

1 Personal Protective Equipment

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3 Contact: [Environmental Health & Safety](#)

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17 Introduction

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

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

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

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32 Policy Statement

33 University departments shall provide employees adequate personal protective equipment where
34 necessary in the performance of their duties. Departments shall determine and document what
35 constitutes adequate personal protective equipment (PPE) through completion of a job hazard

36 assessment or development of a standard operating procedure (SOP). Adequate PPE shall be
37 provided to employees at no cost, including replacement resulting from regular use. Departments
38 shall insure that employees are adequately trained and that assigned PPE is worn when hazards are
39 present.

40

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

44

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

46 **Laboratory PPE**

47 PPE must be worn when working with laboratory hazards (chemical, biological, and radioactive
48 materials). At a minimum this must include:

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

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

56

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

60

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

64 **Electrical Protective Devices**

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

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71 **Eye and Face Protection**

72 Appropriate eye and face protection shall be provided to Iowa State University employees when
73 exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic
74 liquids, chemical gases or vapors, or potentially injurious light radiation. Use of eye and face
75 protection at Iowa State University will be governed by the requirements outlined in the OSHA Eye
76 and Face Protection Standards, 29 CFR 1910.133. All eye and face protection must be approved by
77 the American National Standards Institute, ANSI standard Z87.1-1989.

78 **Safety Glasses**

79 Safety glasses with side shields are required where there is a potential of being struck by projectile
80 flying objects. Detachable, self-locking, or slide-on shields are acceptable if properly installed on the
81 safety glasses prior to exposure to eye hazards. Operations requiring safety glasses include:

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

89 **Safety Goggles**

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

92 **Face shields**

93 Face shields are required where there is potential face exposure to projectiles, chemicals, or radiant
94 energy. Face shields cannot be used as a substitute for eye protection. It is often necessary to
95 provide both means of protection.

96 **Filtered lenses**

97 Eye and face protection with filter lenses are required where there is a potential of being exposed to
98 injurious light radiation. Operations requiring filter lenses include: welding, work with UV lamps and
99 work with lasers. Select the appropriate lens shade or filter by referring to the selection tables in 29
100 CFR 1910.133 (a) (5) and ANSI standard Z136.1-2000.

101 **Prescription Lenses**

102 Employees who wear prescription lenses and who are exposed to eye hazards must wear eye
103 protection that incorporates the prescription in the design or wear eye protection that will fit over the
104 prescription lenses.

105

106 **Contact Lenses**

107 Contact lenses do not provide eye protection and may entrap objects and chemicals. Therefore, if
108 they are worn in hazardous environments, they must be used in conjunction with appropriate
109 protective eyewear (safety goggles or safety glasses). OSHA Respiratory Protection Standard 29
110 CFR 1910.134(e)(5)(ii) specifically prohibits the use of contacts under respirators and gas
111 masks. [<back to top>](#)

112 **Foot Protection**

113 Appropriate protective footwear shall be provided to Iowa State University employees when exposed
114 to hazards of the foot such as crushing hazards caused by falling or rolling objects, objects piercing
115 the sole, electrical shock hazards and chemical hazards. Use of these devices at Iowa State
116 University will be governed by the requirements outlined in OSHA Occupational Foot Protection
117 Standards, 29 CFR 1910.136. Safety shoes with protective toe caps and steel shanks in the sole
118 must be approved by the American National Standards Institute, ANSI standard Z41-1991, to be
119 used at Iowa State University. Footwear used for chemical resistance must be constructed of
120 elastomers resistant to the chemical used.

121 The suitability of wearing sandals, clogs, etc., must be determined by supervisory personnel and
122 must include an evaluation of possible hazards in the workplace. As a general rule, going barefoot is
123 not allowed in any work environment at Iowa State University.

124

125 Special modifications which are a medical necessity will be paid for by the employer upon
126 presentation of a prescription issued by a medical doctor, osteopath, or podiatrist.

127 **Hand Protection**

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

136 **Head Protection**

137 Appropriate head protection shall be provided to Iowa State University employees when working in
138 areas where head injuries could occur from falling objects, contact with stationary objects, or contact
139 with electrical shock hazards. Use of head protection at Iowa State University will be governed by
140 the requirements outlined in OSHA Head Protection Standards, 29 CFR 1910.135. All protective
141 helmets must be approved by the American National Standards Institute, ANSI standard Z89.1-
142 1986, to be used at Iowa State University.

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144 **Hearing Protection**

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

148
149 Use of hearing protection devices at Iowa State University will be governed by the requirements
150 outlined in the ISU Hearing Conservation Manual and OSHA Occupational Noise Exposure
151 Standards, 29 CFR 1910.95.

152
153 Employees exposed to noise levels at or above an 8-hour time-weighted average sound level (TWA)
154 of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent must
155 be included in the ISU Hearing Conservation Program as outlined in the Hearing Conservation
156 Manual. Inclusion in the program requires completion of annual hearing tests (audiograms) and
157 training.

158
159 All hearing protection devices used at Iowa State University must have an Environmental Protection
160 Agency (EPA) Noise Reduction Rating (NRR) shown on the packaging. Hearing protectors must
161 attenuate employee exposure to an 8-hour time-weighted average of 85 decibels or below.

162 **Body Protection**

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

168 **Respiratory Protection**

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

174
175 On an annual basis, all users of respiratory protection must be medically approved by the ISU
176 Occupational Medicine physician, complete required training, and be fit tested on the respirator to be
177 used.

178
179 All respiratory equipment must be certified by the National Institute for Occupational Safety and
180 Health (NIOSH) to be used at Iowa State University. Purchase of respiratory protection at ISU
181 Central Stores will require a prescription issued by Environmental Health and Safety, except for
182 filtering face pieces (dust masks).

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184 Resources

185 Links

- 186 • [American National Standards Institute](#)
- 187 • [CDC Biosafety in Microbiological and Biomedical Laboratories \(BMBL\) 5th Edition](#)
- 188 • [Central Stores](#)
- 189 • [Environmental Health and Safety PPE web page](#)
- 190 • [Environmental Health and Safety](#)
- 191 • [ISU Hearing Conservation Manual and Program](#)
- 192 • [ISU Occupational Medicine Program](#)
- 193 • [ISU Respiratory Protection Manual \[PDF\]](#)
- 194 • [Laboratory Safety Manual \[PDF\]](#)
- 195 • [National Institute for Occupational Safety and Health \(NIOSH\)](#)
- 196 • [OSHA Occupational Noise Exposure Standards, 29 CFR 1910.95](#)
- 197 • [OSHA PPE General Requirements, 29 CFR 1910.132](#)
- 198 • [OSHA Eye and Face Protection Standards, 29 CFR 1910.133](#)
- 199 • [OSHA Respiratory Protection Standards, 29 CFR 1910.134](#)
- 200 • [OSHA Head Protection Standards, 29 CFR 1910.135](#)
- 201 • [OSHA Occupational Foot Protection Standards, 29 CFR 1910.136](#)
- 202 • [OSHA Electrical Protective Devices Standards, 29 CFR 1910.137](#)
- 203 • [OSHA Hand Protection Standards, 29 CFR 1910.138](#)
- 204 • [OSHA Exposure to Hazardous Chemicals in Labs, 29 CFR 1910.1450](#)