Gloves	Protect hands from cuts or lacerations due to contact with cutting machines, equipment, tools, or sharp-edged items such as knives, blades, metals, glass, or ceramics.

Repiratory Protection	
• A separate policy covers the University's Respiratory Protection Program. • Employees should not wear a respirator without obtaining the required medical clearance and approval by EH&S.	
Item	Applicable Hazards
 N95	Offers protection against infectious aerosols, low concentrations of dusts, mists, pollen and allergens. Does not protect against chemical vapors. May be required when appropriate engineering controls (such as a fume hood or biosafety cabinet) are not available. Requires medical clearance, annual training and annual fit testing.
 Air purifying, half mask respirators	Protection is limited by the type and capacity of the filters and cartridges used. Common types include: • HEPA for low level concentrations of toxic dusts such as asbestos and silica • Organic vapor • Acid gas/mist • Combination (more than one contaminant)
 Air purifying, full face respirators	In addition to providing respiratory protection, can protect the eyes and face from irritating vapors, mists, and splashed chemicals. Similar to air purifying, half mask respirators, protection is limited by the type and capacity of the filters and cartridges.

 Powered air purifying respirators (PAPR)	For use with high-risk aerosol-generating procedures. May be used as a substitute for the air purifying, full face respiratory if a mask-to-face seal cannot be achieved.

Hearing Protection	
• Required when engaged in work that exposes personnel to noise that equals or exceeds 85 dBA as an 8-hour time weighted average. • A separate policy covers the University's Hearing Conservation Program • EH&S should be contacted with questions regarding whether a work area has noise levels above the threshold limits.	
Item	Description
 Disposable Earplugs	Are made of waxed cotton, foam, silicone rubber or fiberglass wool. They are self-forming and, when properly inserted, they work as well as most molded earplugs.
 Molded Earplugs	Molded earplugs can be disposable or reusable. Reusable plugs should be cleaned after each use.

 Earmuffs	Require a perfect seal around the ear. Glasses, facial hair, long hair or facial movements such as chewing may reduce the protective value of earmuffs.

Other Considerations	
Item	Applicable Hazards
 Bouffant Cap	Used mostly to protect the environment rather than protect the user. In some applications, can protect the user from incidental biological splashes and contact with animal allergens.
 Surgical Mask	Offers mucous membrane protection from large biological droplets such as blood and bodily fluids.

 Shoe Covers	Provides a barrier against possible exposure from contaminated surfaces and environments. Use in areas where the floor may be contaminated with infectious materials or if there is a splash hazard from blood and other bodily fluids.
 Hard hat	Applicable for industrial and construction sites to protect the head from falling objects, debris and projectiles.
 Steel Toe footwear	Applicable for industrial settings, constructionsites, and farms with heavy equipment and livestock. Protects feet from falling objects, scrapes, cuts and punctures, slips and falls.

Contacts

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References

- EHS PPE Information Personal Protective Equipment » UF | EHS (ufl.edu)
- Lab Specific Chemical Hygiene Plan (LATCH) Chemical Hygiene Plan and Inventory » UF | EHS (ufl.edu)
- PPE for Engineered Nanoparticles (AIHA Fact Sheet)