

3.5.2.1 Protective Clothing

- The lab coat is designed to protect the clothing and skin from chemicals that may be spilled or splashed. It should always be properly fitted to the wearer and is best if it is knee length. There are several types of lab coats for different types of protection.
 - a. Cotton protects against flying objects, sharp or rough edges and is usually treated with a fire retardant. Since many synthetic fabrics can adhere to skin when burning, and thereby increase the severity of a burn, cotton is the most preferred laboratory clothing fabric.
 - b. Wool protects against splashes of molten materials, small quantities of acid and small flames.
 - c. Synthetic fibers protect against sparks and infrared or ultraviolet radiation. However, synthetic fiber lab coats can increase the severity of some laboratory hazards. For instance, some solvents may dissolve particular classes of synthetic fibers, thereby diminishing the protective ability of the coat. In addition, on contact with flames, some synthetic fibers will melt. The molten material can cause painful skin burns and release irritating fumes.
 - d. Aluminized and reflective clothing protect against radiant heat.
- An apron provides an alternative to the lab coat. It is usually made of plastic or rubber to protect the wearer against corrosive or irritating chemicals. An apron should be worn over garments that cover the arms and body, such as a lab coat.
- Loose or torn clothing can fall into chemicals or become ensnared in equipment and moving machinery. Aprons, lab coats and other protective clothing should be readily available and utilized in a laboratory environment.
- If necessary, hair should also be restrained because loose hair can catch fire or dip into chemical solutions.

Foot Protection

Foot protection is essential to prevent injury from corrosive chemicals, heavy objects, electrical shock, as well as giving traction on wet floors. If a corrosive chemical or heavy object were to fall on the floor, the most vulnerable portion of the body would be feet. For this reason, shoes that completely cover and protect the foot are recommended.

Though it is practically impossible to provide foot safety gear to everyone working in the laboratories, the following shoe types should never be worn in the laboratory:

- a) Sandals
- b) Clogs
- c) High Heels
- d) Shoes that expose the foot in any way

3.5.2.2 Protective Gloves

- Any glove can be permeated by chemicals. The rate at which this occurs depends on the composition of the glove, the chemicals present and their concentration, and the exposure time to the glove. Glove manufacturers and the Safety Data Sheets accompanying products in use are good sources of specific glove selection information, or contact EHSRM for assistance in selection. Below is some helpful information regarding glove suitability?
 - a) Latex “surgeons” or “exam” gloves are a general use laboratory glove and provide minimal chemical resistance and light protection against irritants and limited protection against infectious agents.
 - b) PVC protects against mild corrosive and irritants.
 - c) Natural rubber gloves protect against mild corrosive material and electric shock.
 - d) Neoprene gloves are suitable for working with solvents, oils, or mild corrosive material. Butyl, Neoprene and nitrile gloves are resistant to most chemicals, e.g., alcohols, aldehydes, ketones, most inorganic acids, and most caustics.
 - e) Cotton gloves absorb perspiration, keep objects clean and provide some limited fire retardant properties.
 - f) Zetex gloves resist abrasion, most acids (except hydrofluoric acid), alkalis and solvents.
- If direct chemical contact occurs, replace gloves regularly throughout the day. Wash hands regularly and remove gloves before answering the telephone or opening doors to prevent spread of contamination.
- Check gloves for cracks, tears, and holes.
- Care should be taken when removing gloves. Peel the glove off the hand, starting at the wrist and working toward the fingers. Keep the working surface of the glove from contacting skin during removal. Contaminated disposable gloves should be discarded in designated containers (e.g., biohazard waste containers).
- Always wash hands as soon as possible after removing protective gloves.

3.5.2.3 Eye and Face Protection

Laboratory work may require eye and face protection to reduce the possibility of chemical exposures due to splashes. Eye protection is required of everyone who enters a chemical work area. The type of eye protection needed depends on the circumstances. Typically, safety goggles that protect the top, bottom, front and sides of the eyes is mandatory. Safety goggles should not be worn in conjunction with contact lenses, except for therapeutic reasons. If contact lenses are worn the Laboratory Coordinator or Principal Investigator and co-workers should all be aware of this, in case an accidental splash renders the wearer of such lenses incapable of washing or rinsing his or her eyes.

Face shields are necessary when working with severely corrosive liquids, with glassware under reduced or elevated pressure, with glass apparatus used in combustion or other high-temperature operations, and when there is a possibility of an explosion or implosion.

3.5.2.4 Respirators

The laboratory equipment respirators may sometimes be relied on if the engineering controls and laboratory design do not adequately limit the potential exposure to hazardous air contaminants. Individuals planning to use respiratory protection should contact EHSRM for consultation. The proper selection and type of respirator used should be based on a thorough analysis of the specific activity planned. The EHSRM department will assist the respirator user in evaluating their individual circumstances. In addition all individuals who wear respirators, other than dust mask as a personal preference, must first be medically approved by a occupational health physician and then should be fit tested by the department of EHSRM.