



Respiratory Protection

I. Policy

Cal State Fullerton (CSUF) intends to maintain, insofar as can reasonably be expected, an environment that will not adversely affect the health, safety and well-being of students, employees, visitors, nor the surrounding community. Because not all working environments can be made completely safe from potentially hazardous substances and atmospheres, CSUF has established the Respiratory Protection Program (Program) for the safety and well-being of its employees. CSUF also requires compliance where the word "shall" is used and offers guidance when the word "should" is used.

II. Authority

California Code of Regulations (CCR), Title 8, § 5144

Code of Federal Regulations Title 29, Section 1910.134

III. Scope

The Program applies to all University Departments and employees who may work in potentially hazardous atmospheres. It sets forth accepted practices for respiratory equipment users and provides information and guidance for the proper selection, use, and care of the equipment and requirements governing its use. It addresses requirements for protection of the respiratory system from particulate matter, toxic gases, and vapors. It will help safeguard health, as mandatory use of respiratory protective equipment implies that the wearer needs protection from a hazardous atmosphere.

IV. Definitions

Approved - Tested and listed as satisfactory by the National Institute for Occupational Safety and Health (NIOSH).

Cartridge - A small container filled with air-purifying media.

Contaminant - A harmful, irritating, or nuisance agent foreign to the normal atmosphere.

Exhalation Valve - A device which allows exhaled air to leave a respirator and prevents infiltration of outside air.

Face-piece - The portion of a respirator that covers the wearer's nose and mouth in a half face-piece and nose, mouth, and eyes in a full face-piece. It seals to the face and includes the headbands, exhalation valve(s), and connections for an air-purifying device.

Filter - A medium used in respirators to remove solid or liquid particles from the air stream entering the respiratory enclosure.

Filtering Face-piece - (Dust mask) means a negative pressure particulate respirator with a filter as an integral part of the face-piece or with the entire face-piece composed of the filtering medium.

High-Efficiency Particulate Air (HEPA) Filter - A filter that removes 99.97% of specific particulates from an air stream.

Inhalation Valve - A device that allows air to enter the face-piece and prevents exhaled air from leaving the face-piece.

National Institute for Occupational Safety and Health (NIOSH) - A Federal agency that tests, approves, and certifies respirators.

Oxygen Deficient Atmospheres - Air that contains less than 19.5% oxygen by volume.

Particulate - Airborne solid or liquid dusts, fogs, fumes, mists, smokes, or sprays.

Permissible Exposure Limit (PEL) - Contaminant exposure concentrations listed by the California Occupational Health and Safety Administration (Cal/OSHA) that a healthy individual normally can tolerate for 8 hours a day, five days a week, without harmful effects. Particulate concentrations are listed as milligrams per cubic meter of air (mg/m^3), and gaseous concentrations are listed as parts per million by volume (ppm).

Qualitative Fit Test - A test procedure to determine the effectiveness of the seal between the respirator and the wearer's face and usually performed during the fitting process.

Quantitative Fit Test - An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respirator - A device that protects the wearer from inhalation of harmful contaminants.

Threshold Limit Value (TLV) - Contaminant exposure concentrations published by the American Conference of Governmental Hygienists that a healthy individual normally can tolerate for 8 hours a day, five days a week, and without harmful effects. Particulate concentrations are listed as mg/m^3 , and gaseous concentrations are listed as ppm.

Vapor - The gaseous state of a substance.

V. Accountability

A. Department - the department chair or director is responsible for the overall health and safety of employees, visitors, and students at CSUF facilities under their control. They are responsible for assuring the adherence of the mandatory requirements of this program.

B. Environmental Health and Safety (EH&S):

1. Reviews and approves purchases of respiratory protection equipment.

2. Provides instruction on the need for respiratory protection and criteria for selection, respirator fitting, use, and maintenance.
 3. Coordinates annual medical surveillance for each employee who is required to wear a respirator and maintains authorization records.
 4. Conducts annual training for respiratory equipment usage, maintenance, and storage.
 5. Conducts annual fit tests and respirator inspections for employees in the Program.
 6. Performs exposure assessment and monitoring to determine appropriate respiratory protection requirements.
- C. Supervisor - the employee's immediate supervisor:
1. Identifies employees who may need respiratory equipment and contact EH&S for assessments and medical exams.
 2. Requests assistance from EH&S to evaluate operational changes that may create respiratory hazards.
 3. Enforces the use of respiratory protection equipment and safe work practices when applicable.
 4. Ensures inspections occur prior to use.
 5. Confirms that the face to face-piece seal is unobstructed by facial hair or other material.
- D. Employee - CSUF employees required by the Program to wear respirators:
1. Utilizes the issued respiratory protection equipment in accordance with instruction and training provided by EH&S.
 2. Informs the supervisor of any personal health problems that could be aggravated by the use of respiratory equipment.
 3. Guards against damage and ensuring respirators are not disassembled, modified, or altered in any unauthorized manner.
 4. Reports any observed or suspected malfunctioning respirator to EH&S or Material Control.
 5. Uses only those brands, sizes and types of respiratory protection equipment for which they have been trained and fitted.
 6. Utilizes proper cartridges for anticipated exposure.
 7. Ensures an effective face to face-piece seal during respirator use.

VI. Program

A. Authorization – Only staff designated by the supervisor, project leader, or EH&S may wear respirators while working at CSUF. Respirator users shall annually complete respirator fit testing and training and required medical surveillance.

B. Respirator Selection

1. Dust Masks - The N 95 filtering face-piece respirators (dust masks) are available to authorized users, such as the medical staff at the Student

Health & Counseling Center (SHCC) and those who voluntarily choose to use them. The staff at the SHCC are fit tested for use in compliance with Title 8, Section 5199, regarding aerosol transmissible diseases. Voluntary users (see section G) have not been identified as having hazardous exposures and are not fit-tested.

2. Air-purifying Half Face-piece Respirators – These include 3M, North, and Willson brands which are available from Material Control. They do not provide protection in oxygen deficient atmospheres, but utilize replaceable filters cartridges specific to certain contaminants.
3. Air-purifying Full Face-piece Respirators – These respirators provide more protection than half-masks because their shape allows a better mask-to-face seal, and they protect the eyes. They utilize the same filtering cartridges as do the half face-piece respirators. University Police and EH&S staff use full face-piece respirators as well as Painters following an assessment.
4. Full Face-piece Respirators (Avon) – The University Police use specialized masks and filters from Avon Technical Products that have been approved by NIOSH as protective against certain biological, chemical, and radiological agents.
5. Filter Cartridges - HEPA filters protect against particulates such as asbestos, lead, and low levels of toxic and radioactive particulates. Other filters protecting against specific contaminants such as acid gases or organic vapors. Combination filters protect against all or a few of these specific contaminants. And, the University Police use special approved filters designed to protect against terrorist agents. Generally replace the cartridge filters when contaminants are detected through the mask by smell or taste or when breathing becomes difficult. Appendix B provides more specifics on cartridge filters.

C. Medical Monitoring – Only those individuals medically able to wear respirators and have completed the associated requirements shall be issued a respirator (this includes the N95 masks for SHCC personnel). Those who voluntarily choose to use N 95 filtering face-piece respirators as a dust mask are not monitored. Medical monitoring for respirators generally involves a questionnaire consistent with the requirements of [Appendix C](#). A contracted occupational health physician reviews it and may request a physical exam based on its answers. For more information on this process refer to the Medical Monitoring Program.

D. Employee Education and Training –Program respirator wearers shall complete training describing available respiratory protective equipment and the care, maintenance, purpose, and function of the equipment. The instruction discusses proper wearing of each respirator, pertinent State and Federal regulations and standards, and CSUF policies. No CSUF employees will be required to work in atmospheres immediately dangerous to life and health, and so the instruction will focus on work in and around low hazard atmospheres and nuisance dusts. Refer to Appendix E for a training outline.

E. Respirator Fit Testing – the Program requires both daily tests and annual qualitative or quantitative fit tests. EH&S inspects respirators during fit tests and offers either a quantitative fit test using a Port-a-Count® machine or a qualitative fit test for half face-piece respirator wearers. In addition, respirator wearers shall complete the daily tests prior use. Archive and current fit test records reside in the Program binder at EH&S.

1. Daily test – Prior to each use, the respirator wearer will complete a negative pressure test. Don the respirator, and place the hands over the inlet of the filter cartridges to restrict air from passing through; inhale gently so the face-piece slightly collapses; and hold their breath for about 10 seconds. If the face-piece remains slightly collapsed and no inward leakage occurs, the test is successful. Next, complete a positive pressure test by covering the exhalation valve and exhaling gently into the face-piece. If no outward air leakage occurs the test succeeds.
2. Qualitative Test – Options for fit testing include Irritant smoke (stannic chloride), Bitrex® solution, or banana oil applied to the face to face-piece seal. Irritant smoke is applied approximately six inches from the seal as the respirator wearer counts loudly from 100 to 1 or repeats the OSHA “Rainbow Passage” while moving the head from side-to-side and up-and-down. The test simulates movements and conversation the wearer will use during the workday. Infiltration of the smoke will cause the wearer to cough involuntarily and result in an unsuccessful test. If no smoke infiltrates the seal, the test succeeds. The Bitrex® solution or banana oil is used with the employee inside of a test enclosure. The test succeeds if the wearer can not taste the solution upon infiltration of the mask. A sensitivity test confirms that the wearer can detect the solution.

3. Quantitative Test – The Port-a-Count® machine used for quantitative fit testing uses isopropyl alcohol to help determine the ratio of ambient particulate concentrations versus concentrations within the respirator (fit factor). The EH&S conducts this procedure and the testing equipment is housed at T-1475. The test provides overall fit factors and those for specific activities.
4. General Information – Fit testing can detect and help correct poorly fitting or performing respirators based upon contaminant leakage into the respirator. During fit tests, adjust the straps properly as comfortably as possible to simulate working conditions. Cal/OSHA lists fit testing procedures in [Appendix A](#).

F. Protection Factors - Quantitative tests provide a numerical fit factor for each respirator. These fit factors relate to a specific respirator, but Cal/OSHA has assigned protection factors to different classes of respirators as guidance on proper selection. Like the fit factor, the protection factor (PF) equals the ambient concentration of a contaminant divided by the concentration within the respirator ($PF = \text{ambient concentration} / \text{inside concentration}$). PF generally equal 10 for half face-piece respirators and 50 for full face-piece respirators. Example: Work with a half face-piece respirator in an atmosphere with 10 ppm contaminant concentration equates to an exposure of 1 ppm.

G. Voluntary Use - Certain authorized employees may voluntarily use N95 filtering face-piece respirators, available from Material Control, but may not use half or full face-piece respirators. Voluntary users are exempt from medical monitoring, but must have completed the appropriate training with an overview of [Appendix D](#). Voluntary users generally work in Landscape Services.

H. Respirator Care

1. Respirators are properly stored and issued by Material Control and EH&S personnel. However, respirator wearers must continually care for their respirators. If a respirator exhibits any defects, return it to material control for a new respirator, preferably the same brand and size. Prior to selecting a new brand or size contact EH&S to help with the selection and for a fit test. Also, **do not exchange parts from one brand to another.**
2. Inspection – Prior to and after each use the respirator wearer must inspect the following respirator parts to ensure they are not cracked, decomposed, distorted, frayed, loose, pitted, stretched, stiffened, swollen, torn, or warped: rubberized face-piece, plastic adapters, inhalation valves flaps, headband straps, plastic exhalation valve seats, exhalation valve covers, and filter elements.
3. Maintenance – Clean the respirator after use with either respirator wipe pads from EH&S and Material Control or by removing the filters and straps and using a mild soap solution and a soft brush. After using soap, rinse with clean warm water and air dry. Store the respirators in a cool dry location without distorting the face-piece.

I. Exposure Assessment – Employees wishing to use a half face-piece respirator should contact EH&S for an exposure assessment. EH&S will establish whether exposures to hazardous substances exceeds regulatory permissible exposure limits (PEL) established by Cal/OSHA or recommended threshold limit values (TLV). The employee enters the Program when exposures exceed the PEL and TLV, and engineering controls and administrative cannot successfully reduce exposures. EHIS compares exposures to the respirator PF to select the appropriate respirator.

J. Record Keeping – Program records include enrollee names, training tracking, completed fit tests, and medical monitoring. The medical monitoring program addresses those records in more detail, but medical reports are locked up and confidential. EH&S uses the network based Employee Training Center to track training, fit testing, and medical monitoring. The Program binder contains hard copies of records and can be reviewed at EH&S, T 1475.

[Appendix A](#), Fit Testing

[Appendix B](#), Filter Cartridge Selection

[Appendix C](#), Medical Questionnaire, Title 8, §5144,

[Appendix D](#), Voluntary Respirator Use, Title 8 § 5144

[Appendix E](#), Respirator Training Outline

Responsible Executive:

Vice President for Administration and Finance

Responsible Office:

Environmental Health and Safety

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