

## X. PERSONAL PROTECTIVE EQUIPMENT

### 1.0 Personal Protective Equipment Defined

- 1.1 Personal Protective Equipment (PPE) includes all clothing and work accessories designed to protect employees from workplace hazards. Protective equipment should not replace engineering, administrative, or procedural controls for safety — it should be used in conjunction with these controls. Employees must wear protective equipment as required and when instructed by a supervisor.



**IMPORTANT:** *Personal protective equipment that is used to prevent exposure or contamination should always be removed before coming in contact with other individuals or going in or near elevators, break rooms, classrooms, bathrooms, etc. Do not launder personal protective equipment at home.*

### 2.0 Arm and Hand Protection

- 2.1 Arms and hands are vulnerable to cuts, abrasions, temperature extremes, burns, bruises, electrical shock, chemical spills, and amputation. The following forms of hand protection are available for employees:

- 2.1.1 Disposable exam gloves
- 2.1.2 Rubber gloves
- 2.1.3 Nitrile gloves
- 2.1.4 Neoprene gloves
- 2.1.5 Leather gloves
- 2.1.6 Non-asbestos heat-resistant gloves
- 2.1.7 Metal-mesh gloves for meat cutters
- 2.1.8 Cotton gloves
- 2.1.9 Kevlar or Dynema gloves for cut resistance



- 2.2 Always wear the appropriate hand and arm protection. For arm protection, wear a long-sleeved shirt, a laboratory coat, chemical-resistant sleeves, or gauntlet-length gloves.
- 2.3 Follow these guidelines to ensure arm and hand safety:
- 2.3.1 Inspect and test new gloves for defects.
  - 2.3.2 Always wash your hands before and after using gloves. Wash chemical-protective gloves with soap and water before removing them.
  - 2.3.3 Do not wear loose fitting gloves near moving machinery; the gloves may become caught.

2.3.4 Do not wear gloves with metal parts near electrical equipment.

**IMPORTANT:** *Gloves are easily contaminated. Avoid touching surfaces such as telephones, door knobs, etc. when wearing gloves.*

### 3.0 Body Protection

3.1 Hazards that threaten the torso tend to threaten the entire body. A variety of protective clothing, including laboratory coats, long pants, rubber aprons, coveralls, and disposable body suits are available for specific work conditions.

3.1.1 Rubber, neoprene, and plastic clothing protect employees from most acids and chemical splashes.

3.1.2 Laboratory coats and coveralls protect employees and everyday clothing from contamination.

3.1.3 Welding aprons provide protection from sparks.



3.2 Do not launder contaminated chemically, biologically, or radiologically protective clothing at home or in any facilities outside of the university.

### 4.0 Ear and Hearing Protection

4.1 If you work in a high noise area, wear hearing protection. Most hearing protection devices have an assigned rating that indicates the amount of protection provided. Depending on your level of exposure, you may choose from the following devices:

4.1.1 Disposable earplugs

4.1.2 Reusable earplugs

4.1.3 Headband plugs

4.1.4 Sealed earmuffs



4.2 Earplugs may be better in hot, humid, or confined work areas. They may also be better for employees who wear other PPE, such as safety glasses or hats. Earmuffs, on the other hand, may be better for employees who move in and out of noisy areas, because the muffs are easier to remove. Before resorting to hearing protection, attempt to control noise levels through engineering or operational changes.

4.3 To avoid contamination, follow these guidelines when using earplugs:

- 4.3.1 Wash your hands before inserting earplugs.
- 4.3.2 Replace disposable earplugs after each use.
- 4.3.3 Clean reusable earplugs after each use.
- 4.4 Refer to the Hearing Conservation Program in the General Safety chapter or contact the Environmental Health & Safety Department for more information.

## **5.0 Eye and Face Protection**

- 5.1 Employees must wear protection if hazards exist that could cause eye or face injury. Eye and face protection should be used in conjunction with equipment guards, engineering controls, and safe practices.

**NOTE:** *Safety glasses are required in laboratories. Chemical goggles should be worn when handling chemical materials.*

- 5.2 Always wear adequate eye and face protection when performing tasks such as grinding, buffing, welding, chipping, cutting, or pouring chemicals. Safety glasses with side shields provide protection against impact, but chemical safety goggles provide protection against impact, splashes, and hazardous atmospheres.
- 5.3 Follow the below information regarding eye protection:

- 5.3.1 If you wear prescription glasses, wear goggles or other safety protection over the glasses.
- 5.3.2 Safety glasses with side-shields provide primary protection to eyes and are four times as resistant as prescription glasses to impact injuries.
- 5.3.3 Goggles protect against impacts, sparks, dust, and irritating mist. Wear chemical splash goggles, not just safety glasses, when working with chemicals.
- 5.3.4 A welding helmet protects from flash burn due to welding, soldering, or brazing, but does not provide primary eye protection; safety glasses or goggles should be worn with the helmet.
- 5.3.5 A face shield is designed to protect the face from some splashes or projectiles, but does not eliminate exposure to vapors. A face shield should be worn with goggles or safety glasses.
- 5.3.6 To reduce eyestrain from glare and outdoor sun exposure use safety glasses with UV protection to minimize the ultraviolet light exposure



## 6.0 Foot Protection

- 6.1 To protect feet and legs from falling objects, moving machinery, sharp objects, hot materials, chemicals, or slippery surfaces, employees should wear closed-toed shoes, boots, foot-guards, leggings, or safety shoes as appropriate. Safety shoes are designed to protect people from the most common causes of foot injuries — impact, compression, and puncture. Special foot protection is also available for protection against static electricity, sparks, live electricity, corrosive materials, and slipping.



**NOTE:** Foot protection is particularly important in laboratory, agricultural, construction and custodial work.

**IMPORTANT:** Do not wear sandals, crocs, or open-toed shoes in laboratories, shops, food prep, food serving, or other potentially hazardous areas.

## 7.0 Head Protection

- 7.1 Accidents that cause head injuries are difficult to anticipate or control. If hazards exist that could cause head injury, employees should try to eliminate the hazards, but they should also wear head protection.



- 7.2 Safety hats protect the head from impact, penetration, and electrical shock. Head protection is necessary if you work where there is a risk of injury from moving, falling, or flying objects or if you work near high-voltage equipment.

- 7.3 Hard hats should be water resistant, flame resistant, and adjustable. Wear one of the following hard hats as appropriate for your work situation:

- 7.3.1 Class G - General service, limited voltage (2,200 Volts) protection
- 7.3.2 Class E - Utility service, high-voltage (20,000 Volts) protection
- 7.3.3 Class C - Special service, no voltage protection

- 7.4 Follow these guidelines for head safety:

- 7.4.1 Check the shell and suspension of your headwear for damage before each use. Look for cracks, dents, gouges, chalky appearance, and torn or broken suspension threads. Discard damaged hats or replace broken parts with replacements from the original manufacturer.

- 7.4.2 Discard any hat that has been struck or dropped from a great height, even if there is no apparent damage.
- 7.4.3 Do not wear a hard hat backwards, unless this is necessary to accommodate other protective equipment (e.g., welders face shield).
- 7.4.4 Do not paint the plastic shell of a hard hat or alter it in any way.

## **8.0 Respiratory Protection Program**

8.1 TAMU uses engineering, administrative, and procedural controls to protect people from dangerous atmospheres, including harmful mists, smoke, vapors, and oxygen-deficient atmospheres. When these controls cannot provide adequate protection against harmful atmospheres, respiratory protection is necessary.



- 8.2 The Environmental Health & Safety Department can provide training and fit testing for personnel who need respiratory protection.
- 8.3 A copy of the Respiratory Protection Program is available from the Environmental Health & Safety Department.

## **9.0 Usage Requirements**

- 9.1 People who use respiratory protection must be physically capable of using and wearing the equipment. In some cases, a physician must determine if an employee is healthy enough to use a respirator. In addition, all people required to wear respirators must be formally trained and instructed in proper equipment usage. This training should include instruction on common respiratory hazards and symptoms of exposure.
- 9.2 Before wearing a respirator employees must be fit tested by EHS to ensure their respirator protection equipment is the proper size and fits appropriately. Fit testing must be done annually or more frequently based on substantial weight gain/loss or facial surgery.

**NOTE:** Only use respirators that are approved by NIOSH

## **10.0 Selecting a Respirator**

- 10.1 EHSD will help departments to select the respirator. When selecting a respirator, consider the following factors:
  - 10.1.1 Type of hazards

- 10.1.2 Identity and concentration of the contaminant
- 10.1.3 Time constraints
- 10.1.4 Activity of the person wearing the respirator
- 10.1.5 Degree of protection provided by each type of respirator

***IMPORTANT:*** Respirators are available in different sizes. Always fit test a respirator to select the correct size.

## **11.0 Using Respirators Safely**

- 11.1 Your respirator is necessary to prevent the inhalation of particulates, gases, vapors, aerosols, or other contaminants. Be sure you have notified EHS of all hazardous chemicals or materials you will be working with to ensure you have been provided the best possible respiratory protection.
- 11.2 It is important to remember the following:
  - 11.2.1 Only use the respirator you were approved to wear and that has been properly fit tested.
  - 11.2.2 You must be familiar with the respirator, its use and limitations, and how to properly maintain and care for your respirator.
  - 11.2.3 You may not have facial hair that interferes with the seal of a tight fitting respirator. If you were fit tested without facial hair or with a minimal amount of facial hair, you must not wear your respirator with additional hair growth.
  - 11.2.4 You should contact EHS to be fit tested again if you have facial or dental surgery, significant weight gain or loss, facial scarring, or anything else that might affect the fit and seal of your respirator.
  - 11.2.5 You should be fit tested annually.
- 11.3 Safety Tips:
  - 11.3.1 Inspect respirator before and after each use to ensure that all parts are present or attached and are functioning properly.
  - 11.3.2 Rubber and plastic parts should be checked for signs of wear and tear (cracking, stiffness, etc.). If you identify any worn or weak parts, do not use the respirator.
  - 11.3.3 Perform a positive pressure and negative pressure seal check every time you put on the respirator:

NOTE: Positive pressure check: Cover the exhalation valve of the respirator with the palm of your hand. Exhale gently for about 10 seconds to build up a slight pressure. If air leaks out, the respirator is not sealing properly and should be repositioned before entering the hazardous area.

NOTE: Negative pressure check: Cover the filter or cartridge openings of the respirator with the palms of your hands. Inhale gently and hold your breath for about 10 seconds. You should notice a slight suction. If the face piece does not collapse inward or you feel an air leak, the respirator is not sealing properly and should be repositioned before entering the hazardous area.

11.4 Leave the respiratory protection area if any of the following occur:

- 11.4.1 If your respirator is damaged.
- 11.4.2 If your breathing becomes difficult.
- 11.4.3 If you become dizzy.
- 11.4.4 If you detect a respirator failure (smell something you did not notice before, eyes begin to water, etc.).
- 11.4.5 If you feel your seal has been broken (air getting in or out around your face piece).

**DO NOT REMOVE OR REPOSITION YOUR MASK UNTIL YOU HAVE LEFT THE AREA.**

11.5 Storage, Cleaning, and Care:

- 11.5.1 Store respirator in a clean, cool area (away from dust, sunlight, extreme temperatures, moisture, and chemicals).
- 11.5.2 Do not hang respirator by headband.
- 11.5.3 The respirator should be cleaned regularly with respirator wipes or a detergent solution. All parts should air dry or be wiped dry with a lint free cloth.
- 11.5.4 Clean and disinfect the respirator after each use if shared by more than one person (NOTE: respirators may be shared only by individuals who have been properly trained and fit tested for that respirator).

**END OF SECTION**