

Chapter 4 - Personal Protective Equipment

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Use, Responsibility, and Cost

Protection for head, eyes, ears, skin, feet, hands, respiratory system, or body is necessary under certain hazardous working conditions in order to be in compliance with appropriate state safety laws. A general rule to follow is “use of personal protective equipment is required when there is a reasonable probability that injury or illness can be prevented by such equipment.”

Reasonable engineering controls, such as increased ventilation, are preferable to personal protective equipment. Where employees are required to wear personal protective equipment, the cost of the equipment should be considered a departmental expense.

Supervisors or instructors should consult with Environmental Health and Safety (EH&S) or another qualified person to assess hazards in the areas where their employees work, to determine which of these areas may require the use of personal protective equipment, and to select the type and quality of the necessary equipment. It is the responsibility of all employees to wear personal protective equipment if it has been determined that its use is required. It is also the supervisor or instructor’s responsibility to ensure that workers, students, and visitors wear the protective equipment as specified.

An effort has been made to make the more common personal protective equipment readily available, either through the Chemistry Stores, Facilities Services Tool Room, or EH&S. The cost of this equipment may be charged against any approved departmental account. Those supervisors who do not have ready access to these campus store facilities may obtain personal protective equipment through any appropriate commercial safety equipment supplier. Supervisors should consult EH&S to ensure that the type of equipment selected is appropriate.

Training

It is the responsibility of supervisors to provide training to their employees on identifying when the selected personal protective equipment is necessary, on how to use the equipment, and on proper care and maintenance of it.

Apparel

The purpose of protective apparel is to provide protection for the body from chemical exposure, temperature extremes, and injury from sharp objects. Lab coats, chemical resistant aprons, and disposable tyvek suits are examples of protective apparel. Proper selection should be based on intended use.

Foot Protection

Appropriate footwear that is effective in preventing or limiting injury shall be worn where employees are exposed to conditions which may cause foot injuries. As a general rule, low-heeled, closed-toe shoes shall be worn in all laboratory operations where there is a likelihood of exposure to spilled chemicals. Where it is determined by a supervisor and EH&S that employees are exposed to a moderate risk of foot injuries from falling objects or crushing actions, employees will be required to wear safety-toe footwear. This safety-toe footwear must meet the requirements and specifications in American National Standards Institute (ANSI) standard Z41.1 for Safety-Toe Footwear. Employees will be required to obtain this safety-toe footwear on their own.

Eye Protection

Eye injuries can translate into pain, loss of time, money and even your eyesight. Even a slight loss or impairment of your vision is a tremendous price to pay for a moment of carelessness. It is a dreadful reminder of what taking a risk can mean. Wear proper eye protection where eye protection hazards are apparent and use common sense. Become acquainted with proper first aid treatment for eye injuries and seek medical attention if there is an eye injury.

Causes of Eye Injuries

Spray cans are an increasing source of chemical eye injury, compounded by the force of contact. Whether containing caustics or irritants, spray cans must be carefully used and kept away from children.

Particles of rocks, soil, crop material or other foreign objects thrown from farm equipment that chop or grinds can cause unexpected eye injury to the operator or bystander. Keep machinery properly shielded. Keep away from the discharge path.

Eye injuries are more likely to occur when servicing farm equipment than when operating it. Simple hand tools can cause severe eye injuries. Wear industrial strength eye protection when using hand tools. Select the right tool for the job.

Eye Protection

Protective eyewear should be carefully selected, fitted and cleaned. Protective eyewear should be reasonably comfortable and fit snugly without interfering with the movements or vision of the wearer. Protective eyewear should be durable, easily cleaned and capable of being disinfected. It should be kept clean and in good repair. To shield eyes from flying particles and objects, wear industrial-rated glasses or sun glasses and flexible or cushion-fitting ventilated plastic goggles that fit over ordinary eyeglasses. Adding side shields increases protection. Wear splash goggles when handling and applying agricultural chemicals. Employees can also wear welding goggles to protect their eyes from intense light and sparks. Full-face shields are another option for eye protection and can be worn comfortably. Store eye protection in clean, dust-proof containers.

Basic eye protection for the glasses or sunglasses wearer is a must. The glasses wearer should wear a face shield, goggles or spectacles with protective lenses. The glasses should be of industrial-quality with flame-resistant frames. Wearing outdated glasses or sunglasses offers no protection and may even be dangerous as they tend to splinter or shatter on impact.

Glasses, Goggles, and Face Shields

Appropriate eye protection shall be provided to and worn by employees whose jobs expose them to eye hazards. The minimum acceptable form of eye protection is safety glasses that meet the requirements specified in ANSI/ISEA Z87.1, "Practice for Occupational and Educational Eye and Face Protection." Impact and/or chemical resistant goggles or face shields provide additional protection and should be worn over normal corrective lenses unless prescription safety glasses are worn. Several styles of safety glasses and goggles are available on campus.

Normal prescription glasses do not provide adequate protection from injury to the eyes and do not meet ANSI eye protection specifications. In order to provide approved safety glasses for those employees who require corrective lenses, a prescription safety glasses program has been established and is coordinated by EH&S.

To obtain prescription safety glasses:

The employee, working with their supervisor, will contact EH&S and obtain the necessary forms. Please see the EH&S [Safety Glasses Prescription Program](#) for policy and procedures.

Basic First Aid (Eye Injuries)

Proper first aid for eye injuries is critical. The method of first aid needed depends upon the type of injury sustained. Let natural tears wash out specks or particles in the eye. Try not to rub the eyes if possible. If this does not work, see a physician. For blows to the eye, apply cold compresses for 15 minutes and again each hour as needed to reduce pain and swelling. If the blow was hard enough to cause discoloration, see a physician. Internal damage could have occurred. For cuts and punctures to the eye, do not do anything to the eye but bandage it lightly and seek a physician at once.

Chemical burns on the eyes can be minor to very serious. Fresh water should be available for irrigating eyes anywhere chemicals are used. If the eye comes in contact with any chemical, it should be continuously flooded with water for at least 15 minutes. Do not put anything else in the eye. See a physician and take the label or container of the chemical involved.

Hand Protection

Gloves provide protection for the hands and arms from chemicals, temperature extremes, and abrasion. Their proper selection and use is vital to their ability to protect. This is especially true when dealing with potential exposure to chemicals. It is important to remember that both the thickness and the type of material in the glove affect its ability to serve as a barrier against a specific chemical. Specifications regarding compatibility of glove materials with chemicals are available from EH&S.

Another factor in the proper selection of gloves is the wearer's need for dexterity. It is often advisable to reduce the size and thickness of the glove to allow the user to perform manipulations safely. Caution is also required in using gloves around moving equipment. Gloves should not be worn by anyone whose hands are exposed to moving parts in which they could be caught.

Hearing Protectors

Hearing protectors come in two forms: plugs and muffs. Each has specific advantages based on wearer comfort, work environment, and cost. Both are designed to reduce the noise to an acceptable level, although this ability is based on the level and type of noise and on the type of hearing protector.

Proper selection is important. According to OR-OSHA regulations, hearing protection must be available at no cost to all employees exposed to an 8-hour time weighted average (TWA) of 85 dBA (decibels, A-weighted). Employees exposed at 90 dB or greater must wear hearing protectors. Hearing protectors worn where noise is above this permissible level (90 dBA) must reduce the noise to a time-weighted average of 85 dBA or less.

It is the responsibility of supervisors to investigate whether their work environments expose employees to noise above the permissible level. EH&S can assist supervisors in this evaluation by performing sound level measurements and evaluations. If necessary, a hearing conservation program will be established which will include employee training and audiometric testing.

Nothing shall prevent the employee from wearing hearing protectors for reduction of annoyance noise or high-level noise of short duration. Hearing protectors should always be considered "personal" equipment and should not be used by other individuals, except for muffs that are adequately cleaned and sanitized.

Helmets

Employees working in areas where there is possible danger of head injury from impact, falling or flying objects, or electrical shock and burns must wear protective helmets. The typical "hard hat" is the protective helmet of choice in most situations. Hard hats for short-term use can be obtained from the Facilities Services Tool Room.

Respirators

The ability of respiratory protective equipment to provide adequate protection is based on proper selection and fit and on training in the use of the respirator. Therefore, respirators which are intended for protection against harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors must not be obtained or worn by employees without the approval of EH&S and in accordance with the Respiratory Protective Equipment Safety Program.

This program is managed by EH&S and has been established to comply with the OR-OSHA Regulations for Respiratory Protection. The specific requirements for the program are outlined in *Safety Instruction 20*, available from EH&S. EH&S maintains a supply of different types of respirators. If at all possible, respirators should be obtained through EH&S in order to ensure the proper selection and fit.

Persons should not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed annually.

Fall Protection and Harnessing (see also: elevated work surfaces, Chapter 10)

General Fall Protection Recommendations:

The following items are highly recommended to provide maximum protection of workers and ensure compliance with regulations and standards. All work environments are different, so the following are guidelines only. When establishing your own fall protection program, choose the correct system to meet your needs.

Warnings: Always read all instructions and warnings contained on and in the product packaging before using any fall protection equipment.

Inspection: All fall protection equipment should be inspected prior to use by following procedures outlined in the manufacturer's brochure.

Training: All workers shall be trained by a competent person in the proper use of fall protection products.

Regulations: Understand all Federal, State, Local and Provincial regulations pertaining to fall protection before using the equipment.

Rescue Pre-Planning: Minimizing the time between a fall occurrence and medical attention of the workers is vitally important. A thorough rescue program should be established prior to using fall protection equipment. Employers should provide for a prompt rescue should a fall occur. Rescue procedures should be reviewed on a regular basis as part of the company's overall safety training program.

Equipment Preferences: If there are any doubts about which fall protection product to use, choose the following basic system:

Full-Body Harness with Sliding Back D-Ring Should a fall occur, the body harnesses would distribute the load throughout the body instead of concentrating the forces on the abdomen, as is the case with traditional body belts. The sliding back D-Ring will keep the worker in an upright position in the event of a fall, which allows the worker to remain as comfortable as possible while awaiting a rescue.

Shock-Absorbing Lanyards with Locking Snap Hooks Lanyards with built-in shock absorbers reduce fall arresting forces by 65-80% compared to forces generated by traditional lanyards. Locking snaps feature self-closing, self-locking keepers, which remain closed until unlocked and pressed open for connection or disconnection. This feature of locking snaps significantly reduces the possibility of accidental disengagement or "rollout."

Reliable Anchorage Points Anchor points or attachments must be capable of supporting 5000 lbs. per worker. If there is any doubt about the strength of the attachment point -- DO NOT ATTACH. Search for an alternative anchor point.