

# 1 Personal Protective Equipment

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## 5 Content

6 **Introduction**

7 **Policy Statement**

8 [Laboratory PPE](#)

9 [Electrical Protective Devices](#)

10 [Eye and Face Protection](#)

11 [Foot Protection](#)

12 [Hand Protection](#)

13 [Head Protection](#)

14 [Hearing Protection](#)

15 [Body Protection](#)

16 [Respiratory Protection](#)

17 **Resources**

## 18 Introduction

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

- 23 • Environmental Protection Agency (EPA)
- 24 • Centers for Disease Control and Prevention (CDC)
- 25 • National Institutes of Health (NIH)
- 26 • U.S. Department of Agriculture/Animal Plant Health Inspection Service (USDA/APHIS)
- 27 • U.S. Public Health Service (USPHS)
- 28 • Nuclear Regulatory Commission (NRC)

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

32

## 33 Policy Statement

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

41

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

45

46 Visitors shall be provided appropriate PPE when visiting a hazardous area.

47 **Personal Protective Equipment (PPE)**

48 PPE must be worn when working with hazards (chemical, biological, physical, and radioactive  
49 materials). In a laboratory this must include:

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

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

57  
58 Completion of a hazard assessment or SOP may allow individual PPE requirements to be  
59 determined and justified by a laboratory supervisor or principal investigator (PI). Documentation of  
60 PPE selection must be included in the PPE Assessment or SOP developed for the experiment or  
61 operation.

62  
63 In a class situation, students shall purchase or obtain the necessary and approved PPE designated  
64 by the department or instructor responsible for the course. Students must be trained on the proper  
65 use and care of the PPE.

66 **Electrical Protective Devices**

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

71  
72 **Eye and Face Protection**

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

79 **Safety Glasses**

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

- 83 • Grinding or use of abrasive wheels
- 84 • Chiseling
- 85 • Use of power saw
- 86 • Use of staple guns
- 87 • Use of power tools (drill, sander, etc.)
- 88 • Machining
- 89 • Other similar type operations

90 **Safety Goggles**

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

93 **Contact Lenses**

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

97 **Foot Protection**

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

106 **Hand Protection**

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

115 **Head Protection**

116 Appropriate head protection shall be provided to Iowa State University employees when working in  
117 areas where head injuries could occur from falling objects, contact with stationary objects, or contact  
118 with electrical shock hazards. Use of head protection at Iowa State University will be governed by  
119 the requirements outlined in OSHA Head Protection Standards, 29 CFR 1910.135. All protective  
120 helmets must be approved by the most current American National Standards Institute, ANSI  
121 standard Z89.1, to be used at Iowa State University.  
122

123 **Hearing Protection**

124 Hearing protection shall be made available to Iowa State University employees exposed to noise  
125 levels of 85 decibels or greater. Hearing protection must be worn by employees exposed to noise  
126 levels of 90 decibels or greater.  
127

128 Use of hearing protection devices at Iowa State University will be governed by the requirements  
129 outlined in the ISU Hearing Conservation Manual and the OSHA Occupational Noise Exposure  
130 Standard, 29 CFR 1910.95.  
131

132 Employees exposed to noise levels at or above an 8-hour time-weighted average sound level (TWA)  
133 of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent must  
134 be included in the ISU Hearing Conservation Program as outlined in the Hearing Conservation  
135 Manual. Inclusion in the program requires completion of annual hearing tests (audiograms) and  
136 training.  
137

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

## 141 **Body Protection**

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

## 147 **Respiratory Protection**

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

153  
154 On an annual basis, all employees required to wear respiratory protection must be medically  
155 approved by the ISU Occupational Medicine physician, complete required training, and be fit tested  
156 on the respirator to be used.

157  
158 All respiratory equipment must be certified by the National Institute for Occupational Safety and  
159 Health (NIOSH) to be used at Iowa State University. Purchase of respiratory protection at ISU  
160 Central Stores will require a prescription issued by Environmental Health and Safety, except for  
161 filtering face pieces (dust masks).  
162

## 163 **Resources**

### 164 **Links**

- 165 • [EH&S PPE web page](#)
- 166 • [EH&S Occupational Medicine](#)
- 167 • [ISU Hearing Conservation Manual and Program](#)
- 168 • [ISU Respirator Protection Program](#)
- 169 • [ISU Laboratory Safety Manual](#)
- 170 • [ISU Central Stores](#)
- 171 • [American National Standards Institute \(ANSI\)](#)
- 172 • [CDC Biosafety in Microbiological and Biomedical Laboratories \(BMBL\) 5th Edition](#)
- 173 • [National Institute for Occupational Safety and Health \(NIOSH\)](#)
- 174 • [OSHA Occupational Noise Exposure Standards, 29 CFR 1910.95](#)
- 175 • [OSHA PPE General Requirements, 29 CFR 1910.132](#)
- 176 • [OSHA Eye and Face Protection Standards, 29 CFR 1910.133](#)
- 177 • [OSHA Respiratory Protection Standards, 29 CFR 1910.134](#)
- 178 • [OSHA Head Protection Standards, 29 CFR 1910.135](#)
- 179 • [OSHA Occupational Foot Protection Standards, 29 CFR 1910.136](#)
- 180 • [OSHA Electrical Protective Equipment Standards, 29 CFR 1910.137](#)
- 181 • [OSHA Hand Protection Standards, 29 CFR 1910.138](#)
- 182 • [OSHA Exposure to Hazardous Chemicals in Laboratories, 29 CFR 1910.1450](#)

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