

Introduction

Welcome to the Personal Protective Equipment (PPE) (OHS100) Course Material. This training course is strongly recommended for anyone working with or around hazardous materials or objects. It is designed to teach individuals how to protect themselves when working with or around hazardous materials, or objects, in the workplace by wearing or using the right Personal Protective Equipment (PPE) needed for the job. This course also covers what you should and shouldn't wear to work (i.e., no shorts, open-toed or heeled shoes, etc.).

Objectives

After this course, participants should be able to:

1. Identify the appropriate clothes to wear underneath PPE.
2. Select the correct PPE for the hazard you are working with or around.
3. Don and doff gloves correctly.
4. Implement the proper disposal procedures for contaminated PPE.

PPE

UAB Handbook

While ***The You and UAB Handbook*** does not explicitly address the issue of personal protective equipment or PPE, it does state that you must adhere to particular dress standards or uniforms established in patient care areas or any other department or unit at UAB. For more information, see [*The You and UAB Handbook*](#), page 64 – **7.5 Personal Appearance, Dress Code, and Uniforms**.

If you work in a research area, hazardous materials or conditions may also be present. Wearing the proper personal protective equipment (PPE) in a research area is critical and essential to ensuring your health and safety in a potentially dangerous environment.

Wearing the appropriate work attire depends on the type of work you do. However, if you work with hazardous materials, objects, or animals, you need to cover as much skin as possible.

Personal Protective Equipment (PPE) (OHS100) Course Material

Who is Responsible?

It is your responsibility to protect your exposed skin, eyes, and respiratory system using the appropriate PPE.

Appropriate Clothing Underneath

Covering the Legs

You should wear long pants and shoes that completely enclose your feet. These will act as a barrier of protection between you and the hazard. However, long pants should not drag the floor. They can pick up particles with contaminants and spread them across the floor. They can also absorb possibly contaminated liquids left on the floor.



It's best if your legs are covered, but we do acknowledge that basically anything that goes **below the knee is acceptable** (i.e., dresses, skirts, capris, and cargo pants). If you have questions about your attire, ask your Supervisor or Manager.

Appropriate Shoes

Never wear sandals, flip-flops, and open-toed or open-heeled shoes when working around hazards. Canvas shoes may absorb liquids. To avoid spills, contamination, falling objects, and broken bones, wear shoes that enclose entirely your feet – yes, even the heels. The thickness of the shoe depends on the type of work you perform.

Disposable Shoe Coverings (Booties)

Disposable shoe coverings (or booties) are required in ALL animal facility areas to protect research and prevent transmission of the pathogen from one area to another. Put the booties on when you enter the animal facility. Remove them and dispose of them before leaving the area. If you have questions, contact the Animal Resources Program or your supervisor or manager.

Personal Protective Equipment (PPE) (OHS100) Course Material

Long Hair

Long, loose hair could easily be caught in machinery, contaminated by chemical, radioactive or infectious substances, or catch fire near an open flame. If you have long hair and work around chemicals, infectious materials, or open gears, we strongly recommend pulling your hair back or wearing a hair cap to avoid accidental injury or contamination.

Cosmetics

You may wear cosmetics, including lip balm, inside the lab, or in areas containing hazardous materials and chemicals. However, you may not apply them inside the lab or area. Applying cosmetics, even lip balm, in a lab or an area using hazardous materials, could pick up particulates and get in your system (by directly entering your mouth). To prevent contamination, apply cosmetics before entering the area or after leaving the area. Wash your hands before applying cosmetics to minimize the chance of contaminants.

Absolute Basic

Many areas have their PPE (gloves, shoe covers, and disposable gowns) located near the entrance of a lab or facility. Locate some PPE on rolling carts, but other facilities may have their PPE stored in cabinets in a separate room near the entrance.

The basic PPE requirement is a clean, **buttoned** lab coat or properly tied gown and the appropriate gloves. Other PPE might be necessary, depending on your job. The University provides the proper PPE, but it's up to you to wear it on the job and wear it correctly. The lab manager, supervisor, or principal investigator should make sure that it is worn and worn correctly.

Lab Coats or Disposable Gowns

Always wear a clean buttoned lab coat (or disposable gown) and the appropriate gloves when working with hazardous materials. Lab coats or disposable gowns do the following:

Personal Protective Equipment (PPE) (OHS100) Course Material

- Act as a barrier between you and infectious substances, chemicals, hazardous waste, and flying objects.
- Help delay the transfer of hazardous materials to your clothes and skin.
- Protect your clothes from possible contamination.
- Protect lab equipment, materials, specimens, patients, and animals from contamination from you.
- It should remain in the area being used and not be worn outside of the area no matter where you are going. By doing this, you protect you, your co-workers, your work, and others from the possibility of contamination.

Gloves

Never put on, or don, gloves just because they are in a lab or are readily available. Read the label and determine if the glove is best for the hazard. Also, one type of glove does not work for all types of chemicals and hazardous materials.

- The glove shown on the left is latex and a basic type of rubber glove suitable for wearing while working with some water-based chemicals and hazardous materials. If you have an allergy to latex, you should use Nitrile gloves.
- The blue gloves on the right are Nitrile gloves. Made of synthetic material, they contain no latex proteins. They offer excellent resistance to punctures and tears. Nitrile gloves are three times more puncture resistant than rubber and can be used to provide superior resistance to too many types of chemicals.
- Both are commonly found in medical areas and laboratories, but this does not mean that they can be used for everything.



Personal Protective Equipment (PPE) (OHS100) Course Material

Types

Leather Gloves are most often found in construction areas and maybe cut-resistant. These are useful when working with abrasive materials.



Neoprene Gloves are made from synthetic rubber that is highly liquid-proof and chemical-resistant. They are great for specialized chemical applications involving acids, caustics, oils, alcohols, and solvents, but they are not very flexible.

Butyl Gloves are highly flexible and made from cheap rubber. These are useful for handling some types of strong corrosives, acids, or solvents.



Heat Resistant Gloves can be found on UAB's campus in areas using autoclaves and other heat or steam cleaning machines.

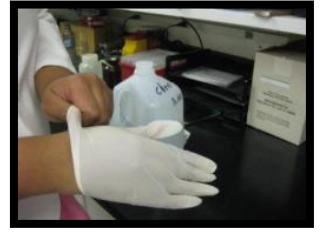
Cryogenic Gloves are required when handling liquid nitrogen. These gloves usually have thermal protection built in since they are designed to work in ultra-cold temperatures. They can be water-resistant or waterproof.



The Proper Way to Don Gloves

Before donning your gloves, you may want to remove any jewelry that could puncture the gloves. This is only a suggestion. It is not a requirement.

1. Pick up the first glove and slip the open end of the glove over the hand and thumb.
2. Gently pull the glove on to avoid tearing or ripping it. In this picture, she has her thumb inside the glove, but her fingers are curled around the edge of the glove.
3. Make sure that the fingers and thumb of the glove fit correctly.
4. Pull the glove up around the wrist.
5. Repeat the procedure with the other hand. In this picture, she has the thumb tucked inside, and the fingers curled around the edge of the glove to pull it on just like the first one.
6. Both gloves should feel like they fit properly without being too loose or too tight. If you are wearing a disposable gown, the top of the glove should go over the gown's cuff area to provide complete protection.



The Proper Way to Doff Your Gloves

1. To remove or doff your gloves, gently pick up the edge between two fingers and pull down.
2. Place your gloved fingers under the edge (as shown in this picture) and continue to pull the glove off.
3. Keep pulling until the glove is off and inside out on your remaining gloved hand.
4. Stick one finger from the ungloved hand down into the glove. Remember to hang on to the glove you just removed in your gloved hand!
5. Grab the underside of the glove with the fingers of your ungloved hand.
6. Gently pull until the glove covers the first glove you removed.
7. Continue to gently pull until the glove covers the first glove you removed.
8. Both gloves should be inside out.

Personal Protective Equipment (PPE) (OHS100) Course Material

9. Place the gloves in the proper waste receptacle. Slinging or tossing them could spread contaminated materials.
10. Always wash your hands before donning and after doffing your gloves. Washing your hands eliminates most contaminants. If it helps, sing! Singing “Happy Birthday to You” or “Old MacDonald Had a Farm” twice while washing means that you’ve spent enough time, soap, and water to ensure cleanliness. It may be silly, but you’ll have clean hands.



Are You Contaminated?

You are about to see what happens when a professional removes her gloves. She removes her gloves properly, being careful not to spread contamination that she can't see in normal light. Even after adequately removing her gloves, she still has contamination on her fingers and hands. Fortunately, it was Glow Dust on her gloves and not contaminated materials.



Personal Protective Equipment (PPE) (OHS100) Course Material

Eye

Many jobs may not need or require eye protection. However, if the materials you are working with pose any danger to your eyes, wear the appropriate protective gear — such as goggles or a face shield. There is no cure for blindness.



- Goggles are primary protectors intended to shield the eyes against liquid or chemical splash, irritating mists, vapors, and fumes. Most are made of soft but durable plastic.
- Safety glasses are also primary protectors usually worn when performing tasks such as chipping, grinding, machining, masonry work, riveting, sanding, and when working with materials that may break or explode posing a danger to the eyes. Safety glasses are sturdier than regular glasses or goggles. Some are heat resistant.
- Face shields are secondary protectors intended to protect the entire face against exposure to splashes.
- Reusable goggles, safety glasses, and face shields should be cleaned using the appropriate cleaner regularly and especially after every exposure. Replace them when they become too scratched, marked, or damaged to use safely. See your supervisor, manager, or OH&S for more information.



Personal Protective Equipment (PPE) (OHS100) Course Material

Respiratory

Depending on the performed task, a respirator may be required for your job. Select the respirator for the specific hazard. If your job requires a respirator, you must have medical clearance according to the UAB Employee Health Program, and the respirator must be fit-tested on an annual basis or if the type or manufacturer of respirator changes.



- The N95 disposable mask looks like a dust mask that a painter might wear. However, there is a big difference. N95 masks have been certified and approved by the U.S. Government.
- The N95 mask is designed to reduce exposures to airborne particles – not eliminate them. They have a filtration efficiency of at least 95% against solid and liquid particles that do not contain oil. So you should be protected against most airborne particles, chemical splashes, and biological agents.



Hearing

“Noise is not a new hazard. Too much noise exposure may cause a temporary change in hearing (your ears may feel stuffed up) or a temporary ringing in your ears (tinnitus). These short-term problems usually go away within a few minutes or hours after leaving the noise. However, repeated exposure to loud noise can lead to permanent tinnitus or noise-induced hearing loss.

We recommend reducing noise in the workplace whenever possible. Use hearing protectors in those situations where dangerous noise exposures have not yet been controlled or eliminated.” *(adapted from the CDC/NIOSH website on noise)*

When should you wear ear protection? Listen to your conversations during the noise.

- When noise levels are above 80 decibels (dB), people have to speak very loudly.
- When noise levels are between 85 and 90 dB, people have to shout.
- When noise levels are higher than 95 dB, people have to move close together to hear each other and speak loudly.

Personal Protective Equipment (PPE) (OHS100) Course Material

If the noise is prolonged or you must shout to be heard, you may want to ask your supervisor or manager about ear protection. There are two types to choose from – the earmuffs or soft internal plugs.

- The earmuff type should completely cover the ear and block most of the noise.
- If you use soft earplugs, they should be put in with clean hands and appropriately inserted.



Signage

Due to the nature of some animal research, door postings for PPE and other considerations are necessary. Before entering an animal area that has this type of posting, make sure that you read and follow the instructions carefully.

As you can see here, a uniform or street clothes

with a lab coat or gown is required for entry into this area, as are booties whether contact is made or not. Gloves are required only if physical contact is made. In some cases, a surgical mask is required.

If you have questions, contact the Animal Resources Program or your supervisor or manager.

OUTERWEAR REQUIREMENTS (May be augmented or superseded by outerwear requirements based on research-associated risks or personal susceptibility.) DO NOT WEAR OPEN-TOED SHOES or LOOSE JEWELRY.		
Minimum Required Outerwear	No Contact ¹	Contact ²
Uniform OR Street Clothes		
Uniform OR Street Clothes with Lab Coat or Gown	X	X
Uniform with Lab Coat or Gown OR Street Clothes with Lab Coat or Gown		
Gloves		X
Surgical Mask		(X) ³
Dust Mask N90 (Requires fit testing)		
N95 Mask (Requires fit testing)		
Goggles or Face Shield		
Bonnet		
Shoe Covers	X	X
Slip-resistant Shoes		
Ear Plugs		
Tyvek Suit		

¹No Contact – Activity in animal room that does not require contacting animals or soiled cage equipment. Examples include entering room to observe animals, conducting census counts, checking environmental conditions, and restocking supplies.
²Contact – Activity that requires physical contact with animals or soiled cage equipment. Includes cleaning cages and moving animals into or out of cages. Recommendations for outerwear applicable regardless of whether contact occurs in animal housing area, procedure room, lab, or field situation.
³(X) – Surgical masks should be worn if cages are not opened in a biosafety cabinet.

Personal Protective Equipment (PPE) (OHS100) Course Material

Disposal

A designated trash container should always be located near the exit to a lab or facility so that possibly contaminated PPE can be removed and disposed of **before** leaving the area.

There should also be a place to put non-disposable PPE, such as lab coats, for laundering. Never take your lab coat home to wash it! This could contaminate you, your clothes, your vehicle, your family, and the other clothes in the washing machine.

Different areas have different rules for what should be done with dirty or contaminated clothing. Check with your manager or supervisor for more information.

Violations

Unacceptable PPE, or lacking the proper PPE, or wearing it in areas where you shouldn't **may** be cause for disciplinary action.

Conclusion

This concludes the Personal Protective Equipment (PPE) (OHS100) Course Material. You should now take the assessment. 80% or higher is required to pass. You have three chances to complete the assessment successfully. Failing all three attempts means that you fail the course and must start over.

EHS Decision Tree

EHS has many training courses available to all active UAB Employees and Students [including topics such as radiation, biosafety, chemical safety, building life, waste (hazardous, medical, and universal), PPE, hazard communication, etc. EHS developed a [decision tree](#) to assist you in choosing the right course to match the knowledge or skills you may need at work every day, as well. If you have any questions, contact UAB's Department of Environmental Health and Safety (EHS) at (205) 934-2487.