

Respiratory Protection Program

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1.0 PURPOSE

The primary objective of this program is to prevent respiratory injury due to atmospheric contamination. As far as feasible this shall be accomplished by accepted engineering controls (i.e., enclosure, confinement, ventilation, and substitution). When effective engineering controls are not feasible, or while they are being instituted, occupational respiratory injuries and illnesses caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes sprays or vapors, will be controlled by the use of appropriate respiratory protection equipment. This program will outline the training, inspection, and utilization of respirators.

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2.0 SCOPE

This program applies to all BYU-Idaho personnel that wear respiratory protective devices as part of their routine assignment or in emergency or non-routine situations.

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3.0 REFERENCES

29 CFR 1910.38

29 CFR 1910.134

29 CFR 1926.103

ANSI Z88.6 (Respirator Use -- Physical Qualifications for Personnel)

ANSI Z88.2 (Standard Practices for Respiratory Protection)

BYU-Idaho EH-005-R02 Hazard Communication Program

BYU-Idaho EH-011-R01 Chemical Hygiene Program
BYU-Idaho EH-001-R02 Confined Space Entry Program

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4.0 Definitions.

Competent person: One who is capable of identifying existing and predictable hazards in the surroundings, and who has authorization to take prompt corrective measures to eliminate them.

Fit testing: Evaluation of the sealing characteristics and performance of the respirator under controlled conditions.

Respirator: A device designed to protect the wearer from inhalation of harmful atmospheres. Types include:

1. Atmosphere-supplying respirators:
 - a. Self-contained breathing apparatus (S.C.B.A.)
 - b. Air-line
 - c. Hose-mask
 - d. Combination of self-contained and hose-mask or air-line
2. Air-purifying respirators:
 - a. Gas and vapor (gas mask and chemical cartridge)
 - b. Particulate (dust, fog, fume, mist, smoke, and sprays)
 - c. Combination gas, vapor, and particulate
3. Combination atmosphere-supplying and air-purifying:

Qualified person: A person who by reason of experience or training is familiar with the operation to be performed and the hazards involved.

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5.0 Medical Evaluation

5.1 (Alternate) BYU-Idaho personnel will not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. A BYU-Idaho physician shall determine what health and physical conditions are pertinent. (This is the OSHA 29 CFR 1910.134)

5.1.1 A physician shall determine if employees are indeed physically able to wear a respirator as part of their work assignment. (This is from ANSI Z.88.6 a good idea but not mandated)

5.2 Frequency. This medical examination should be conducted every five years up to age 35, every 2 years up to age 45, and annually thereafter. (This goes with previous one)

5.3 Pulmonary Function Test. Spirometry will be used to screen individuals that use respirators incidentally to their job performance. If the FVC (forced vital capacity) is less than 80 percent or the FEV1 (forced expiratory volume - 1 second) is less than 70 percent, restriction from respirator use will be considered.

5.4 Medical History. A medical history questionnaire will be utilized to identify the following:

5.4.1 Previously diagnosed diseases, especially cardiovascular or respiratory diseases

5.4.2 Psychological conditions that might effect respirator use (claustrophobia)

5.4.3 Problems associated with breathing during normal work activities

5.4.4 Past problems with respirator use

5.4.5 Past and current usage of medication

5.4.6 Known physical deformities or abnormalities which may interfere with respirator use

5.4.7 Previous occupations

5.4.8 Susceptibility to tachycardia (rapid beating of the heart) produced by breathing heated air.

5.5 A determination will be made by the examining physician into which of three possible categories the respirator user falls:

Class 1 No restrictions

Class 2 Limited Restrictions (Specifically identified by the physician)

Class 3 No respirator use allowed under any circumstances (This goes with medical exam)

5.6 Corrective Lenses. Because of the potential of serious fitting problems by individuals wearing corrective lenses, ONLY the BYU-Idaho Safety Office can authorize respirator use to these individuals.

5.6.1 The wearing of contact lenses in contaminated atmospheres is not allowed.

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6.0 Monitoring.

6.1 A representative of the BYU-Idaho Safety Office or other competent person shall perform all required air monitoring.

6.2 The competent person shall make a reasonable determination as to which substances to monitor and how frequently to monitor

6.3 Air sampling data are important in the selection of the proper respirator and should include:

6.3.1 Identification of the contaminant

6.3.2 Nature of the hazard

6.3.3 Concentration in the breathing zone.

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7.0 Selection of Respirators.

7.1 The selection of the appropriate respirator will be made only after considering a wide assortment of contaminant variables. Among them are the following:

7.1.1 The physical state of the contaminant -- dust, mist, vapor, fume, or gas

7.1.2 Its physical properties such as molecular weight, water solubility and vapor pressure

7.1.3 Physiologic effects on the body, such as eye irritation, skin adsorption or dulling of the sense of smell.

7.1.4 Measured concentrations compared to permissible exposure level

7.1.5 Warning properties and odor thresholds.

7.2 Job and individual requirements shall be considered in the selection of respirators. These include:

7.2.1 Length of time respirator will be worn

7.2.2 The activity of the wearer

7.2.3 Additional requirements of eye protection

7.2.4 Communication

7.2.5 Temperature

7.2.6 Personnel acceptance and face fit

7.3 Unusual factors should be anticipated in selecting respirators. Some examples include:

7.3.1 Adsorption through or irritation of the skin

7.3.2 Radiation of the skin and whole body

7.4 Air Purifying Respirators

7.4.1 Air purifying respirators will not be worn in atmospheres containing less than 19.5% oxygen by volume.

7.4.2 Air purifying respirators will not be used where the contaminants are unknown.

7.4.3 Air purifying respirators will not be used where high or moderate levels of exposure are expected.

7.4.4 Air purifying respirators will not be used when any of the following contaminants are present:

carbon monoxide	ozone
hydrogen cyanide	isocyanates"
hydrogen fluoride	vinyl chloride
hydrogen sulfide	<i>(This list is not all</i>
methylene chloride	<i>inclusive)</i>
nitrous oxides	

7.4.5 Only NIOSH/MSHA -- certified respirators will be used.

674.6 The selection of respirators will be made by the BYU-Idaho Safety Office or its' qualified designee.

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8.0 Training.

8.1 Minimum training shall include the following:

8.1.1 Instruction in the nature of the hazard and an appraisal of what may happen if the respirator is not worn.

8.1.2 A discussion of the respirators capabilities and limitations.

8.1.3 Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. (Respirators shall not be worn when conditions such as facial hair, temple pieces on glasses, or absence of one or both dentures, prevent a good face seal.)

8.1.4 Training shall provide individuals an opportunity to handle the respirator, have it fitted properly, test its face piece-to-face seal, wear it in normal air for a long familiarity period, and, to wear it in a test atmosphere.

8.2 Fit Testing.

8.2.1 A qualitative fit test will be conducted initially and as part of the regular medical evaluation using irritant smoke.

8.2.2 A fit check will be conducted by employees each time they don a respirator. This check can be performed in either of 2 ways:

8.2.2.1 Positive Pressure: the wearer covers the exhalation valve and breathes out. If a slight positive pressure is felt inside the face piece, the respirator is adjusted properly.

8.2.2.2 Negative Pressure: The wearer covers both cartridges with his hands and inhales. The test is deemed acceptable if the face piece collapses slightly, and stays collapsed while the wearer holds his breath.

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9.0 Maintenance and Care of Respirators.

9.1 Cleaning

9.1.1 Routinely used respirators shall be collected on a regular basis and be cleaned and disinfected. (At least weekly)

9.1.2 Those respirators used by more than one worker shall be thoroughly cleaned and disinfected after each use.

9.2 Inspection

9.2.1 All respirators shall be inspected routinely before and after each use.

9.2.2 Respirators used routinely shall be inspected during cleaning. Worn, deteriorated, or defective parts shall be immediately replaced.

9.2.3 Parts replacement or repairs should be done only by a qualified individual.

9.3 Storage

9.3.1 Respirators must be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Storage should be in a self-sealing type container. (Zip-lock bags or cans with plastic lids)

9.3.2 Respirators should be packed or stored so that the face piece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position

9.4 Repair

9.4.1 Replacements or repairs shall be done only by experienced persons with parts designed for the respirator. No attempt shall be made to replace components or to make adjustment or repairs beyond the manufacturer's recommendations

9.5 Air Quality. All breathing air shall meet or exceed the CGA (Compressed Gas Association) G7.1 standard for Grade "D" air.

9.6 Use of Respirators.

9.6.1 Each respirator permanently assigned to an individual should be durably marked to indicate to whom it was assigned and when the respirator was issued.

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10.0 Emergency Use Respirators.

10.1 Training

10.2 Inspection. Emergency use SCBA or Air-line respirators must be inspected monthly. This inspection will be made by the "using" department and shall include, as a minimum, the following items:

10.2.1 The respirator is where it is supposed to be

10.2.2. The air cylinder(s) are fully charged

10.2.3. The low air-pressure warning alarm is working

10.2.4. The elastomeric parts are in good condition

10.2.5. The air cylinders are hydrostatically tested at least once every 5 years. (Test date is stamped into cylinder neck)

10.3 A record shall be kept of inspection dates and findings for respirators maintained for emergency use.

10.4 Cleaning. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

10.5 Storage. Instructions for proper storage of emergency use respirators are found in "use and care" instructions usually mounted inside the carrying case lid.

10.6 Use in Dangerous Atmospheres.

10.6.1 In areas where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional person shall be present. Communication shall be maintained, and planning shall be such that one individual will be unaffected by any likely incident and that individual will have the proper rescue equipment to be able to assist others in time of an emergency.

10.6.2 When self-contained or hose masks with blowers are used in atmospheres immediately dangerous to life or health, standby men must be present with suitable rescue equipment.

10.6.3 Individuals using airline respirators in atmospheres immediately hazardous to life or health shall be equipped with safety harnesses and safety lines for lifting or removing persons from hazardous atmospheres or, other and equivalent provisions for rescue, shall be used. A standby rescuer with a SCBA shall be at the nearest fresh air station.

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11.0 Program Monitoring

11.1 The BYU-Idaho Safety Office will monitor the "Respiratory Protection Program". Random inspections will be made to insure that respirators are properly selected, used, cleaned and maintained.

11.2 Results of these inspections will be forwarded to department supervisors, area directors and the Safety Office.

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