

UC Irvine Environmental Health & Safety

SECTION: TITLE: Respiratory Protection Program

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1. Program Description

The Respiratory Protection Program provides a system for complying with the requirements of the applicable regulatory standards. The program defines the procedures for:

- selecting respirators (which includes performance of a respiratory hazard evaluation),
- medical evaluations,
- UCI respirator user training in
 - respiratory hazards and proper respirator use,
 - fit-testing,
 - proper use of respirators in routine and reasonably foreseeable emergencies,
 - respirator care and maintenance,
 - atmosphere supplying respirators,
- evaluating program effectiveness, and
- voluntary use of respiratory protection.

2. Scope

When possible, engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution with less toxic materials) are implemented to prevent exposure to harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors.

When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators are used. The University of California, Irvine (UCI), through the Environmental Health and Safety (EH&S) office, selects and provides an appropriate respirator to personnel subject to this policy. Such personnel include, but are not limited to:

- A. UCI personnel in areas known to have contaminant levels requiring the use of respiratory protection;
- B. UCI personnel performing operations documented to be health hazardous;
- C. UCI personnel performing operations suspected of being health hazardous but for which adequate sampling data has not been obtained.

3. Definitions

Air-purifying respirator - A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Atmosphere-supplying respirator - A respirator that supplies the user with breathing-quality air from a source independent of the work environment. This includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

Canister or cartridge - A container with a filter, sorbent media, catalyst, or combination of these items, that removes specific contaminants from the air.

Demand respirator - An atmosphere-supplying respirator that supplies breathing air to the user only when a negative pressure is created inside the facepiece by inhalation.

Emergency situation is any occurrence that may result in an uncontrolled significant release of an airborne contaminant. This may include equipment failure, rupture of containers, or failure of control equipment.

UCI personnel exposure - Exposure to a concentration of an airborne contaminant that would occur if the UCI personnel were not using respiratory protection.

End-of-service-life indicator (ESLI) is a system that warns the respirator user of the approach of the

end of adequate respiratory protection, for example, that the sorbent media is approaching saturation or is no longer effective.

Escape-only respirator is a respirator intended to be used only for emergency exit from a contaminated area.

Filter or air purifying element is a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering facepiece (dust mask) is a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit factor is a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test is the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

High efficiency particulate air (HEPA) filter is a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Immediately dangerous to life or health (IDLH) is an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Loose-fitting facepiece is a respiratory inlet covering that is designed to form a partial face-to-facepiece seal.

Negative pressure respirator (tight fitting) is a respirator which uses a tight face-to-facepiece seal to create negative pressure inside the mask during inhalation with respect to the ambient air.

Oxygen deficient atmosphere is an atmosphere with oxygen content below 19.5% by volume.

Physician or other licensed health care professional (PLHCP) is an individual whose legally permitted scope or practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by the regulations.

Positive pressure respirator is a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered air-purifying respirator (PAPR) is an air-purifying respirator that uses a built-in fan to actively filter ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator is a positive pressure atmosphere-supplying respirator that supplies breathing air to the facepiece when the pressure inside the facepiece is reduced by inhalation.

Qualitative fit test (QLFT) is a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT) is an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering is that portion of a respirator that forms the protective barrier between the

user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA) is an atmosphere-supplying respirator for which the breathing air source is contained within a portable compressed gas cylinder designed to be carried by the user..

Service life is the period of time that a respirator, filter or sorbent media, or other respiratory equipment provides adequate protection to the wearer.

Supplied-air respirator (SAR) or airline respirator is an atmosphere-supplying respirator for which the air supply is provided by an external, fixed compressed gas source or compressor. The SAR air supply is not typically carried by the user.

Tight-fitting facepiece is a respiratory inlet covering that forms a complete face-to-facepiece seal.

User seal check is an action conducted by the respirator user to determine if the respirator is properly seated to the face.

4. Responsibilities

UCI/EH&S:

UCI, through the administration of the EH&S office, shall be responsible for the establishment, implementation, and maintenance of a written respiratory protection program. A trained program administrator will administer the program. The EH&S office shall:

- Conduct the respiratory hazard evaluation;
- Perform the respirator fit test and respirator use training, including provision of the suitable respirator for the task, as determined by the evaluation;
- Assess the effectiveness of the program as described in this document.

The program shall be updated as necessary to reflect changes in workplace conditions that affect respirator use.

Manager/Supervisor:

The UCI department manager/supervisor/PI/administrator shall be responsible for implementing the recommendations provided by EH&S following a hazard evaluation. The recommendations are intended to minimize, reduce, or eliminate UCI personnel exposures and may include engineering controls, administrative controls, or the use of personal protective equipment. EH&S shall work collaboratively with the affected UCI department to develop worksite-specific procedures. The affected department shall be responsible for implementing and maintaining the worksite-specific procedures.

Employee:

UCI personnel shall be responsible for:

- implementing EH&S recommendations;
- following worksite-specific procedures;
- maintaining current on status of annual fit test and training;
- notifying EH&S when respiratory protection is no longer in use or is needed.

5. Program Components

PROCEDURES FOR SELECTING RESPIRATORS

EH&S shall only issue NIOSH-certified respirators. Its use shall comply with the conditions of its certification. All filters, cartridges and canisters used in the workplace shall be labeled and color-coded with the NIOSH approval label; the label shall not be removed and shall be legible. EH&S shall maintain

the respiratory equipment inventory.

Prior to assigning a respirator to the UCI personnel, EH&S shall evaluate the respiratory hazards in which the respirator will be used. The "UCI EH&S Respiratory Hazard Evaluation Part 1 and 2" forms (Appendices A1 and A2) and the "UCI EH&S Respirator Decision Logic Sequence and Filter Change-out Schedule" and associated flowchart (Appendix B and B1) shall be used to determine the appropriate respirator to issue.

- A. The "UCI Respiratory Hazard Evaluation" forms identify and provide an evaluation of the respiratory hazard(s) in the workplace. The evaluation includes a reasonable estimate of UCI personnel exposures to respiratory hazard(s) and an identification of the contaminant(s). The contaminant(s) may be chemical or biological in nature.
 - i. If the UCI personnel exposure cannot be identified or reasonably estimated, the atmosphere shall be considered immediately dangerous to life and health (IDLH).
 1. All oxygen-deficient atmospheres shall be considered IDLH.
 2. No UCI personnel shall be authorized to enter an atmosphere immediately dangerous to life and health (IDLH).
 - ii. When applicable, the contaminant(s) chemical state and physical form shall be identified in the hazard evaluation.
 - iii. The hazard evaluation determines the need or requirement for respirator use. However, requirement for respirator use can be at the discretion of the evaluator since materials exist that do not have exposure limits (such as many biological agents).
 - iv. If the hazard evaluation determines that respirator use is not required, the UCI personnel(s) may still choose to use respiratory protection. Such "voluntary use" of respiratory equipment is subject to the following:
 1. All affected respirator users shall be identified;
 2. Shall sign the "UCI EH&S Respiratory Protection Voluntary Use Affidavit" (Appendix C);
 3. Shall be provided with a copy of Appendix D of the regulations, "Information for UCI Personnel Using Respirators When Not Required Under the Standard" (Appendix D); and,
 4. Shall be provided with a medical evaluation and training (*Exception: voluntary users of filtering facepieces are not subject to medical evaluations*).
 - v. The "UCI Respiratory Hazard Evaluation" forms shall be provided to the physician or other licensed health care professional (PLHCP) prior to the UCI personnel's medical evaluation.
- B. The "UCI EH&S Respirator Decision Logic Sequence and Flowchart" provides a process for selecting respirators for use in the workplace. The sequence of questions is used to identify the class or type of respirators to be assigned.
 - i. EH&S shall issue respirators that are adequate to protect the health of the UCI personnel and to ensure compliance with all applicable regulatory requirements. The respirators shall be appropriate for the chemical state and physical form of the contaminant. All filters, cartridges and canisters used in the workplace shall be labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible.
 - ii. To protect against gases and vapors, EH&S shall issue:

1. An atmosphere-supplying respirator; or
 2. An air-purifying respirator equipped with a cartridge/canister that has an End-of-Service-Life-Indicator (ESLI).
 - a. In the absence of an ESLI, a “Change-out Schedule” for the cartridge/canister shall be provided.
 - b. The Change-out Schedule shall be based on the information and data collected and recorded on the respiratory hazard evaluation. Additional guidelines for determining the change schedule is found in Appendix B.
- iii. To protect against particulates, EH&S shall issue:
1. An atmosphere-supplying respirator; or
 2. An air-purifying respirator equipped with a High-Efficiency-Particulate-Air (HEPA) filter cartridge; or
 - a. Any NIOSH-certified filters may be used to protect against particulates of mass median aerodynamic diameters (MMAD) of at least 2 micrometers.
 3. A filtering facepiece.
- iv. If deemed appropriate, UCI personnel shall be issued with a powered air purifying respirator (PAPR).

MEDICAL EVALUATION

UCI personnel subject to this policy shall have a medical evaluation completed before they are assigned or required to use respiratory protection.

- A. Pursuant to regulatory requirements and this policy, voluntary users of respirators may be subject to the medical evaluation. The cost of the medical evaluation shall be borne by the UCI personnel's department.

The procedures for medical evaluation are as follows:

- A. The UCI EH&S-identified professional or other licensed health care professional (PLHCP) shall obtain the “UCI EH&S Respiratory Hazard Evaluation Part 1 and 2” form (Appendices A1 and A2) from EH&S.
- B. The UCI personnel shall be provided with the UCI EH&S “OSHA Respirator Medical Evaluation Questionnaire (Mandatory)” form (Appendix E). The UCI personnel shall be instructed to submit the form to the PLHCP.
 - i. The medical questionnaire shall be administered confidentially during the UCI personnel's normal working hours or at a time and place convenient to the UCI personnel.
 - ii. The UCI personnel will be afforded the opportunity to discuss the questionnaire with the PLHCP.

C. The PLHCP shall determine if the employee is medically fit to wear respiratory protection.

- i. **Additional medical evaluations shall be provided if a UCI personnel report medical**

signs or symptoms that are related to his/her ability to wear a respirator.

- ii. Additional medical evaluations shall be provided as deemed necessary by the PLHCP, UCI personnel supervisor, or the Respirator Program administrator.
- iii. Additional medical evaluations shall be provided pursuant to information from the respiratory protection program that indicates a need for reevaluation. Such information includes, but is not limited to, observations made during fit testing and program evaluation.
- iv. Additional medical evaluations shall be provided if a change occurs in the workplace conditions that may result in a substantial increase in the physiological burden placed on the UCI personnel. Such conditions include, but are not limited to, physical work effort, protective clothing, or temperature.

The questionnaire evaluation is the typical medical assessment for personnel who are assigned to wear filtering facepiece. However, a follow-up medical evaluation may be required at the discretion of the PLHCP.

D. Following the medical determination of the UCI personnel's ability to use a respirator, the PLHCP shall provide:

- i. The UCI personnel with the results of the medical determination.
- ii. The EH&S Respiratory Program Specialist with the "Respirator Clearance Statement" letter (Appendix F).

1. The "Respirator Clearance Statement" letter shall contain the following information:

- a. Any limitations on respirator use related to the medical condition of the UCI personnel;
- b. Any limitations on respirator use relating to the workplace conditions in which the respirator will be used;
- c. A statement regarding whether or not the UCI personnel is medically able to use the respirator;
- d. The need, if any, for Follow-up medical evaluations;
- e. A statement that the PLHCP has provided the UCI personnel with a copy of the "Respirator Clearance Statement" letter.

TRAINING

UCI personnel receive training on the hazards present in the workplace through completion of the applicable general EH&S-administered course: SOS Representative (SR) Training, Core Safety Training, Laboratory Safety Training, and/or HAZCOM for Building, Facilities, and Custodial Personnel.

In addition to the applicable general safety course, UCI personnel who use respiratory protection receive a comprehensive training during the EH&S Respirator Fit-test and Training course. The training course must be completed prior to requiring the UCI personnel to use a respirator. The training course recurs annually and more often if necessary.

Note: New UCI personnel who have received Respiratory Protection training within the last 12 months are not required to repeat such training provided that the UCI personnel can demonstrate knowledge and records of medical clearance.

Retraining is administered annually, and when the following situations occur:

- Changes in the workplace or the type of respirator render previous training obsolete;

- Inadequacies in the UCI personnel's knowledge or use of the respirator indicate that the UCI personnel has not retained the requisite understanding or skill; or
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

Registration for the training courses is accomplished by logging on to: www.uclc.uci.edu

UCI personnel who wear respirators on a voluntary basis receive the basic information on respirators, including training on the proper use and limitation of the respirator, in accordance with Appendix D of the regulation and of this program. Voluntary Use personnel also receives a copy of UCI EH&S' Appendix D "Information for Employees Using Respirators When Not Required Under the Standard" pursuant to all applicable Respiratory Protection standards, completes the "UCI EH&S Voluntary Use Affidavit" (Appendix C), submits the completed form to EH&S for recordkeeping and retains a copy for the department.

UCI personnel who wear powered air-purifying respirators (PAPR's) receive the basic information on respirators, including training on the proper use and limitation of the respirator, in accordance with the regulation and of this program. Users also complete the "UCI EH&S Powered Air Purifying Respirator (Loose Fitting Facepiece) Training Affidavit" (Appendix L), submits the completed form to EH&S for recordkeeping and retains a copy for the department.

Training In Respiratory Hazards And Proper Respirator Use

UCI personnel subject to this policy shall be taught in the respiratory hazards for which the respiratory protection will be used. The information can be conveyed through a thorough discussion with the UCI personnel regarding their UCI EH&S Respiratory Hazard Evaluation (Appendix A) prior to performing the fit-testing. The discussion includes:

- Identification and discussion of the respiratory hazard;
- Review of the Safety Data Sheet (SDS);
- Discussion of the permissible exposure limit for the respiratory hazard;
- Discussion of the assessment for the respiratory hazard, including monitoring results.

In addition, UCI personnel subject to this policy shall be trained in the proper use of respiratory protection. The training shall address the following elements:

- the necessity for using the respirator;
- the effects of improper fit, usage, or maintenance;
- the limitations and capabilities of the respirator;
- the effective use of respirators in emergency situations;
- the proper inspection, donning, doffing, and use of the respirator (including seal check);
- the procedures for maintenance and storage of the respirator;
- the medical signs and symptoms that may limit or prevent the effective use or respirators.

When applicable, the training elements shall be demonstrated by the trainer to the UCI personnel prior to performing the fit-testing. Appendix G, "UCI EH&S Information of Respiratory Protection", shall be provided to the UCI personnel.

Fit-Testing Procedures For Tight Fitting Respirators

UCI personnel subject to this policy shall be fit tested pursuant to all applicable regulations. The cost of the fit testing and equipment shall be borne by the UCI personnel's department. The UCI fit testing protocols are in Appendix H, "UCI EH&S Respiratory Protection SOP for Fit Testing".

Fit testing shall be performed prior to initial use of a respirator, with the same make, model, style, and size of the respirator that will be used.

The qualitative fit test (QLFT) and quantitative fit test (QNFT) protocols shall comply with all applicable regulatory protocols and procedures.

Respirator types subject to this procedure include any negative or positive pressure tight-fitting facepiece.

Routine fit testing shall recur annually.

Additional fit testing shall be performed:

- whenever a different respirator facepiece (size, style, model, or make) is used;
- when there are changes in the UCI personnel's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

UCI personnel must pass the qualitative fit test (QLFT) or quantitative fit test (QNFT) prior to using a tight fitting respirator.

Qualitative Fit Test (QLFT):

QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.

The UCI EH&S QLFT instrument is the 3M FT-30 Qualitative Fit Test Apparatus (Bitter).

Quantitative Fit Test (QNFT):

QNFT is passed when the fit factor for:

1. Tight-fitting half facepieces is equal to or greater than 100;
2. Tight-fitting full facepieces is equal to or greater than 500.

UCI EH&S QNFT instrument: TSI Portacount Plus Model 8020 and the OHD Quantifit

Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air –purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode.

Procedures For Proper Use In Routine And Reasonably Foreseeable Emergencies

UCI personnel subject to this policy shall properly use the respirator pursuant to all applicable regulations.

When wearing tight-fitting respirators, UCI personnel may not have facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or any condition that interferes with the face-to-facepiece seal or valve function. UCI respirator users shall be instructed of this requirement during the initial fit test and training.

Use of corrective glasses or goggles or other personal protective equipment must be worn in a manner that does not interfere with the seal of the facepiece to the face of the UCI personnel. The UCI personnel shall be instructed of this requirement during the initial fit test and training.

The UCI personnel shall be trained on the specific limitations and proper use of the issued respirator during the initial fit test and training.

When donning a tight-fitting respirator (including a filtering facepiece), the UCI personnel shall perform a user seal check. The User Seal Check procedure is in Appendices G and H.

The respirator user shall immediately leave the respirator use area if:

- Breathing becomes difficult;
- Dizziness or other distress occurs;
- Contaminant breakthrough is detected through smell, taste, or sense irritation;
- The End-of-Service-Life Indicator (ESLI) on the canister/cartridge changes color to indicate expiration;
- The respirator becomes damaged.

These issues must be addressed and corrections must be made before returning to the respirator use area.

UCI personnel are not permitted to enter atmospheres immediately dangerous to life and health (IDLH).

Procedures For Care And Maintenance

UCI respirator users are required to routinely inspect, clean and disinfect, properly store, and the respirators. Details of these requirements are found in Appendix I, "UCI EH&S Procedures for Respirator Care and Maintenance". Necessary repairs must be reported to the EH&S Respiratory Program administrator.

Inspection:

Respirator users must inspect their respiratory protection equipment before each use and during cleaning.

The respirator inspection must include a check of

- respirator function,
- tightness of connections,
- and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, and cartridges, canisters or filters; and
- elastomeric parts for pliability and signs of deterioration.

Cleaning and Disinfecting:

The respirator user must clean and disinfect the respirator following the procedures in Appendix I, "UCI EH&S Procedures for Respirator Care and Maintenance".

The respirator user shall develop a respirator cleaning and disinfecting schedule based on frequency of use; however, the respirator shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.

Respirators used in fit testing and training shall be cleaned and disinfected after each use.

Storage:

All respirators shall be stored in a manner that will protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve.

Repairs:

Respirators that fail an inspection or are found to be defective shall be reported to the EH&S Respiratory Program administrator. The failed/defective respirator shall be removed from service, then discarded or repaired or pursuant to all regulatory requirements and manufacturer's

recommendations.

Procedures For Atmosphere Supplying Respirators

Use of atmosphere supplying respirators, such as self-contained breathing apparatus (SCBA) or supplied-air respirators, at UCI is subject to the requirements of the UCI EH&S Respiratory Protection Program and must receive approval from the EH&S Respiratory Program Specialist.

UCI EH&S personnel are the general users of self-contained breathing apparatus (SCBA). The SCBA's are used during emergency situations.

- i. All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use.
- ii. For respirators maintained for emergency use, a responsible person designated by the responsible department shall:
 - a. Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and
 - b. Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.
- iii. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

All atmosphere-supplying respirators shall be inspected monthly. The inspection protocol and documentation shall follow the same procedures as above.

Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The regulator and warning devices shall be maintained in good working order.

The procedures and checklists associated with atmosphere supplying respirators are in Appendix K, "UCI EH&S Atmosphere Supplying Respirators".

Breathing air quality and use:

The compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall accord with the following specifications:

- i. Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
- ii. Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
 - a. Oxygen content (v/v) of 19.5-23.5%;
 - b. Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or

less;

c. Carbon monoxide (CO) content of 10 ppm or less;

d. Carbon dioxide content of 1,000 ppm or less; and

e. Lack of noticeable odor.

Compressed oxygen shall not be used in atmosphere-supplying respirators that have previously used compressed air.

Oxygen concentrations greater than 23.5% shall only be used in equipment designed for oxygen service or distribution.

Cylinders used to supply breathing air to respirators shall meet the following requirements:

i. Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR 173 and part 178);

ii. Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and

iii. The moisture content in the cylinder does not exceed a dew point of -50 deg. F (-45.6 deg. C) at 1 atmosphere pressure.

The compressors used to supply breathing air to respirators shall be constructed and situated so as to:

i. Prevent entry of contaminated air into the air-supply system;

ii. Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (-5.56 deg. C) below the ambient temperature;

iii. Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.

iv. Have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change. The tag shall be maintained at the compressor.

For oil lubricated compressors, a high-temperature or carbon monoxide alarm, or both, shall be used to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

Breathing air couplings shall be incompatible with outlets for nonrespirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.

The breathing gas containers shall be marked in accordance with the NIOSH respirator certification standard, 42 CFR part 84.

PROCEDURES FOR EVALUATING PROGRAM EFFECTIVENESS

To ensure continuing respirator effectiveness, the UCI respirator user shall report changes:

- in the work area conditions; or
- in the degree of the exposure to the contaminant; or
- in the stress that may affect respirator effectiveness;
- to the SOS Safety Representative, or EH&S School Safety Coordinator, or the EH&S Respiratory Program administrator.

EH&S conducts evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

EH&S consults UCI personnel required to use respirators to assess the UCI personnel's views on program effectiveness and to identify any problems. Any problems that are identified during this assessment are corrected.

A. The assessment is performed during:

1. a follow-up site-visit conducted after the initial fit-test and training; or
2. a follow-up communication (email, voice call) conducted after the initial fit-test and training;
2. and at the annual fit-test and training.

B. Factors to be assessed include, but are not limited to:

1. Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
2. Appropriate respirator selection for the hazards to which the UCI personnel is exposed;
3. Proper respirator use under the workplace conditions the UCI personnel encounters; and
4. Proper respirator maintenance.

The assessment is performed using Appendix J, "UCI EH&S Respirator Use Assessment".

6. Reporting Requirements

To ensure continuing respirator effectiveness, the UCI respirator user shall report changes:

- in the work area conditions; or
- in the degree of the exposure to the contaminant; or
- in the stress that may affect respirator effectiveness;

to the EH&S School Safety Coordinator or the EH&S Respiratory Program Specialist.

Medical Clearance letters, Fit-test results, and training records shall be maintained in the Environmental Health and Safety office. Records shall also be entered in UCLC.

7. Competency Assessment and Training Requirements

Competency is assessed during the fit-test and training. The respirator user is asked to demonstrate proper donning, doffing, fit-check, and cleaning procedures. Competency is further assessed during the follow up visit/program evaluation.

Training requirements and elements are specified in the Program Components. Training and fit testing frequency is annual except for voluntary users of filtering facepieces and PAPR's with loose fitting facepiece.

8. Information and External References

[Appendix A1- UCI EH&S Respiratory Hazard Evaluation Part 1](#)

[Appendix A2- UCI EH&S Respiratory Hazard Evaluation Part 2](#)

[Appendix B- UCI EH&S Respirator Decision Logic Sequence and Filter Change-out Schedule](#)

[Appendix B1- UCI EH&S Respirator Decision Logic Sequence Flowchart](#)

[Appendix C- UCI EH&S Respiratory Protection Voluntary Use Affidavit](#)

[Appendix D- Information for Employees Using Respiratory When Not Required Under the Standard \(Appendix D\)](#)

[Appendix E- UCI EH&S Respirator Medical Questionnaire](#)

[Appendix F- UCI EH&S Respirator Medical Clearance](#)

[Appendix G- UCI EH&S Information on Respiratory Protection](#)

[Appendix H- UCI EH&S Respiratory Protection SOP for Fit Testing](#)

[Appendix I- UCI EH&S Respirator Care and Maintenance](#)

[Appendix J- UCI EH&S Respiratory Protection Program Evaluation](#)

[Appendix K- UCI EH&S Atmosphere Supplying Respirators](#)

[Appendix L- UCI EH&S Powered Air Purifying Respirator \(Loose Fitting Facepiece\) Training Affidavit](#)

[UCI EH&S Respiratory Program Process Flowchart](#)

Title 29 Code of Federal Regulations 1910.134 Respiratory Protection

Title 8 California Code of Regulations 5144 Respiratory Protection

National Institute of Occupational Safety and Health Publication No. 87-116 "NIOSH Guide to Industrial Respiratory Protection"