1.0 PURPOSE:

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, LSU departments must provide employees with adequate PPE. Protective equipment shall be used and maintained in sanitary and reliable condition. Under no circumstances shall a person knowingly be subjected to a hazardous condition without appropriate personal protective equipment. 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. Upon request, OES will provide guidance on the selection of the appropriate classes and specific types of PPE. This SOP provides general safety procedures for the use of personal protective equipment.

2.0 SCOPE:

This procedure applies to all Louisiana State University Personnel that work in a laboratory. It is the intent of this guideline to provide information on the general PPE of a laboratory at LSU and afford employee protection while working in a laboratory.

3.0 RESPONSIBILITIES:

Only trained and qualified personnel shall be allowed to work in a laboratory at LSU. Persons who are exposed to hazards requiring personal protective equipment shall be properly instructed in the use of such equipment by the individual in charge of the activity or his/her designee. It is the responsibility of the individual in charge of the activity to assure that safety practices are adhered to. If those individuals required to wear personal protective equipment fail to do so, they will be subject to disciplinary action.

4.0 DEFINITIONS:

Not Applicable

5.0 REFERENCES:

Not Applicable

6.0 MATERIALS and/or EQUIPMENT:

Not Applicable

7.0 PROCEDURE FOR PERSONNAL PROTECTIVE EAUIPMENT

7.1 Respirator Use

The use of respirators in a laboratory setting is not acceptable as a standard practice. Engineering controls are required to reduce air contaminants to an acceptable level. Voluntary respirator use in a laboratory setting may be acceptable under special conditions. Many types of respirators are available and the appropriate type of respirator depends on the concentration of contaminants, as well as the form of contaminants (e.g., dusts, mists, fumes, etc.). If considering respirator use, contact OES because there are medical, training, and fit test requirements for respirator use. Refer to the LSU Safety Manual for additional information.

7.2 Eye and Face Protection

Safety glasses with side shields, goggles, or face shields are 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

7.2.1 Approved eyewear is required while working in a laboratory.

7.2.2 Management level employees, students, or visitors who make occasional visits to labs shall wear approved eyewear.

7.2.3 Prescription lens wearers, if required to wear eye protection, shall wear an approved face shield, goggles that fit over glasses, prescription glasses with protective optical lenses fitted with side shields, or goggles that incorporate prescription lenses.

7.2.4 Contact lenses shall never be considered as a substitute for eye protection; eye protection shall be worn over them.

7.2.5 All eye and face protection shall be kept clean and inspected daily before each use. Badly scratched or damaged items are to be replaced immediately.

7.3 Hand Protection

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.

7.3.1 Hand protection shall be worn by employees when handling hot work, chemicals, electrical, material handling of rough and/or sharp items, doing landscaping work, welding, and "wherever it is necessary by reason of hazards of processes of environmental, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment." (OSHA 1910 Standards)

7.3.2 Hand protection used will meet the criteria for its particular use. Consult with OES for assistance in selection as required. The OES web site contains chemical resistance charts for glove selection. Other factors such as durability, dexterity, and frequency and ease of donning and removing gloves are also important factors in glove selection.

7.3.3 Gloves shall be selected to fit comfortably and snugly.

7.3.4 All hand protection shall be kept clean and inspected daily before each use. Badly worn or damaged items are to be replaced.

7.3.5 All glove manufactures provide permeability data for specific gloves. Manufacturers may show different data for the same glove material. It is imperative to review this data before selecting the appropriate glove. For Glove selection, consult the Occupational and Environmental Safety Web Page or contact OES.

7.3.5.1 In general, 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

7.3.5.2 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.

7.3.5.3 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.).

7.4 **Protective and Preventive Clothing**

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.

7.4.1 Protective clothing shall be worn by employees/students when the potential of an employee/student being exposed or coming in contact with harmful substance is evident. i.e., chemicals, high heat (radiant), dust, open flame, etc.

7.4.2 There are many different standards for approval of protective clothing (ANSI, ASTM, etc.). Protective clothing shall be selected for specified hazard, degree of protection, comfort, and ease of use. Once the specific or multi hazards have been identified, contact a reputable vendor or Occupational and Environmental Safety personnel for recommendation of proper protective clothing and/or equipment needed.

7.4.2 Protective clothing shall fit the wearer comfortably and shall not be too loose or baggy.

7.4.3 Protective clothing shall be routinely cleaned unless disposable. Disposable clothing shall be disposed of after use. Damaged, torn, ripped, etc., clothing shall be replaced before use.

7.5 Foot Protection –

Protective footwear should be selected based on the degree of hazard.

7.5.1 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.**

7.5.2 Shoe covers provide protection in medium-hazard operations (e.g., contact with chemicals is likely but risk of splash is low). Selection of the material of construction for shoe covers is very important. Like gloves, the material of construction and thickness determines the level of protection of the shoe cover

7.5.3 Formed boots provide the highest level of protection and are designed for operations with significant potential for contact with chemicals. Formed boots may also be necessary for medium-hazard activities that are not compatible with shoe covers because of the likelihood of damage to the shoe cover (e.g., outdoors, abrasive floor coverings, etc.) and for activities that require good

footing (e.g., slippery surfaces). Consult the manufacturer's permeability data when selecting the material of construction and follow the manufacturer's recommendations for cleaning or discarding.

7.5.4 All foot protection shall be kept reasonably clean and in good repair. Shoes shall be repaired or replaced periodically.

8.0 CONTINGENCIES:

8.1 In case of a fire, explosion, or gas leak evacuate individuals from the area and call the emergency response (911). Notify supervision and adjacent personnel as quickly as possible. Observe appropriate procedures for personal injury or fire as provided in OES Web site.

8.2.1.1 In case of a chemical spill, alert others in the immediate vicinity and notify your supervisor. Determine the severity of the spill and proceed as appreciate. Small spills may be cleaned up by laboratory personnel. For large spills, notify OES (578-5640) and Campus Police (911 or 578-3231). If possible to do so safely (without risk of over-exposure), take action to stop the release. Ensure that extraneous personnel remain at a safe distance until the spill is completely cleaned-up

9.0 REVIEWS AND REVISIONS:

This procedure shall be reviewed for compliance and effectiveness and revised as necessary on an annual basis.

10.0 ATTACHMENTS and REFERENCE FORMS:

Not Applicable