



ECKERD COLLEGE

Safe Operating Procedure

(2/04)

Guidelines for the Selection of Personal Protective Equipment

Use of an appropriate ensemble of personal protective equipment (PPE) creates a second line of defense against exposure to hazardous chemicals. Engineering controls, such as fume hoods and other ventilation devices, are used to create a first line of defense. When engineering controls are not adequate to minimize exposures to acceptable levels, Eckerd College must provide employees with adequate PPE.

All types of PPE have limitations and are only effective when in good condition and used correctly. Ensure that selected PPE:

- Is appropriate for the task at hand and used as designed .
- Has a low permeability rating for the chemical(s) it is being used to protect against.
- Is cleaned upon donning and doffing.
- Is routinely inspected for damage and is repaired or replaced as necessary.
- Is stored in a clean area that is protected from excessive light, cold, and heat when not in use.

Components selected for an adequate ensemble of PPE vary with the route and degree of exposure. General classes of PPE, with specific examples, are discussed below.

Hand Protection – Available in the biology, chemistry, and marine science stockrooms. See: [Guidelines for the Selection of Gloves](#)

- Gloves provide protection for the hands from many types of hazards, including chemical absorption. Like other classes of PPE, many types of gloves are available, ranging in material of construction and thickness.
- Selection of an appropriate glove depends on specific chemicals to which the user is or may be exposed, as well as severity of exposure (e.g., incidental, or low hazard contact verses immersion of the hands, or high hazard contact) and manual dexterity considerations. All glove manufactures provide permeability data for specific gloves. It is imperative to review this data before selecting the appropriate glove.

- Examination-type gloves are very thin and provide protection only for incidental contact (e.g., unexpected small droplets). These types of gloves are disposable and should be removed immediately upon contamination, with the hands washed immediately after removal. It is best to avoid gloves constructed of latex because of associated allergy hazards.
- Silvershield gloves provide the broadest range of possible protection, but are not suitable for operations where the hands are immersed in a chemical or when dexterity is of great importance.
- Long, thick gloves, constructed of butyl rubber or other material depending on the chemical of interest, must be used when immersing the hands in chemical solutions. Always try to avoid immersion of the hands in any chemical solution, regardless of glove use, by implementing engineering solutions (e.g., retrieval tongs, removable baskets, etc.).
- See the stockroom supervisor if you have questions concerning glove selection.
- **Respirators** - When engineering controls are not sufficient to reduce air contaminants to an acceptable level, respirators may be required. Many types of respirators are available, ranging from dust masks to self-contained breathing apparatuses. The appropriate type of respirator depends on the concentration of contaminants, as well as the form of contaminants (e.g., dusts, mists, fumes, etc.). **Regardless of the type of respirator, respirator users must complete a medical exam, attend training, and participate in fit testing on an annual basis.**
- **Eye and Face Protection** - Safety glasses with side shields, goggles, or face shields may be required when there is potential for exposures to chemical splashes or fumes, dusts, flying projectiles, heat, or optical radiation. All protective eyewear must meet the American National Standard for Eye Protection for Occupational and Educational Eye and Face Protection Z87. 1.
- **Body Protection** - Protective body apparel may be required when there is potential for accidental spills or splashes. Material of construction varies with type of garment selected.
 - Cotton, flame-retardant laboratory smocks or coats provide protection in low hazard situations.
 - More sophisticated apparel, such as tyvek coveralls, may be necessary when working with large quantities or highly dangerous chemicals.
 - Laboratory coats and other reusable outer garments (e.g., rubber suits) should be laundered frequently, and not commingled with ordinary street clothing.
 - Consult the manufacturer's permeability data when selecting the material of construction and follow the manufacturer's recommendations for cleaning or discarding.

- **Foot Protection** - Protective footwear should be selected based on the degree of hazard. Street shoes are generally sufficient to provide protection in low-hazard operations (e.g., laboratory scale). Bare feet, sandals, and open-toed shoes are not permitted when working with chemicals. Shoe covers provide protection in medium-hazard operations (e.g., contact with chemicals is likely but risk of splash is low).

See: <http://www.pp.okstate.edu/ehs/hazmat/GLOVES5.HTM>