Personal Protective Equipment

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Introduction
Occupational Safety & Health Administration (OSHA) Personal Protective Equipment Standards - General Requirements, 29 CFR 1910.132, govern the use of personal protective equipment at Iowa State University. Other federal agencies that govern the use of personal protective equipment (PPE) in the workplace include, but are not limited to:

- Environmental Protection Agency (EPA)
- Centers for Disease Control and Prevention (CDC)
- National Institutes of Health (NIH)
- U.S. Department of Agriculture/Animal Plant Health Inspection Service
- U.S. Public Health Service
- Nuclear Regulatory Commission

Examples of PPE include, but are not limited to, hard hats, plain and prescription safety glasses, goggles, welding helmets, shields, safety shoes, laboratory coats, aprons, gloves, protective clothing, ear muffs or plugs, and respirators.

Policy Statement
University departments shall provide employees adequate personal protective equipment where necessary in the performance of their duties. Departments shall determine and document what constitutes adequate personal protective equipment (PPE) through completion of a job hazard assessment or development of a standard operating procedure (SOP). Adequate PPE shall be provided to employees at no cost, including replacement resulting from regular use. Departments shall insure that employees are adequately trained and that assigned PPE is worn when hazards are present.

Employees shall be expected to use assigned PPE when called for by the hazard assessment, standard operating procedure, container label or safety data sheet. PPE shall be maintained by the employee in a clean, sanitary and usable condition.

Visitors shall be provided appropriate PPE when visiting a hazardous area.
Personal Protective Equipment (PPE)
PPE must be worn when working with hazards (chemical, biological, physical, and radioactive materials). In a laboratory this must include:

- Laboratory coats (or other protective clothing such as aprons, scrubs, coveralls, etc.)
- Safety glasses or goggles
- Gloves resistant to the material used
- Appropriate footwear (closed at the heel and toe)

Sandals must not be worn when working in the laboratory or shop. Other protective equipment, such as splash goggles, face shields, aprons, thermal or cut resistant gloves, hearing protection, or respirators, must be worn when conditions dictate.

Completion of a hazard assessment or SOP may allow individual PPE requirements to be determined and justified by a laboratory supervisor or principal investigator (PI). Documentation of PPE selection must be included in the SOP developed for the experiment or operation.

In a class situation, students shall purchase or obtain the necessary and approved PPE designated by the department or instructor responsible for the course. Students must be trained in the proper usage and care of the PPE.

Electrical Protective Devices
Electrical protective devices (i.e., rubber insulated gloves, sleeves, matting, blankets, covers and line hoses) shall be provided to Iowa State University employees when working with high voltage electrical hazards. Use of these devices at Iowa State University will be governed by the requirements outlined in the OSHA Electrical Protective Devices Standards, 29 CFR 1910.137.

Eye and Face Protection
Appropriate eye and face protection shall be provided to Iowa State University employees when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. Use of eye and face protection at Iowa State University will be governed by the requirements outlined in the OSHA Eye and Face Protection Standards, 29 CFR 1910.133. All eye and face protection must be approved by the most current American National Standards Institute, ANSI standard Z87.1.

Safety Glasses
Safety glasses with side shields, including detachable, self-locking, or slide-on shields, are required where there is a potential exposure to eye hazards. Operations requiring safety glasses include but are not limited to:

- Grinding or use of abrasive wheels
- Chiseling
- Use of power saw
- Use of staple guns
- Use of power tools (drill, sander, etc.)
- Machining
- Other similar type operations

Safety Goggles
Safety goggles are required in chemical handling and operations where there is potential for chemical fumes, splashes, mists, sprays, or dust exposure to the eyes.
Contact Lenses

Contact lenses do not provide eye protection and may entrap objects and chemicals. Therefore, if they are worn in hazardous environments, they must be used in conjunction with appropriate protective eyewear (safety goggles or safety glasses).

Foot Protection

Appropriate protective footwear shall be provided to Iowa State University employees when exposed to hazards of the foot such as crushing hazards caused by falling or rolling objects, objects piercing the sole, electrical shock hazards and chemical hazards. Use of these devices at Iowa State University will be governed by the requirements outlined in OSHA Occupational Foot Protection Standards, 29 CFR 1910.136. Safety shoes with protective toe caps and steel shanks in the sole must be approved by the most current American National Standards Institute, ANSI standard Z41, to be used at Iowa State University. Footwear used for chemical resistance must be constructed of elastomers resistant to the chemical used.

Hand Protection

Appropriate hand protection shall be provided to Iowa State University employees when exposed to hazards of the hand, such as skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns, and harmful temperature extremes. Use of hand protection at Iowa State University will be governed by the requirements outlined in OSHA Hand Protection Standards, 29 CFR 1910.138. Selection of appropriate hand protection shall be based on the hazards identified, level of protection needed, duration of use, dexterity required and fit. Elastomeric gloves used for chemical resistance must be constructed of elastomers resistant to the chemical used.

Head Protection

Appropriate head protection shall be provided to Iowa State University employees when working in areas where head injuries could occur from falling objects, contact with stationary objects, or contact with electrical shock hazards. Use of head protection at Iowa State University will be governed by the requirements outlined in OSHA Head Protection Standards, 29 CFR 1910.135. All protective helmets must be approved by the most current American National Standards Institute, ANSI standard Z89.1, to be used at Iowa State University.

Hearing Protection

Hearing protection shall be made available to Iowa State University employees exposed to noise levels of 85 decibels or greater. Hearing protection must be worn by employees exposed to noise levels of 90 decibels or greater.

Use of hearing protection devices at Iowa State University will be governed by the requirements outlined in the ISU Hearing Conservation Manual and the OSHA Occupational Noise Exposure Standard, 29 CFR 1910.95.

Employees exposed to noise levels at or above an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent must be included in the ISU Hearing Conservation Program as outlined in the Hearing Conservation Manual. Inclusion in the program requires completion of annual hearing tests (audiograms) and training.

All hearing protection devices used at Iowa State University must have an Environmental Protection Agency (EPA) Noise Reduction Rating (NRR) shown on the packaging. Hearing protectors must attenuate employee exposure to an 8-hour time-weighted average of 85 decibels or below.
Body Protection

Body protection shall be provided to Iowa State University employees to prevent skin exposure to harmful contaminates (i.e., harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors), limit contamination of "street clothing," and aid the decontamination process. Selection of appropriate body protection must be based on the hazards identified, parts of the body affected, level of protection needed, duration of use and fit.

Respiratory Protection

Respiratory protection shall be assigned to Iowa State University employees when exposed to contaminated breathing air that could cause occupational diseases (i.e., harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors). Use of respiratory protection at Iowa State University will be governed by the requirements outlined in the ISU Respiratory Protection Manual and the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

On an annual basis, all employees required to wear respiratory protection must be medically approved by the ISU Occupational Medicine physician, complete required training, and be fit tested on the respirator to be used.

All respiratory equipment must be certified by the National Institute for Occupational Safety and Health (NIOSH) to be used at Iowa State University. Purchase of respiratory protection at ISU Central Stores will require a prescription issued by Environmental Health and Safety, except for filtering face pieces (dust masks).

Resources

Links

- EH&S PPE web page
- EH&S Occupational Medicine
- ISU Hearing Conservation Manual and Program
- ISU Respirator Protection Program
- ISU Laboratory Safety Manual
- ISU Central Stores
- American National Standards Institute (ANSI)
- CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th Edition
- National Institute for Occupational Safety and Health (NIOSH)
- OSHA Occupational Noise Exposure Standards, 29 CFR 1910.95
- OSHA PPE General Requirements, 29 CFR 1910.132
- OSHA Eye and Face Protection Standards, 29 CFR 1910.133
- OSHA Respiratory Protection Standards, 29 CFR 1910.134
- OSHA Head Protection Standards, 29 CFR 1910.135
- OSHA Exposure to Hazardous Chemicals in Laboratories, 29 CFR 1910.1450