

Respiratory Protection Program

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Respiratory Protection Program

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1. Purpose

In the course of their work, employees of the University of California, Berkeley (Berkeley) may be exposed to materials that pose a respiratory hazard. Berkeley provides respiratory protective equipment based upon assessments of potential or known exposure to hazardous substances and atmospheres, and has developed safe procedures for their use in compliance with the California Code of Regulations, Title 8, Section 5144. Feasible alternate methods to reduce respiratory hazards to safe levels should always be implemented first. Respiratory protective equipment shall be used when necessary to control respiratory hazards and may be used to supplement other hazard control methods.

The Berkeley Respirator Protection Program (RPP) establishes the procedures and administrative requirements necessary for use of respiratory protective equipment—a type of Personal Protective Equipment (PPE). It provides health and safety information and guidance to those persons falling within the jurisdiction of this program as described in the following section.

2. Applicability / Scope

The RPP applies to all Berkeley Faculty and Staff including registered student volunteers working under the authority of an animal protocol or other formal user authorization. It applies whether the use is required as PPE or is by choice or voluntary* and to all types of respirators.

(Note: The use of dust masks is not recommended and not part of the RPP. Surgical masks are not part of the RPP.)

RPP Applicability

Faculty/Staff	All types	Applies to PPE and voluntary use
Student Volunteer In accord with an animal protocol or formal user authorization by staff or faculty	All types	Applies to PPE and voluntary use
Student, Research Student, Visiting Scholar, & other affiliates paid or partially paid by the university, a sponsor, fellowship or grant In accord with an animal protocol or formal user authorization by staff or faculty	All types	Applies to PPE and Voluntary use

*See Voluntary Use of Respirators, page 11 and attachments 2, 3 & 4)

The RPP does not apply to students, student volunteers, or non-employee research students, other than in the limited exception mentioned in the first sentence of this section. Faculty and student organization sponsors/leaders are encouraged to maintain safe environments and activities in which respirator use is neither necessary nor required. Faculty members and student organization leaders that require students to wear a respirator must make appropriate arrangements to ensure that use is conducted safely and in accordance with any applicable laws, standards, and best practices. The Office of Environment, Health & Safety (EH&S) is available for consultation. *(In the case of student use, the RPP may be used as guidance and best practices.)*

Note: Requirements outlined in this program are mandatory in nature where the word "MUST" is used, and are advisory in nature where the word "SHOULD" is used.

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3. Roles / Responsibilities

All Berkeley Staff, Faculty and Eligible Students must

Be aware of the requirements of this program and never wear a respirator (except voluntary use of N-95 type respirators) without first being medically cleared to do so by the Occupational Health Clinic (OHC) located in the University Health Services (UHS), and fit tested by EH&S.

Know that they may request the use of a respirator from their employer at any time and be voluntarily enrolled in the Respiratory Protection Program.

Inform their supervisor of any personal health problems that could be aggravated by the use of respiratory protection equipment.

Inform their supervisor of new situations in their work environment where respiratory protection equipment may be needed.

Departments that have Respirator users– Specifically the PI or Supervisor

Campus department's performing research, facilities maintenance, or other activities where respiratory protection equipment may be required, must:

1. Identify those employees who may need respiratory protection equipment.
2. Schedule or ensure that employees schedule medical evaluation, fit testing, and training, as required by this program. Medical evaluation, fit testing, and training is required before first use and annually thereafter.
3. Reschedule training when there are changes in respirator use, or if personnel demonstrate that they have not retained the requisite understanding or skill to safely use respiratory protection.
4. Accommodate restrictions regarding respirator use if established for employees by the OHC.
5. Enforce the use of respiratory protection equipment when required.
6. Provide for proper storage, monthly inspection, and maintenance for SCBA equipment when personnel are assigned to use such equipment.
7. Provide voluntary users of respirators (including N-95 type respirators) with:
 - a. Appendix D of the Cal/OSHA Respiratory Protection Standard [California Code of Regulations, Title 8 Section 5144]
 - b. An acknowledgement form: "**EMPLOYEE ACKNOWLEDGEMENT OF RECEIPT OF TITLE 8 CCR § 5144 APPENDIX D**" (Attachment 3 of this program). This form is used to verify that a voluntary respirator user has received a copy of Appendix D, and understands that they are enrolled into the UC Berkeley RPP as a voluntary user. The acknowledgement form shall be retained by the department and a copy should be sent to EH&S.

Department Safety Coordinator or Other Responsible Person

Ensure that all aspects of this program are implemented in their department including Medical Clearance from OHC, current Fit Test and training from EH&S, and scheduling training / retraining as needed.

Respirator Users

All UC Berkeley Faculty, Staff, and Eligible Students who are required or request to wear a respirator must: Use the respirator in accordance with this document and training provided by EH&S whether it's employer issued or employee owned.

Work in accordance with any restrictions of respirator use placed by the OHC and inform their supervisor if an assignment precludes adherence to any restrictions.

Guard respiratory protection equipment against damage, and ensure that respirators are not disassembled or altered in any way other than by changing cartridges or filters. Guard respiratory protection equipment against damage, and ensure that respirators are not disassembled or altered in any way other than by changing cartridges or filters.

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Clean respirators after each use, and store properly. Respirators which cannot be cleansed of a toxic material should be returned to EH&S for replacement.

Report any malfunction of respiratory protection equipment to EH&S.

Use only respirators for which the employee was trained and fitted.

Use the correct type of respirator and cartridge/filter for the hazard involved.

Exchange cartridges whenever breakthrough or load up of filters is detected.

Inform their supervisor of new situations which arise where respiratory protection equipment may be necessary.

Schedule with EH&S the Cal/OSHA required annual re-fit test and training one year after last fit testing/training date (plus or minus 31 days).

Contractors and Vendors that are required¹ to Use Respiratory Protection

Contractor or Vendor employees that are required to use respiratory protection must have a current medical clearance, fit testing and training under their company's Respiratory Protection Program. Contractors and vendors may be required to show proof of their employees' enrollment in a Respiratory Protection Program. This verification is at the discretion of the Berkeley manager, project manager, or procurement representative with oversight authority and/or Berkeley EH&S.

EH&S – (Respiratory Protection Program Manager)

THE RESPIRATORY PROTECTION PROGRAM ADMINISTRATOR FROM EH&S MUST:

1. Review and approve all purchases of respiratory protection equipment.
2. Provide for instruction of affected departments and program enrollees on the need for respiratory protection, the selection of respirators, and respirator fitting, use, and maintenance.
3. Refer personnel with suspected and identified medical problems that would preclude safe respirator use to the OHC for further medical examination.
4. Provide for qualitative or quantitative fit testing of all persons required to wear respiratory protection equipment.
5. Support the supply, maintenance, and cleaning of respiratory protection equipment.
6. Recommend specific engineering controls for identified airborne hazards whenever possible.
7. Provide technical consultation on issues relating to respiratory protection.
8. Retain records as required by this document.
9. Conduct a periodic evaluation of the program and update as regulatory need or newly identified hazards may require.

Occupational Health Clinic

The OHC must:

- a. Establish health standards which must be met by all prospective respirator users based on type of respirator to be used.
- b. Establish medical evaluation protocols for conducting health assessments.
- c. Conduct medical evaluations (Appendix I) on all persons designated to wear respiratory protection equipment and provide medical approval or disapproval as appropriate. Results will be provided to the applicant, their supervisor and EH&S.

Note: The OHC will not provide medical evaluations for students and other non-employees except registered student volunteers working under the authority of an animal protocol or other formal user authorization. No medical evaluations will be provided for users who choose (volunteer) to use an N-95 respirator. Government safety regulations do not require medical evaluation for voluntary use of dust masks or N-95 respirators.

¹ California Code of Regulations, Title 8 Section 5144

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4. Types and Selection of Respiratory Protection

There are many varieties of respirators available with each designed to protect against a specific type of hazard. Air-purifying respirators clean the air as the wearer breathes or PAPR powered by a fan worn by the user. Air-supplied respirators provide clean air to the employee from tanks or from an air compressor. Each type has specific capabilities and limitations. Therefore, it is necessary that personnel are provided with the correct type of respirator for a given job. This section describes the various types of respirators available, when they can be used, when they are inappropriate, and specific guidelines for the selection of a suitable respirator. EH&S provides specific types of respirators based upon these guidelines and the nature of the hazard, and according to the following criteria:

All respirators used by Berkeley personnel must be NIOSH/MSHA approved.

Air-purifying respirators must not be used in atmospheres deficient in oxygen or in emergency situations where the level or type of air contamination is unknown.

The use of Air-purifying respirators is prohibited in "Immediately Dangerous to Life and Health" (IDLH) atmospheres or where a toxic vapor or gas is above the Permissible Exposure Limit (PEL) and has poor warning properties.

Dust Mask –

Description: Single use, disposable dust masks are generally not made available from EH&S, but can be obtained through the Berkeley Storehouse.

Advantages: These respirators are lightweight, disposable, comfortable, and inexpensive.

Limitations: Disposable dust respirators offer essentially no protection due to poor sealing characteristics.

Applications: Low concentrations of nuisance dusts, pollen, and animal dander where airborne contaminant levels are always below the Permissible Exposure Limits (PEL's).

Protection Factor: 1.

Typical Uses: Grounds keeping, Sanding, Woodworking, Mixing powders, Dry Machining, Sweeping floors, Grinding, Cleaning dirty area, Use of leaf blowers, Raking, or any other activity that generates nuisance dust.

Surgical Mask –

Description: Single use, disposable surgical masks are generally not made available from EH&S, but can be obtained through the Berkeley Storehouse.

Advantages: These respirators are lightweight, disposable, comfortable, and inexpensive.

Limitations: Disposable surgical masks offer essentially no protection to the wearer due to poor sealing characteristics, but helps control the spread of airborne contaminants from the person wearing the mask.

Applications: Typically medical facilities to control the spread of airborne particles.

Protection Factor: 1.

Typical Uses: Medical facilities, Doctor to patient or Nurse to patient contact.



N95 or N100 Filtering Face Piece –

Description: Single use, disposable dust masks are generally not made available from EH&S, but can be obtained through the Berkeley Storehouse. Has regulations by Cal/OSHA regarding their use, which may or may not require a medical clearance a campus physician. Please contact EH&S for proper guidance governing the use of N95 or N100 dust masks.

Advantages: These respirators are lightweight, disposable, comfortable, and inexpensive.

Limitations: This type of disposable dust mask offers a much higher protection factor than the lesser expensive dust masks. And they cannot be used where facial hair interrupts the facial sealing surface if the employer requires the use of this type of respiratory protection which fit testing is required.

Applications: Low concentrations of nuisance dusts, pollen, and animal dander where airborne contaminant levels are always below the Permissible Exposure Limits (PEL's). Used as the industry standard for BL3 lab entry and medical facilities with possible air borne hazards such as TB or other viruses. And animal facilities doing operations such as cage cleaning and preparation of TB infected mice

Protection Factor: 1.

Typical Uses: Grounds keeping, sanding, woodworking, mixing powders, dry machining, sweeping floors, grinding, cleaning dirty area, use of leaf blowers, raking, medical facilities, animal research facilities, or any other activity that generates nuisance dust.

Half Face (Negative Pressure) –

Description: This type of respirator has an elastomeric face seal which fits over the nose and under the wearer's chin. It is fitted with cartridges which purify the air as the wearer breathes. Different types of cartridges are available for different air contaminants.

Advantages: This type of respirator is relatively lightweight, comfortable, and offers good protection from low concentrations of air contaminants.

Limitations: Some people experience irritation from the elastomeric face seal. The protection offered is not as good as a full-face piece air-purifying respirator. Air-purifying respirators cannot be used for all types of air contaminants. They cannot be used where facial hair interrupts the facial sealing surface, in atmospheres deficient in oxygen, in atmospheres that may be Immediately Dangerous to Life or Health (IDLH), or in atmospheres that have high concentrations (>10 x PEL) of contaminants. They do not protect the eyes from irritating contaminants.

Applications: Protection afforded by these respirators depending upon the cartridge used. There are several different types of cartridges, and each type is designed to protect against a specific type of hazard. Cartridges are color coded to identify their applicability. The most common types of cartridges are:



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- a. **HEPA Cartridge:** Useful for low airborne concentrations of toxic dusts, including asbestos, radio nuclides, and silica.
- b. **Organic Vapor Cartridge:** Useful for low airborne concentrations of most solvents, petroleum distillates, and glue vapors. Not useful against natural gas or propane, or vapors with poor warning properties.
- c. **Acid Gas/Mist Cartridge:** Useful in atmospheres containing low airborne concentrations of mineral acid gas or mist.
- d. **Pesticide:** Useful against low airborne concentrations of pesticide vapors or mists.
- e. **Combination Cartridge:** Useful for environments with low airborne concentrations of more than one contaminant present (e.g. vapor and particulate exposure).
- f. **Mercury Cartridge:** Useful for protection against low airborne concentrations of metallic mercury vapors.
- g. Other types of cartridges are also available from EH&S.

Protection Factor: 10.

Typical Uses: Painting, working with chemicals, welding, sanding, woodworking, mixing powders, dry machining, grinding, animal research facilities, lead and asbestos abatement operations, or any other activity that generates nuisance dust.

Full Face (Negative Pressure) –

Description: Air-purifying full-face piece respirators are similar to the half-mask respirators described above in that ambient air is filtered as the wearer breathes. Again, specific cartridges are available to protect against specific hazards. However, the full-face piece extends around the entire face, covering the eyes in addition to the nose, chin, and mouth.

Advantages: Full-face piece respirators provide a better seal and more protection than half-mask air-purifying respirators. They also protect the eyes from irritating vapors and mists or damage by splashed chemicals.

Limitations: These respirators are heavier than half-masks. Skin irritation may be experienced by some individuals at the sealing surface. Eyeglasses must be specially adapted to these respirators to ensure that temple bars do not interrupt the respirator sealing surface. These respirators cannot be used when facial hair comes between the respirator sealing surface and the face, in oxygen-deficient atmospheres, in IDLH atmospheres, or in atmospheres which have high concentrations (> 50 x PEL) of contaminants.

Applications: Full-face piece air-purifying respirators are used in the same manner as half-mask air-purifying respirators. A full-face piece respirator is recommended where a greater degree of respiratory protection is needed or where eye protection is desirable.

Protection Factor: 10.

Typical Uses: Painting, working with chemicals, welding, sanding, woodworking, mixing powders, dry machining, grinding, animal research facilities, lead and asbestos abatement operations, or any other activity that generates nuisance dust.



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PAPR (Powered Air Purifying Respirator) –

Description: This class of respirators features a battery powered, portable fan which draws air through a particulate or chemical filter and blows it to the face piece. The fan/filter unit is usually mounted on the wearer's back or belt. Full or half-mask face pieces are available, as are a variety of helmets and hoods.

Advantages: The major advantages of this type of respirator derive from the positive-pressure provided to the face piece, hood, or helmet. This eliminates any difficulty in breathing provided by negative-pressure respirators, provides improved cooling and comfort, and reduces the importance of a good facial fit. Individuals with facial hair can be issued helmet or hood models provided they have a documented medical exemption from shaving, or the department is willing to pay for the equipment.

Limitations: These units are relatively expensive to purchase and maintain. The battery and fan pack must be carried on the wearer's belt. This class of respirator cannot be used in IDLH atmospheres or in atmospheres deficient in oxygen. Heavy exertion may create negative-pressure, reducing the respirator's effectiveness.

Applications: PAPR respirators are recommended where a greater degree of respiratory protection is needed, where eye protection is desirable or if the person has facial hair that would interfere with the sealing surface of negative pressure type respiratory protection.

Protection Factor: 50.

Typical Uses: Animal research facilities, Lead and Asbestos abatement operations, or any other activity that requires a higher protection factor than negative pressure respirators.

Supplied-Air Respirator –

Description: A hose-mask respirator equipped with a face piece, breathing tube, safety harness, and safety line. The respirable air is supplied through an air hose connected to a compressed-air cylinder or air compressor. Generally, this type of respirator is not issued to Campus personnel.

Advantages: Supplied-Air respirators offers the greatest degree of protection against all airborne contaminants, including atmospheres deficient in oxygen and in IDLH atmospheres.

Limitations: Supplied-Air Respirators are expensive to purchase and maintain. The wearer mobility is limited due to the supplied air hose which connects and series of air tanks to the wearers face piece. As with other types of respirators, personnel with facial hair which comes between the respirator sealing surface and the wearer's face cannot utilize SCBA equipment.

Applications: This class of respirator is used in IDLH atmospheres or in atmospheres deficient in oxygen or if the atmosphere exceeds the Permissible Exposure Limits (PEL's).

Protection Factor: 100.

Typical Uses: Confined space entry, where atmospheres could contain an IDLH situation (Example; work with toxic gases or chemicals)



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SCBA (Self Contained Breathing Apparatus) -

Description: This type of respirator provides the user with clean air (ANSI Z86.1-1973) from a high pressure cylinder carried on the wearer's back. They are always provided with a full-face piece and are operated in the pressure demand mode. The SCBA respirator provides the maximum degree of protection against all airborne contaminants.

Advantages: The SCBA offers the greatest degree of protection against all airborne contaminants, including atmospheres deficient in oxygen and in IDLH atmospheres.

Limitations: SCBA units are expensive to purchase and maintain, require the wearer to carry 20 to 30 pounds of equipment, and provide no more than 40 minutes of continuous use. As with other types of respirators, personnel with facial hair which comes between the respirator sealing surface and the wearer's face cannot utilize SCBA equipment.

Applications: This class of respirator is used in IDLH atmospheres or in atmospheres deficient in oxygen or if the atmosphere exceeds the Permissible Exposure Limits (PEL's).

Protection Factor: 100.

Typical Uses: Confined space entry, firefighting, unknown chemical exposures, terrorist attacks, where atmospheres could contain an IDLH situation (Example: work with toxic gases or chemicals)



5. Program Requirements & Respirator User Procedures

Elements of the Program

The Respiratory Protection Program includes:

Hazard Assessment to minimize the need for respiratory protection equipment through the use of engineering controls (e.g., ventilation, isolation) and administrative controls wherever possible.

Prerequisites required for respirator use, including medical qualification, training, and fit testing.

Criteria for the correct selection of respiratory protection equipment.

Instructions detailing the use, cleaning, storage, maintenance, and inspection of respirators.

Training requirements for respirator users, DSCs and other responsible persons of Departments that have personnel enrolled in the Respiratory Protection Program.

Recordkeeping requirements for EH&S (fit tests & training), UHS-Occupational Health Clinic (medical evaluations, etc.) and any department with personnel who are enrolled in the Respiratory Protection Program (assessments).

Administrative Requirements

Hazard Assessment and Engineering Controls

Departments must evaluate work environments that may require respirator use to assess need and hazard control options.

If reasonable engineering controls are available to negate the need for respirator use, they must be implemented. If the selected engineering and other controls do not reduce the respiratory hazards to below the Permissible Exposure Level (PEL), then personnel may be directed to apply for medical clearance, the first step in the Respiratory Protection Program enrollment process.

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Additionally, personnel may be enrolled in the Respiratory Protection Program as a secondary / precautionary means of added safety and hazard control.

New Job Consultation

Upon request, EH&S evaluates new or unusual work environments to determine if there is an airborne hazard and, if so, assists in developing engineering solution(s) to the problem. If engineering or administrative solutions are not practical, only then will EH&S make a recommendation for respiratory protection.

If industrial hygiene (IH) sampling or other means of hazard evaluation are implemented, the sampling results and evaluation findings, including any proposed recommendations or test results, are submitted by EH&S to the affected employees, OHC and/or the Department, and kept on file by the Program Administrator.

Prerequisites for Use of Respiratory Protection Equipment

Authorization for Mandatory Use of respirators is required. Only those persons authorized by their supervisor and EH&S to wear respiratory protection equipment, and who have been medically qualified, fitted, and trained may use such equipment. Supervisors shall send an email to ehs@berkeley.edu providing an assessment of the need and requesting EH&S authorization. EH&S may assess the need further before authorizing respirator use or providing other recommendations to control the involved hazards.

Once EH&S has authorized use of a respirator, the supervisor, employee or registered volunteer shall schedule a medical evaluation at the Occupational Health Clinic. Upon successful completion of the medical evaluation, the employee or registered volunteer shall schedule fit testing/training with EH&S.

Voluntary use of respirators by employees who wish to wear a respirator for work when a respirator is not required may request a respirator from their supervisor or use their own, provided such respiratory use will not in itself create a hazard. Issuance is at the discretion of the affected department. EH&S does not provide respirators for voluntary use. Additionally, employees voluntarily using respirators must be medically qualified (except for N-95 respirators). Also, respirators must be properly cleaned, stored and maintained. Supervisors must provide voluntary users of respirators with a copy of Appendix D of the standard. The voluntary respirator user will sign an "Acknowledgement Form" that they have received and agree to comply with the requirements of Appendix D of the standard. The acknowledgement form shall be retained by the department and a copy should be sent to EH&S.

Medical Qualification

Prior to being trained and fitted for respirator use, personnel must be certified as medically capable of wearing a respirator. (Table of requirements in attachment 2) The general medical screening protocol is as follows:

Initial evaluation

If the employee requires clearance limited to a disposable filter mask or PAPR, the supervisor must provide the employee with Part One of the Respiratory Protection Questionnaire (Appendix IV) and instructions regarding return of the completed form to the Occupational Health Clinic.

For all other types of respirators, the supervisor contacts OHC at 510-642-6891 to schedule an appointment for medical evaluation. Information that must be provided to the OHC include name, department, type of respirator needed, and type of hazard. Appointments will not be scheduled without this information.

The medical evaluation will be performed by an OHC clinician familiar with respiratory program qualification standards, and may include all or some of the following: questionnaire, physical examination, screening spirometry, medical record review or other tests (See Appendix I).

Upon medical certification, the certifying clinician will complete written documentation that the employee is cleared to wear a respirator, and inform EH&S.

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Annual evaluation

Respirator users are required to undergo annual fit testing. Prior to fit testing, an interim questionnaire is administered by EH&S. Answers to the questions that indicate that there may be a change in the user's or ability to wear a respirator safely, will prompt a referral to OHC for medical clearance. Once cleared, the employee can proceed to fit-testing and training.

Voluntary Use

1. For N-95 respirators: medical clearance is not required.
2. Voluntary use of respirators other than N-95s requires medical clearance as described in the mandatory use section.

Qualitative and Quantitative Fit Testing

The safe and effective use of respiratory protection equipment, especially negative-pressure respirators, requires that the respirator be properly fitted to the wearer. Poorly fitting respirators leak and fail to provide the expected degree of protection. No one model of respirator is capable of fitting all people; therefore, several models may have to be tested to find a good fit for some people.

Fit Testing Protocol

Prior to issuing a reusable, face-fitting respirator to personnel, they must successfully pass a qualitative or quantitative fit test on that respirator. The complete quantitative fit test protocol is described in Appendix VI. Before commencing the quantitative fit test protocol, a qualitative fit test must be successfully completed and conducted as described below:

- a. **Negative-Pressure Test:** With the intake port(s) blocked, the wearer inhales slightly. The respirator should collapse slightly on the wearer's face. No leakage around the face seal should be noted while maintaining a negative-pressure inside the respirator for several seconds. This test is not feasible with all brands of respirators.
- b. **Positive-Pressure Test:** With the exhaust port(s) covered, the wearer exhales gently to generate a slight positive-pressure within the face-piece. No leakage outward around the seal should be noted. This test also is not feasible with all brands of respirators.
- c. If the wearer fails to obtain a good facial fit on either the negative- or positive-pressure tests, the head straps should be adjusted and the testing procedure repeated. Extreme, uncomfortable tightening of the respirator straps in order to obtain an adequate face seal is prohibited.
- d. If a respirator cannot be made to fit by adjusting the straps, a different model and/or size should be tried.
- e. Once a satisfactory fit is obtained on the negative- and positive-pressure fit tests, the quality of the facial seal is verified by the use of stannic oxychloride (an irritant smoke). If an air-purifying respirator is being fitted, it must be equipped with a High Efficiency Particulate Air (HEPA) filter for this test. This testing is conducted as follows:
 - i. Inform the employee of the purpose and procedure for irritant smoke testing.
 - ii. If the employee must wear eyeglasses, she or he will be fitted for a half-mask respirator while wearing these glasses. If a full-face piece respirator is to be fitted, eyeglasses must be removed. A spectacle insert must be purchased to accommodate eyeglass wearers who must use full-face piece respirators.
 - iii. Instruct the employee to close her/his eyes tightly and to breathe normally.
 - iv. Irritant smoke is puffed around the entire face seal and cartridge seal, slowly at first and with increasing smoke density if the wearer experiences no irritation.
 - v. Step iv. is continued as the employee goes through several exercises, minimally including slowly moving her/his head from side to side in 180° arcs, up and down 90°, deep breathing, and counting out loud. Each exercise should be continued for at least 15 seconds.
 - vi. If no discomfort from the smoke is noted, the fit testing is complete. If coughing, gagging, or irritation occurs, it is necessary to adjust the respirator straps or select a different model and return to negative- and positive-pressure fit testing.

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- f. Positive- and negative-pressure fit testing is not applicable to some loose fitting, powered air-purifying or air-supplying respirators. However, irritant smoke or quantitative fit testing must be conducted on all respirators.

Fit Testing Restrictions:

- a. Personnel must not be fitted with or wear a face-sealing respirator if there are conditions that prevent a good face seal. Conditions that prevent good face seals may include beards, large mustaches, side burns, or facial stubble. A respirator user's face must be clean shaven where the respirator seals against it.
- b. Personnel who have documented medical conditions (e.g. facial scars) that prevent compliance with the above bullet (a) are fitted with loose fitting PAPR or helmet-type respirators, if possible.
- c. If an employee exhibits any difficulty breathing or a severe psychological reaction during any phase of fit testing, they must be referred to the Campus OHC to determine whether or not the employee is capable of wearing a respirator.

Fit Testing Requirements

Qualitative/quantitative fit testing will be repeated at least annually. In addition, fit testing will be repeated when any change occurs which may alter respirator fit, such as:

A weight change of 20 pounds or more.

Significant facial scarring in the area of the face seal.

Significant dental changes, such as multiple extractions without prosthesis or dentures.

Reconstructive or cosmetic surgery.

Any other condition which may interrupt the face piece seal.

Training

Personnel required to wear respiratory protection equipment are trained by EH&S in the selection, care, use, and limitations of the equipment. Training varies depending on the type of respirator used and the nature of the airborne hazard. At minimum, the training includes and the personnel must demonstrate knowledge of:

- a. The need for respiratory protection equipment.
- b. The types of situations which may require respirators.
- c. Description of prerequisites for respirator use, including medical qualification, training, and fit testing.
- d. A description of different types of respirators, their specific application, selection, and limitations.
- e. Issuance procedures for respirators.
- f. The proper use of respirators, including field fit check procedures and how to detect filter load up or breakthrough.
- g. Cleaning and sanitizing procedures.
- h. Proper storage of respirators.
- i. Inspection and maintenance procedures.
- j. The general requirements of the standard.

Program Evaluation

The Respiratory Protection Program Administrator must observe (and interview) at least eight respirator users in at least 4 departments to ascertain whether the RPP is effective. An annual assessment report will be sent to the EH&S Associate Director and Assistant Manager for Health & Safety. The report will assess implementation of the current program, identify any needed changes and include assessment of:

- a. Respirator fit (including the ability to use the respirator without interfering with effective workplace performance).
- b. Appropriate respirator selection for the hazards to which the employee is exposed.
- c. Proper respirator use under the workplace conditions the employee encounters.
- d. Proper respirator maintenance.

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RESPIRATOR USER PROCEDURES

Once the correct respirator has been selected, care must be exercised in its use, cleaning, storage, and maintenance. This section describes the controls which assure that each respirator will function up to its design specifications. Note that the use and care of SCBA is covered separately in Appendix III.

ISSUANCE

Respirators will only be issued to persons who have been medically examined, trained, and fitted as described in Section III of this document.

Available respirators are stored in the EH&S Respiratory Fit Test Facility, at University Hall. Persons requiring a respirator can contact the EH&S office at 510-642-3073 to obtain one.

The personnel then will receive the respirator in a clean sanitized condition, sealed inside of a plastic bag.

Cartridge Replacement

Contact the EH&S office at 510-642-3073 if replacement cartridges are needed, or for departments that are considered as a high usage department they can acquire new cartridges from that departments stock.

RESPIRATOR RETURN

The respirator must be returned to EH&S if any of the following conditions are met:

- a. It is no longer needed.
- b. It malfunctions or is damaged.
- c. It becomes contaminated with toxic chemicals.
- d. It becomes dirty or difficult to wipe down.

The respirator should be returned in sealed plastic bag with attached note explaining reason for respirator's return.

EH&S note all returned respirators in the Respirator Fit Test Database.

Use of Respirator in the Field

Immediately after receiving the respirator and prior to each use, the personnel must remove it from its plastic bag and inspect it to determine the following:

- a. It is the correct type of respirator for the job. Read the cartridge on air-purifying respirators to verify that it is approved for its intended use.
- b. It is the correct brand and size, as specified on the Respirator Fit Test Card at was issued during the fit testing procedure.
- c. It is intact, complete, and functioning. Don the mask and run perform both positive and negative-pressure face piece seal checks, per Appendix B-1 of the Standard, to ascertain that the valves and face seal are working properly. Notify EH&S of any problems noted.

Respiratory Protection Program

Use: The personnel assigned to a job requiring the use of respiratory protection equipment must use the equipment in accordance with this document and training provided by EH&S.

In almost every case, respirators are individually issued. Special exemptions to this requirement will be made when individual issuance is impractical/cost prohibitive. In any event, all persons wearing respirators must comply with all requirements of this document.

Field Inspection: Prior to each use, the personnel must inspect the respirator as described in Section C 1. Respirators which are damaged, dirty, or fail to fit properly should be returned to EH&S in a sealed plastic bag with an attached note explaining the problem.

Storage: When not in use, respirators must be stored to protect against dust, sunlight, extremes of temperature, excessive moisture, or damaging chemicals. Respirators must be stored in sealed plastic bags or other sealed containers.

Cleaning and Sanitizing:

Every respirator must be cleaned after each day's use, and periodically sanitized. This can be done by wiping down all rubber surfaces of the respirator with respirator cleaning wipes or washing the respirator with soap and warm water, rinsing the respirator thoroughly. (Disposable dust respirators are not to be cleaned and reused.)

Inspection and Cleaning by EH&S

- a. In addition to the personnel inspection prior to each use, respirators shall be inspected by EH&S when they are brought in for annual or semi-annual fit testing. This involves examining the straps, hoses, valves, gaskets, rubber mask, filters, and cartridges as required. Defective or worn parts will be replaced with new parts, or a new respirator will be issued to the user. Cartridges and filters are changed. Parts should never be interchanged between different brands of respirators, as this would void their NIOSH/MSHA approval.
- b. Respirators returned to EH&S are cleaned and sanitized prior to re-issue. Cleaning is conducted by immersing the respirator (after removing cartridges) in a cleaning/sanitizing solution for at least 30 minutes.
- c. Respirators are cleaned using soft brushes and towels, rinsed twice to remove all soap/sanitizer residue, and air dried at temperatures of less than 125° F. Alternately, the dishwasher installed in the EH&S laboratory can be used to sanitize equipment.
- d. After drying, all respirators are sealed in plastic bags prior to re-issue.

Replacement of Cartridges/Filters

An initial set of cartridges/filters, based on the expected exposure, is provided by EH&S at the time of fit testing. Departments will supply additional cartridges/filters, if more than one set is needed during the one year fit test cycle. N-95 respirators are provided by the individual departments.

Use of Respirators for Protection from Airborne Asbestos

Additional program requirements specific to the use of respirators for protection against asbestos fibers are provided in Appendix VII.

Respiratory Protection Program

Use of Respirators in IDLH Atmospheres

Respirators used in IDLH atmospheres must be either full face piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or a combination full face piece pressure demand supplied-air respirator with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres must be NIOSH-certified for escape from the atmosphere in which they will be used. For all IDLH atmospheres the following procedures will be followed:

- a. One personnel or, when needed, more than one personnel is located outside the IDLH atmosphere.
- b. Visual, voice, or signal line communication is maintained between the personnel in the IDLH atmosphere and the personnel located outside the IDLH atmosphere.
- c. The personnel located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue.
- d. The supervisor is notified before the personnel located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue.
- e. The supervisor, once notified, provides the necessary assistance appropriate to the situation.
- f. Personnel located outside the IDLH atmospheres are equipped with pressure demand SCBAs or other positive pressure supplied air respirators, and the appropriate retrieval equipment or other means of removing the personnel in the IDLH atmosphere during an emergency.

6. Training Requirements

All Berkeley Staff, Faculty and Eligible Students

Personnel required to wear respiratory protection equipment shall be thoroughly trained by EH&S in the selection, care, use, and limitations of the equipment. Training varies depending on the type of respirator to be issued and the nature of the airborne hazard.

Departments that have Respirator Users

Departments must be familiar with the administrative and personnel training procedures of this program, and integrate them into their operations. It is the responsibility of the supervisor of any personnel required to wear respiratory protection equipment to ensure that the personnel is rescheduled for training at least annually, when there are changes in respirator use, or if personnel demonstrate that they have not retained the requisite understanding or skill to safely use respiratory protection. EH&S assists supervisors by programming the Learning Management System to send reminder notices around the due date for retraining.

Department Safety Coordinators

DSCs must be familiar with the administrative and personnel training procedures of this program, and implement / integrate them into their research / work / business practices.

Respirator Users

Personnel required to wear respiratory protection equipment shall be thoroughly trained by EH&S in the selection, care, use, and limitations of the equipment. Training varies depending on the type of respirator to be issued and the nature of the airborne hazard.

Contractors using Respiratory Protection on Berkeley property

Contractor or vendor personnel that are required to use respiratory protection must have current medical clearance, fit testing and training under their company's Respiratory Protection Program.

EH&S – (Respiratory Protection Program Manager and Associates that perform fit tests & training)

Designated EH&S personnel must be trained on all aspects of program management and requirements, including:

Respiratory Protection Program

- a. Basic hazard assessment
- b. Fit test equipment and supplies
- c. Respirator and respirator cartridge use
- d. Respirator training requirements
- e. Designated EH&S personnel must be trained on, and familiar with, all Cal/OSHA codes relevant to this program

7. Record Keeping Requirements

Departments that have Respirator Users

All departments that have respirator users should keep a log on file with names, assigned type of respirator protection, fit test date. This shall include a list of voluntary-use Respirator Users also. For a current list of respirator users please contact EH&S.

Department Safety Coordinators

No record keeping needed, but should verify that all respirator users have current medical clearance, respirator training, fit test and/or have sign that they have received a copy of Appendix "D".

Respiratory Users

Respirator users should keep their Respirator Fit Test Card (Appendix IV, page 41) with the respirator at all times. Reference this card for medical clearance and respirator fit test proof, fit test date, brand, model, types of filters or cartridges that have been assigned during the last respirator training and fit test.

EH&S – (Respiratory Protection Program Manager)

EH&S maintains a training database and record filling system of all UC Berkeley respirator users. These records and trainings can be accessed anytime by EH&S and supplied to the department, department safety coordinator, supervisor, Cal/OSHA or the person who have been fit tested.

The EH&S office maintains a log of all respirators issued.

EH&S must maintain records of all fit testing in the personnel respiratory protection file (Respirator Qualification Record) for the duration of employment. (Thirty years after employment ends)

EH&S Trainer

The Respirator Fit Test person retains all training tests, forms, and sign-in sheets for record keeping purposes on Appendix V. These records will reside in the Respiratory Protection Program Managers filling system.

OHC /University Health Services

The University Health Services (UHS) Medical Records Department and Occupational Health Clinic maintain employee medical records in accordance with all applicable state and federal laws regarding record retention and medical confidentiality. Medical records include progress notes, results of any examination or tests, and documentation of medical certifications. Records since October of 2014 are electronic and managed on secure servers by UCOP Risk Solutions. Records are retained for the duration of employment plus thirty days after termination of employment.

8. References

The following Title 8 Cal/OSHA codes dictate the requirements of this program:

§5144. Respiratory Protection

<http://www.dir.ca.gov/title8/5144.html>

9. Issued By and Next Review Date

Issued by: Brandon DeFrancisci, Associate Director, EH&S, UC Berkeley, August, 2018

Next Review Date: May, 2019 or sooner upon changes to code requirements.

10. Attachments

Attachment 1 – Definitions

Attachment 2 – Respirator Medical Clearance Requirements

Attachment 3 – Acknowledgement of Receipt of Appendix D of Section 5144 Form

Attachment 4 – Appendix D of Section 5144

Attachment 5 – Annual Respiratory Protection Questionnaire

Appendix I – Medical Protocol for Respirator Examinations

This 7 page document is titled: Respirator Use Medical Clearance

Appendix II – Use of SCBA Equipment

Appendix III – Occupational Health Clinic Respiratory Protection Questionnaire

Appendix IV – Respirator Fit Test Card

Appendix V – Respirator Qualification Record

Appendix VI – Quantitative Fit Test Protocol

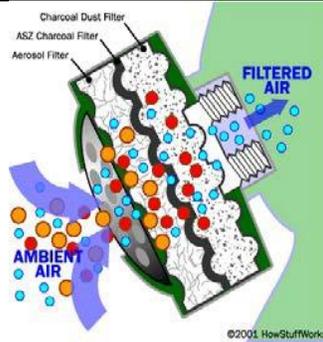
Appendix VII – Use of Respirators for Protection Against Asbestos

Respiratory Protection Program

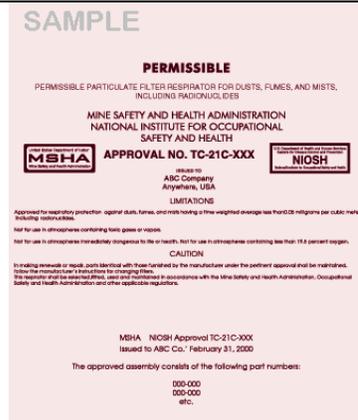
Definitions

Attachment 1

Air Purifying Respirator – This class of respirator actually cleanses incoming dirty air via cartridges/filters and passes clean, filtered air onto the wearer. Available in half-mask, full-face, or powered units, these are the mainstay of the Fit Test Facility's inventory.



Approved – Tested and listed as satisfactory, jointly by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH).



Canister (air purifying) – A container filled with sorbents and catalysts that remove gases and vapors from air drawn through the unit. The canister may also contain an aerosol (particulate) filter to remove solid and liquid particles.



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



Confined Space – An enclosure such as a storage tank, process vessel, boiler, silo, tank car, pipeline, tube, duct, sewer, underground utility vault, tunnel, or pit that has limited means of egress and poor natural ventilation and that may contain hazardous contaminants or be oxygen deficient.

<http://ehs.berkeley.edu/healthsafety/cseprogram.pdf>

Respiratory Protection Program

Contaminant – A harmful, irritating, or nuisance material that is foreign to the normal atmosphere.

Exhalation Valve – A device that allows exhaled air to leave a respiratory device and prevents outside air from entering through the valve.



Face Piece – That portion of a respirator that covers the wearer's nose, mouth, and eyes in a full-face piece. It is designed to make a gas-tight or dust-tight fit with the face and includes the headbands, exhalation valve(s), and connections for an air-purifying device.



Filter – A fibrous medium used in respirators to remove solid or liquid particles from the airstream entering the respiratory enclosure.



IDLH Atmosphere – An atmosphere “Immediately Dangerous to Life or Health” (IDLH). An IDLH atmosphere poses an immediate hazard to life, such as being oxygen deficient (containing less than 19.5% oxygen), or produces an irreversible debilitating effect on health such as exposure to carbon monoxide.

Inhalation Valve – A device that allows respirable air to enter the face piece and prevents exhaled air from leaving the face piece through the intake opening.



Mine Safety and Health Administration (MSHA) – A federal agency that tests, approves, and certifies respiratory protection equipment.



National Institute for Occupational Safety and Health (NIOSH) – A federal agency that tests, approves, and certifies respiratory protection equipment.



Respiratory Protection Program

Negative Fit Check – A respirator-to-face seal check, which is performed by covering the inlets (filters) and inhaling. Once you feel the respirator collapse, stop and hold you breathe for three seconds and observe if the respirator loses the negative pressure seal.

Particulate Matter – A suspension of fine solid or liquid particles in air, i.e. dust, fog, fume, smoke, or sprays. Particulate matter suspended in air is commonly known as an aerosol.

Pesticide – For the purpose of this program, the terms "pesticide" and "pesticide chemical" are synonymous with "economic poison," as defined under the United States Department of Agriculture's (USDA) Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Protection Factor – The overall protection afforded by a certain type of respirator as defined by the ratio of the concentration of contaminant outside a face mask or hood to that inside the equipment under conditions of use. For example, if a half-mask respirator has a protection factor of 10, it may be used for protection in atmospheres with a contaminant concentration up to 10 times the permissible exposure limit (PEL).

Positive Fit Check – A respirator-to-face seal check, which is performed by covering the exhaust or exhalation outlet. While exhaling you will feel air escaping from the weakest point. This can be resolved by tightening the straps at the point where the air escaped.



Qualitative Fit Test – A test procedure to determine the effectiveness of the seal between the face mask and the wearer's face, usually performed during the fitting process, and relying on the wearer providing smell-response information to the fit-tester to determine respirator performance.



Respiratory Protection Program

Quantitative Fit Test - A scientifically-based test that measures the exact extent of respirator fit. Assigns a numerical value (protection factor) to determine face-to-face piece seal through computerized sensing and monitoring.



Respirator - A device designed to protect the wearer from inhalation of harmful atmospheres.

Self-Contained Breathing Apparatus (SCBA) - A unit designed to provide to the wearer a respirable atmosphere independent of the ambient air. A supply of approved compressed air contained in a gas cylinder is carried by the wearer. (See Appendix for a detailed description of SCBA use.)



Supplied-Air Respirator - A hose-mask respirator equipped with a face piece, breathing tube, safety harness, and safety line. The respirable air is supplied through an air hose connected to a compressed-air cylinder or air compressor. Generally, this type of respirator is not issued to Berkeley personnel.



Test Subject - A person wearing a respirator for qualitative / quantitative fit testing.

Vapor - The gaseous state of a substance that is solid or liquid at ordinary temperature and pressure.

Respiratory Protection Program

Attachment 2

Respirator medical clearance Requirements

Voluntary Use	Initial medical clearance	Fit testing/ Training (EH&S) Initial and Annual	Annual medical clearance* (OHC)
N95	None required	Appendix "D" and signed Acknowledgement form	None needed
Negative Pressure	Respirator clearance exam	Appendix "D" and signed Acknowledgement form & Hands on training at time of fit testing	Respirator medical clearance questionnaire required at the time of fit testing*
PAPR	Part One of the Respiratory Protection Questionnaire (See Appendix III)	Appendix "D" and signed Acknowledgement form & Hands on training at time of fit testing	Respirator medical clearance questionnaire required at the time of fit testing*
Air-line / SCBA	Respirator clearance exam	Appendix "D" and signed Acknowledgement form & Hands on training at time of fit testing	Respirator medical clearance questionnaire required at the time of fit testing*
Mandatory Use		Fit testing/ Training (EH&S)	Medical Clearance (OHC)
N95	Part One of the Respiratory Protection Questionnaire (See Appendix III)	Hands on training at time of fit testing	Respirator medical clearance questionnaire required at the time of fit testing*
Negative Pressure	Respirator clearance exam	Hands on training at time of fit testing	Respirator medical clearance questionnaire required at the time of fit testing*
PAPR	Part One of the Respiratory Protection Questionnaire (See Appendix III)	Hands on training at time of fit testing	Respirator medical clearance questionnaire required at the time of fit testing*
Air-line / SCBA	Respirator clearance exam	Hands on training at time of fit testing	Respirator medical clearance questionnaire required at the time of fit testing*

*If clearance is not granted based on the questionnaire, a respirator clearance examination is required.

Respiratory Protection Program

Attachment 3

EMPLOYEE ACKNOWLEDGEMENT OF RECEIPT OF TITLE 8CCR § 5144 APPENDIX D

Date: _____

I _____, acknowledge that I have received and read Appendix D of Title 8 California Code of Regulations section 5144, as provided by my supervisor.

Employee's Department: _____

Employee's Signature: _____ Date: _____

Supervisor's Department: _____

Supervisor's Signature: _____ Date: _____

RPP Manager: _____ Date: _____

Cal/OSHA requires that employees who are enrolled in the voluntary-use Respiratory Protection Program (RPP) receive a copy of Appendix "D". By signing this form, this acknowledges that you received and understand that you have enrolled into the UC Berkeley RPP as a voluntary user. Copies of this signed form will be filed in the department's personnel folder and Voluntary-Use Respirator files at EH&S.

CC:
EH&S Fit Testing Files (Voluntary-Use)
Supervisor (Employee File)

Respiratory Protection Program

Attachment 4

Appendix D to Section 5144: (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Guide to Respiratory Protection at Work

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard. You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designated to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Respiratory Protection Program

Attachment 5



Occupational Health Clinic

Annual Respiratory Protection Questionnaire

This questionnaire must be completed by all UCB employees who will be using any NIOSH-approved respirator. **Please complete the questionnaire and then hand to the person performing your fit test.** It will be returned to the Occupational Health Clinic at the completion of your fit test.

Name: _____

Date of Birth: ___ / ___ / ___ Supervisor: _____ Department _____

Work phone number _____ Home phone number _____

Since your last medical clearance for use of a respiratory protection device, have you:

- | | (circle one) |
|---|--------------|
| 1. Had a heart attack? | Yes No |
| 2. Had a chest pain or shortness of breath when climbing 2 flights of stairs? | Yes No |
| 3. Had asthma or wheezing which is not well-controlled with medication? | Yes No |
| 4. Had a fainting spell or a seizure? | Yes No |
| 5. Grown a mustache or beard/developed any facial deformity? | Yes No |
| 6. Had a notable change in workplace exposure to airborne hazards? | Yes No |
-

- | | |
|---|--------|
| 7. Do you have concerns about your medical ability to wear a respirator? | Yes No |
| 8. Do you wish to talk to an Occupational Health Clinic provider about any other aspect of your medical clearance to wear a respirator? | Yes No |

If you answered 'yes' to any of the above questions, please ask your EH&S Safety Specialist or Safety Specialist to assist you in making an appointment with the Occupational Health Clinic.

Additionally, please inform the EH&S specialist if you have any concerns regarding respiratory protection including fit, selection, use, and maintenance.

Signature _____

Date ___ / ___ / ___

Respiratory Protection Program

APPENDIX I

Medical Protocol for Respirator Examinations

Respirator Use Medical Clearance

Reviewed 12/14

Revised: 01/15

AAAHC Standard: 21a.1,21.a.2,21.a.3,21.h.1,21.h.3

Medical Clearance for Respirator Use

Purpose

- The purpose of the Medical Clearance for the Respiratory Protection Program (RPP) is to assess if persons required to or voluntarily choose to wear a NIOSH-certified respirator during the course of their work at UC Berkeley are medically fit to wear a respirator. The evaluation is limited to conditions that may place the person at risk for harm if wearing a respirator.

Guiding Law, Regulation, and Policy

- California Code of Regulations. §5144. Respiratory Protection <https://www.dir.ca.gov/title8/5144.html>

Eligibility and Enrollment

- Faculty, Staff or students of the University of California, Berkeley who wear a NIOSH-certified respirator (hereafter referred to as “respirator”) or who may be required to wear a respirator are provided with a medical evaluation.
- In addition, there is a Voluntary Respiratory Protection Program for any faculty, staff or student who request to wear a respirator to perform their job duties, if the person’s supervisor agrees that respirator use will not in itself create a hazard. The employee will then be enrolled in the respiratory protection program and undergo screening and fit testing the same as other respirator users.

Voluntary users of respirators

- Must undergo medical clearance
- Must receive instructions from his/her supervisor or EH&S on the proper use (including the appropriate respirator and filter to use in contaminated atmospheres) , maintenance and cleaning of the respirator. (see Appendix A)

Medical Evaluation Protocols

Respiratory Protection Program

- *N95/N100 filtering facepiece respirators:*
 - Initial clearance: N95 respirator users
 - Respirator user is provided Part One of the “Occupational Health Clinic Respiratory Protection Questionnaire” (adapted from CCR §5144).
 - This questionnaire is provided at the time of new hire exam OHC, or when it is initially determined that the respirator user is required to wear a respirator.
 - If not part of a new hire examination (i.e., newly identified respirator user, but already an employee of University of California, Berkeley), it is returned to the OHC in a sealed envelope. Supervisors are not allowed to review the questionnaire.
 - After OHC clinician review of the questionnaire one of the following options may apply depending on the answers to the questions, and the clinician’s medical opinion:
 - Clearance: an email will be sent to EH&S stating the employee is ready for fit testing; Employee will be notified.
 - Medical Evaluation: the employee will be asked to make an appointment in the clinic. The clinician will determine if further history, exam, spirometry, medical record review or further testing are needed at that time. (Proceed to Section [Follow-up](#) of this document).
 - Interval clearance: N95 respirator users:
 - Employee fills out the “Annual Respiratory Protection Questionnaire.” This will be administered by EH&S at the time of the annual fit test.
 - If all answers are negative, the employee proceeds with fit testing.
 - If any answers are affirmative, then the employee is instructed to make an appointment with OHC for follow-up. (See Section [Follow-up](#))
- *Half Face/Full face cartridge respirator and SCBA*
 - Initial Clearance: Half/full Face respirator and SCBA users:
 - For Half Face respirators, employee fills out Part One of the “Occupational Health Clinic Respiratory Protection Questionnaire.” Full-face respirator and Self-contained breathing apparatus (SCBA) users also fill out Part Two.
 - All users must have a medical evaluation in OHC
 - Medical history
 - Vital signs including BP, pulse, height and weight, allergies
 - General physical including evaluation of facial hair, rashes, clubbing, ear drums, nasal passages/septum, and oropharynx, cardiovascular and respiratory systems.
 - Spirometry
 - Supervisor will be notified that
 - The employee has completed medical clearance and must be fit tested before wearing a respirator, OR
 - The employee has not been cleared for Half Face/ Full Face respirator or SCBA use.
 - If cleared, OHC will send an email to EH&S stating user is cleared for fit testing.
 - Interval clearance: Half Face/Full Face Respirator users:
 - Employee fills out the “Annual Respiratory Protection Questionnaire.” This will be administered by EH&S at the time of the annual fit test.
 - If all answers are negative, the employee proceeds with fit testing.

Respiratory Protection Program

- If any answers are affirmative, then the employee is instructed to make an appointment with OHC for follow-up. (See Section [Follow-up](#))
- Interval clearance: SCBA users:
 - SCBA respirator users must make an appointment for a medical evaluation in OHC
 - At the OHC visit:
 - The clinician will review the Medical History portion of the “Respirator Medical Clearance” form with the respirator user
 - Vital signs including BP, pulse, height and weight, allergies
 - General physical including evaluation of facial hair, rashes, ear drums, nasal passages/septum, oropharynx, cardiovascular system and respiratory system.
 - Spirometry only if recommended by clinician
 - The OHC clinician will determine if any further information, work-up, or exam is needed.
 - Supervisor will be notified that
 - The employee has completed medical clearance and must be fit tested before wearing a respirator, OR
 - The employee has not been cleared for SCBA use.
 - If cleared, OHC will send an email to EH&S stating user is cleared for fit testing.

Follow-up at OHC

- When answers to any questions on the (EH&S provided) Annual Respiratory Protection Questionnaire are in the affirmative, respirator users will be seen in OHC for clearance before EH&S will proceed with annual fit testing.
- At the OHC visit:
 - The clinician will review the Medical History portion of the “Respirator Medical Clearance” form with the respirator user
 - Vital signs including BP, pulse, height and weight, allergies
 - General physical including evaluation of facial hair, rashes, ear drums, nasal passages/septum oropharynx, cardiovascular system and respiratory system.
 - Spirometry only if recommended by clinician
 - The OHC clinician will determine if any further information, work-up, or exam is needed.
- Supervisor will be notified that
 - The employee has completed medical clearance and must be fit tested before wearing a respirator, OR
 - The employee has not been cleared for SCBA use.
- If cleared, OHC will send an email to EH&S stating user is cleared for fit testing.

Departmental/Supervisor Notification

- The Respirator Medical Clearance form will be sent to the supervisor at the conclusion of any OHC visit. This may be handed to the employee to give to the supervisor, or transmitted electronically if possible.

Medical Records

- See OHC Manual chapter “Employee Medical Records.”

Respiratory Protection Program

Use of SCBA Equipment

I. General Discussion

A few groups on Campus have the need for emergency use self-contained breathing systems (SCBA's). Additional requirements are applied to the use of these respirators.

II. Description

SCBA units provide the user with a pure supply of breathing air regardless of ambient air contamination. They may be used in atmospheres unsuitable for air-purifying respirators. This includes use in IDLH atmospheres, in confined spaces, and for emergencies where breathing hazards may exist. Departments required to utilize SCBA units must purchase their own equipment as approved by EH&S. Medical qualification is done under the auspices of the University Health Services, and training and the use of such equipment by University personnel comes under the control of the EH&S Respiratory Protection Program. SCBA units may be used in IDLH atmospheres only in conjunction with a positive-pressure full-face mask.

III. Limitations

The air supply in a standard SCBA cylinder is normally rated for either 30 or 60 minute duration; however, heavy exertion and stress will increase breathing rates and deplete the air in less than rated time. When the warning alarm on the unit sounds, the wearer has about five minutes of air remaining, and should leave the area immediately. No one should work alone in hazardous atmospheres; a standby with SCBA and proper communications equipment should always be nearby. The positive-pressure full-face mask used with the SCBA unit cannot be worn with contact lenses or when facial hair extends under the face piece sealing area of the mask.

IV. Monthly Inspections

Emergency use SCBAs and respirators must be inspected monthly. Inspection documentation tags must be attached to the SCBA unit.

V. Annual Training

Departments utilizing SCBA equipment must be retrained on its use at least annually. The SCBA equipment must be maintained in accordance with this training. Periodic donning exercises should be performed to assure that users are comfortable in their use.

VI. Annual Medical Examinations

All SCBA users must have annual medical evaluations at the University Health Service's Occupational Health Clinic. These will be provided under the direction of the Campus Occupational Health Physician.

Respiratory Protection Program

APPENDIX III

CONFIDENTIAL

OCCUPATIONAL HEALTH CLINIC RESPIRATORY PROTECTION QUESTIONNAIRE PART ONE - MANDATORY FOR ALL UC Berkeley RESPIRATOR USERS

Can you read English? Yes No

This questionnaire must be completed by all Campus employees who will be using any respiratory protection at work. Your department must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, no one, including your supervisor, may look at or review your answers without your permission. Please bring the completed questionnaire to your respiratory protection medical examination at the University Health Services Occupational Health Clinic (510-642-6891).

Name: _____ Today's Date: _____

Date of Birth: _____ Age: _____ Sex: Male Female

Height: _____ Weight: _____

Department: _____ Job Title: _____

Home Phone: (_____) _____ Best time to reach you there: _____

Work Phone: (_____) _____ Best time to reach you there: _____

Check the type of respirator will you use:

- N, R, or P disposable respirator (filter-mask, non-cartridge type only)
- Other type (such as half- or full-face, supplied-air, SCBA, etc.)

Have you worn a respirator before? No Yes, type: _____

MEDICAL HISTORY

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes No

2. Have you ever had any of the following conditions?
 - a. Seizures: Yes No
 - b. Diabetes (sugar disease): Yes No
 - c. Allergic reactions that interfere with your breathing: Yes No
 - d. Claustrophobia (fear of closed-in places): Yes No
 - e. Trouble smelling odors: Yes No

3. Have you ever had any of the following pulmonary or lung problems?
 - a. Asbestosis: Yes No
 - b. Asthma: Yes No
 - c. Chronic bronchitis: Yes No
 - d. Emphysema: Yes No
 - e. Pneumonia: Yes No

Respiratory Protection Program

- | | | | | | |
|----|---|--------------------------|--------------------------|--------------------------|--------------------------|
| f. | Tuberculosis: | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| g. | Silicosis: | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| h. | Pneumothorax (collapsed lung): | <input type="checkbox"/> | <input type="checkbox"/> | No | <input type="checkbox"/> |
| | | Yes | <input type="checkbox"/> | | |
| l. | Lung Cancer: | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| j. | Broken ribs: | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| k. | Any chest injuries or surgeries: | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| l. | Any other lung problem that you've been told about: | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| | | | | | |
| 4. | Do you currently have any of the following symptoms of pulmonary or lung illness? | | | | |
| a. | Shortness of breath: | Yes | | No | |
| b. | Shortness of breath when walking fast on level ground or walking up a slight hill or incline: | <input type="checkbox"/> | | <input type="checkbox"/> | |
| c. | Shortness of breath when walking with other people at an ordinary pace on level ground: | Yes | | No | |
| d. | Have to stop for breath when walking at your own pace on level ground: | <input type="checkbox"/> | | <input type="checkbox"/> | |
| | | Yes | | No | |
| | | <input type="checkbox"/> | | <input type="checkbox"/> | |
| | | Yes | | No | |
| e. | Shortness of breath when washing or dressing yourself: | Yes | | No | |
| f. | Shortness of breath that interferes with your job: | Yes | | No | |
| g. | Coughing that produces phlegm (thick sputum): | Yes | | No | |
| h. | Coughing that wakes you early in the morning: | Yes | | No | |
| l. | Coughing that occurs mostly when you are lying down: | Yes | | No | |
| j. | Coughing up blood in the last month: | Yes | | No | |
| k. | Wheezing: | Yes | | No | |
| l. | Wheezing that interferes with your job: | Yes | | No | |
| m. | Chest pain when you breathe deeply: | Yes | | No | |
| n. | Any other symptoms that you think may be related to lung problems: | Yes | | No | |
| | | | | | |
| 5. | Have you ever had any of the following cardiovascular or heart problems? | | | | |
| a. | Heart attack: | Yes | | No | |
| b. | Stroke: | Yes | | No | |
| c. | Angina: | Yes | | No | |
| d. | Heart failure: | Yes | | No | |
| e. | Swelling in your legs or feet (not caused by walking): | Yes | | No | |
| f. | Heart arrhythmia (heart beating irregularly): | Yes | | No | |
| g. | High blood pressure: | Yes | | No | |
| h. | Any other heart problem that you've been told about: | Yes | | No | |
| | | | | | |
| 6. | Have you ever had any of the following cardiovascular or heart symptoms? | | | | |
| a. | Frequent pain or tightness in your chest: | Yes | | No | |
| b. | Pain or tightness in your chest during physical activity: | Yes | | No | |
| c. | Pain or tightness in your chest that interferes with your job: | Yes | | No | |
| d. | In the past two years, have you noticed your heart skipping or missing a beat: | Yes | | No | |

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- e. Heartburn or indigestion that is not related to eating: Yes No
- f. Any other symptoms that you think may be related to heart or circulation problems: Yes No

- 7. Do you currently take medication for any of the following problems?
 - a. Breathing or lung problems: Yes No
 - b. Heart trouble: Yes No

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- c. Blood pressure: Yes No
- d. Seizures (fits): Yes No
8. If you have used a respirator, have you ever had any of the following problems?
(If you've never used a respirator, check here _____.)
- a. Eye irritation: Yes No
- b. Skin allergies or rashes: Yes No
- c. Anxiety: Yes No
- d. General weakness or fatigue: Yes No
- e. Any other problem that interferes with your use of a respirator: Yes No

If you will be using a full face respirator or a self-contained breathing apparatus, please complete Part II of this questionnaire.

Thank you for completing this questionnaire. Your questionnaire will be reviewed with a clinician at the time of your medical examination at the Occupational Health Clinic. Contingent on your answers and your medical examination, further information about your health and your use of a respirator may be required. If you would like to talk with one of our nurses prior to your appointment, please feel free to call us at 510-642-3073. We are available 8 to 11:45 and 1 to 4:45 weekdays.

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PART TWO

MANDATORY FOR ALL UC BERKELEY FULL-FACE RESPIRATOR AND SELF-CONTAINED BREATHING APPARATUS (SCBA) USERS

1. Have you ever lost vision in either eye (temporarily or permanently): Yes No
2. Do you currently have any of the following vision problems?
 - a. Wear contact lenses: Yes No
 - b. Wear glasses: Yes No
 - c. Color blind: Yes No
 - d. Any other eye or vision problem: Yes No
3. Have you ever had an injury to your ears, including a broken ear drum: Yes No
4. Do you currently have any of the following hearing problems?
 - a. Difficulty hearing: Yes No
 - b. Wearing a hearing aid: Yes No
 - c. Any other hearing or ear problem: Yes No
5. Have you ever had a back injury: Yes No
6. Do you currently have any of the following musculoskeletal problems?
 - a. Weakness in any of your arms, hands, legs, or feet: Yes No
 - b. Back pain: Yes No
 - c. Difficulty fully moving your arms and legs: Yes No
 - d. Pain or stiffness when you lean forward or backward at the waist: Yes No
 - e. Difficulty fully moving your head up or down: Yes No
 - f. Difficulty fully moving your head side to side: Yes No
 - g. Difficulty bending at your knees: Yes No
 - h. Difficulty squatting to the ground: Yes No
 - i. Climbing a flight of stairs or a ladder carrying more than 25 lb.: Yes No

Thank you for completing this questionnaire. The clinician will review your answers at the time of your respirator physical. Contingent on your answers and your medical examination, further information about your health and your use of a respirator may be required.

Respirator Fit Test Card

Name: [Redacted] Test Date: 5/19/2015

ID: [Redacted] Next Test Date: 5/19/2016

Respirator

Mfg: 3M

Model: 7502

Style: HALF FACE

Size: MEDIUM

Results

Overall FF: 428

FF Pass Level: 100

Pass: Y

Operator: PKAULBA...

Protocol: OSHA 29CFR1910.134

Fit Test Method: QNFT using TSI PortaCount

Respirator Fit Testing is required Annually by Cal/OSHA

RESPIRATOR QUALIFICATION RECORD

Name: _____ Employee # _____ Job Title: _____
Department: _____ Phone: _____
Campus Address: _____ E-mail address: _____
Supervisor: _____ Phone: _____ Supervisor e-mail: _____
Exposure/Chemicals or agents of concern: _____

I. Training Record

The employee named has been trained in the selection, use, storage for the respirator specified in Section II below based on the contaminants in his/her work place. See the back of this page for all items covered in the training.

II. Fit Testing

Respirator No. Manufacturer Size Cartridge Issued (circle one or more)

- 1) _____ _____ _____ P100 OV AG Mercury CN/CS N95 (filtering Face Piece)
2) _____ _____ _____ P100 OV AG Mercury CN/CS N95 (filtering Face Piece)
3) _____ _____ _____ P100 OV AG Mercury CN/CS N95 (filtering Face Piece)

Quantitative Fit Test Performance (otherwise noted):

- 1) Overall Fit Factor _____ Pass Fail
2) Overall Fit Factor _____ Pass Fail
3) Overall Fit Factor _____ Pass Fail

Medical Clearance

Date of OHC exam: _____ OHC Clinician: _____

Voluntary Use (Not required to wear respiratory protection)

I have received a copy of Appendix D: (Check Box) Signature: _____

Monitoring/Evaluation:

Previously evaluated by EH&S Needs monitoring Volunteer user
Monitored by _____ Date ___/___/___ PPM _____ Type of monitoring _____

By signing below, I acknowledge that I have either received the above listed equipment (excludes, N95, SCBA, PAPR), and was instructed in the use, storage, and care of my respirator. I understand that the filters or cartridges are to be used only for the purposes indicated. I have discussed the intended use of this respirator with an EH&S representative. I have been given an opportunity to ask questions about respiratory protection and I understand the information that has been provided. Before one year from today's date I understand that I need to obtain medical clearance, training and fit testing OR return my respirator and cartridges/filter to EH&S.

Signature: _____

Date: _____

EH&S Representative: _____

Date: _____

N95

- ___ I was instructed to be clean shaven and remove any piercings that may interfere with the seal at all times when wearing the filtering face piece.
- ___ I was shown the proper positioning of the filtering face piece onto my face and instructed to wear the mask as high on the nose as possible.
- ___ I was shown the proper strap placement with the lower strap on the neck (under long hair) and the upper strap on the highest part of the back crown of the head to give an upward pull.
- ___ I was instructed the proper molding of the metal strip to the nose bridge using two index fingers, and to the pinching motion that could cause the mask to leak.
- ___ I was instructed that N95 filter face pieces are considered to be a onetime use mask if required to wear during their assigned job duties. (This does apply if being used as a Voluntary Use situation)

Negative Pressure Half Face / Full Face

- ___ I was instructed to be clean shaven and remove any piercings that may interfere with the seal at all times when wearing the respirator.
- ___ I was shown the proper strap placement with the lower strap on the neck (under long hair) and the upper strap on the highest part of the back crown of the head to give an upward pull.
- ___ I instructed on what filters and or cartridges were needed for the purpose of wearing the respirator, how to properly attach the filter or cartridge, and how to determine when the cartridge has expired by breakthrough if a determined cartridge life cannot be determined through air monitoring.
- ___ I was shown how to perform a “positive fit check” by covering the exhalation valve and exhaling gently to check for escaping air, and a “negative fit check” by covering the filter or cartridge openings (or removing the filter or cartridge if the hands cannot completely seal the opening) and inhaling creating a negative pressure inside the mask then holding ones breath to see if the mask stays collapsed or is the mask loses the negative pressure. A failure of either fit check will require adjusting of the straps and a re-check of the seal before entry to any hazardous work space.
- ___ I was instructed on the proper cleaning of the respirator by being shown how to fully disassemble the respirator, and not allowing the filter or cartridges to get wet. Then to allow to air dry, and re-assemble and store in an air tight bag to protect the mask and cartridges from dust and contaminated that could lessen the life of the cartridges.

PAPR (Powered Air Purifying Respirator)

- ___ I was shown how to wear the PAPR unit around the waist, how to turn the unit on and off, how to check the air flow, to connect the supply hose and don the hood.

Air-Line or SCBA Units

- ___ I was instructed to read all the items covered in the “Negative Pressure Half Face / Full Face” section
- ___ I was informed to get proper instruction from either lab or departmental staff in charge of such units on the checking or tank or air-line pressure, and the need to wear an escape or SCBA unit.

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APPENDIX VI

QUANTITATIVE FIT TEST PROTOCOL

I. Introduction

The following protocol establishes the procedures to be employed at EH&S when performing quantitative fit tests.

II. General Discussion

- A. Each employee will be quantitatively fit tested at least annually as part of the certification process.
- B. Each employee will be fit tested with her/his own personal respirator.
- C. Special adapter or probed filters will be utilized to allow fit testing for each employee's respirator.
- D. TSI Model 8038 Port-A-Count Quantitative fit test equipment will be used to measure protection fit factors for each employee.
- E. The testing will take place in the Respiratory Protection Facility, 19a University Hall, and all records will be retained there.

III. Procedures

A. Preliminary Procedures

- 1. Initialize and calibrate TSI unit at least daily. Make certain that particulate concentration is sufficient to attain adequate sensitivity.
- 2. Inspect all respirators to be used in tests for defects and cleanliness.

B. Quantitative Fit Test Procedures

- 1. Dispense respirator to test subject.
- 2. Describe test procedures to subject ensuring that she/he understands actions expected of her/him.
- 3. Instruct subject to don respirator and adjust until a comfortable fit is achieved, according to established procedures. (Note: Compatibility with eye wear is a key consideration in the trial process. Every effort should be made to select a brand of respirator which does not interfere with eye wear.)
- 4. Equip respirator with a set of High Particulate Efficiency Aerosol (HEPA) / P-100 filters or (one of which is specially probed to accept a sample line), and attach sampling line from TSI 8038 to face piece adapter and conduct qualitative fit test as per Section 3 D of the Campus Respiratory Protection Program. Once satisfactory qualitative fit has been attained, the subject is then ready to be quantitatively fit tested.
- 5. Instruct test subject to perform the following exercises in the following order, in order to simulate those movements made during normal work activity:

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- A. Normal breathing with head motionless for 60 seconds.
 - B. Deep breathing with head motionless for 60 seconds.
 - C. Turning head slowly side to side while breathing, pausing for at least two breaths before changing direction (continue for at least 60 seconds).
 - D. Moving head up and down while breathing normally, pausing for at least two breaths before changing direction (continue for at least 60 seconds).
 - E. Reading the "rainbow passage" out loud or talking, slowly and clearly, and loudly enough to be heard and understood by the test operator (continue for 60 seconds).
 - F. Grimace for 15 seconds.
 - G. Stand up, and while holding the sampling tube that leads to the respirator bend over the touch your toes. Pause for at least two seconds, before touching your toes again. Continue this for 60 seconds.
 - H. Normal breathing for at least 60 seconds.
6. After the test, the sampling line is disconnected and the subject removes respirator. Subject is then questioned on overall comfort of respirator and any pressure points are noted. The subjective evaluation of the particular respirator is based upon the criteria outlined in Section 3 D 2 c & d of the Campus Respiratory Protection Program.
 7. The test results are then analyzed, and protection factors are determined for each exercise and for the entire test as a whole. Exercise-specific protection factors are displayed directly by the Port-A-count. The overall fit factor will be calculated by taking the arithmetic average of all the individual exercise values.
 - a. Information on each test subject should be recorded to identify uniquely the test by campus employee or student ID number, date, subject, type of respirator, protection factors for each exercise, and overall fit factor for the test, and will be entered on the subject's fitting test record. Satisfactory performance on the test must be determined by both the individual test protection factors and the average protection factor.
 8. For half-mask air-purifying pressure respirators, an overall fit factor of at least 100 must be attained to provide adequate protection and comply with Cal/OSHA's requirement. The protection factor for each individual test exercise must be at least 100. For full-face air-purifying negative-pressure respirators, an overall fit factor of at least 1,000 must be attained to provide adequate protection. The protection factor for each individual test exercise must be at least 500.
 9. Regardless of the fit factor achieved, the determining factor on whether or not the respirator is issued should be based upon user comfort.
 10. Any difficulty in breathing encountered during the fit tests will result in the subject being referred to the Campus OHC.
 11. In addition to the annual fit testing requirement, fit testing must be repeated immediately when any of the following conditions are met:
 - A. weight change of 20 pounds or more;
 - B. significant facial scarring in the area of the face piece seal;
 - C. significant dental changes, i.e. multiple extractions without prosthesis or acquiring dentures;
 - D. reconstructive cosmetic surgery; or
 - E. any other condition that may interfere with face piece sealing.

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12. A summary of all fit test results must be kept for thirty (30) years. This summary must include:
- A. name of the test subject.
 - B. date of testing.
 - C. name of test conductor.
 - D. respirator selected, including manufacturer, model, size, and approval number; and
 - E. testing agent.

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APPENDIX VII

USE OF RESPIRATORS FOR PROTECTION AGAINST ASBESTOS

I. Introduction

The Cal/OSHA Asbestos Standard for general industry and construction industry, 8 CCR § 5208 and 8 CCR § 1529 respectively, requires specific procedures to be employed in the selection, fit testing, and use of respirators provided to protect against airborne asbestos at levels equal to, or exceeding 0.1 fibers per cubic centimeter (F/cc).

This appendix (VII) to the general Campus Respiratory Protection Program is designed to comply with these requirements. It is applicable only to respirators provided to protect personnel from exposure to asbestos where there is potential for exposure at or above 0.1 F/cc.

II. General Discussion

A. Respirator Selection

Respirators, where required, will be provided at no cost to the employee and will be jointly approved for protection against asbestos by the Mine Safety and Health Administration (MSHA) and by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part II. EH&S will determine the appropriate type of respirator from information regarding the likely airborne concentration of asbestos and assist in the selection of a respirator from among a variety of suitable manufacturers, models and sizes.

1. Those persons who would not reasonably be expected to work in atmospheres exceeding 10 times the permissible exposure limit (1 F/cc), must at least be issued a reusable half-mask air-purifying respirator equipped with High Efficiency Particulate Aerosol (HEPA) filters known as P-100 filters.
2. At concentrations not reasonably expected to exceed fifty times the PEL (5 F/cc), a full-face piece air-purifying respirator equipped with HEPA filters must be issued.
3. At concentrations not in excess of 100x PEL (10 f/cc) use PAPR with HEPA or supplied air continuous flow.
4. At concentrations not in excess of 1000x PEL (100 f/cc) use full-face supplied air in pressure demand mode.
5. In lieu of any type of negative-pressure respirator, any employee may request to use a powered, air-purifying respirator if she/he chooses, and if the respirator will provide adequate protection.
6. Respirators assigned for higher asbestos concentrations may be used at lower concentrations.
7. Qualitative fit testing is required annually for negative-pressure respirators.

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B. Selection Process

Initially, the EH&S test conductor will demonstrate to the test subject how to put on a respirator, how it should be positioned on the face, how to adjust the strap tension, and how to determine a "comfortable" fit. The test subject must then be instructed to hold up each face piece to the face and eliminate those which obviously do not provide a comfortable fit. A suitable half-mask face piece will be chosen if a good fit can be attained, if not, the test subject will be provided with a hood-type powered air-purifying respirator. A mirror will be made available throughout the selection process to the test subject for self-evaluation of the fit and positioning of the respirator. Once the most comfortable mask has been determined, the test subject would then don and make adjustments to the respirator without assistance from the test conductor. If the test subject is unfamiliar with a particular respirator, she/he must repeatedly don the mask several times to become proficient at setting the proper strap tension. This mask must be donned and worn at least five (5) minutes to assess comfort.

1. Assessment and determination of comfort must be done with the following points in mind. The test subject must evaluate:
 - a. Positioning of mask on nose (for half-mask respirators);
 - b. Room for eye protection (for half-mask respirators);
 - c. Room to talk; and
 - d. Positioning of mask on face and cheeks.
2. The following criteria must be used to help determine the adequacy of the respirator fit:
 - a. Chin properly placed;
 - b. Strap tension;
 - c. Fit across nose bridge (for half-mask respirators);
 - d. distance from nose to chin (for half-mask respirators);
 - e. Tendency to slip; and
 - f. Self-observation in mirror.
3. Once the test subject has attained the desired comfort and a satisfactory fit with a particular respirator, she/he must conduct the conventional negative- and positive-pressure fit checks. Prior to these checks, the subject must "seat" the mask by moving her/his head side to side, and up and down rapidly, while taking a few deep breaths.
4. Once the test subject has selected a respirator with the desired comfort that passes positive- and negative-pressure fit checks, the quantitative fit protocol in Appendix VI **will be followed**.