

1 Personal Protective Equipment

2 Effective: Moved to Policy Library from University Policy Manual (UPM) 3.1(11)

3 Reviewed and Updated: March 2021

4 Contact: [Environmental Health and Safety \(EH&S\)](#)

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
- 27 • U.S. Public Health Service
- 28 • Nuclear Regulatory Commission

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

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

65 **Electrical Protective Devices**

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

70
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 most current American National Standards Institute, ANSI standard Z87.1.

78 **Safety Glasses**

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

- 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 operations where there is potential for
91 chemical fumes, splashes, mists, sprays, or dust exposure to the eyes.

92 **Contact Lenses**

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

96 **Foot Protection**

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

105 **Hand Protection**

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

114 **Head Protection**

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

122 **Hearing Protection**

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

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

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

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

140 **Body Protection**

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

146 **Respiratory Protection**

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

152
153 On an annual basis, all employees required to wear respiratory protection must be medically
154 approved by the ISU Occupational Medicine physician, complete required training, and be fit tested
155 on the respirator to be used.

156
157 All respiratory equipment must be certified by the National Institute for Occupational Safety and
158 Health (NIOSH) to be used at Iowa State University. Purchase of respiratory protection at ISU
159 Central Stores will require a prescription issued by Environmental Health and Safety, except for
160 filtering face pieces (dust masks).
161

162 **Resources**

163 **Links**

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

182