

# UC Santa Barbara Respiratory Protection Program Manual

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## I. Purpose/Introduction

There are multiple state and federal regulations that govern the occupational use of respiratory protection. The purpose of this document is to establish procedures that ensure regulatory compliance, and safe and effective use of respiratory protection equipment by UCSB personnel. However, the primary objective of the UCSB Respiratory Protection Program is to prevent and control diseases which may be caused by exposure to hazardous atmospheres through the following:

- 1) The elimination of hazardous atmospheres wherever possible through the implementation of effective control measures; and
- 2) Where adequate control measures are not feasible, in emergencies, or while such measures are being implemented or evaluated, the use of respiratory protection to ensure exposures to hazardous atmospheres do not exceed applicable exposure limits.

## II. Applicability/Scope

Per the UCSB Respiratory Protection Policy (5440), the UCSB Respirator Protection Program shall be administered by the Office of Environmental, Health and Safety (EH&S). The UCSB Respiratory Protection Program, through the requirements described in this manual, establishes procedures and responsibilities for UCSB personnel (i.e., faculty, staff, students and volunteers) while engaged in University related activities. Per Cal/OSHA regulations and UCSB Campus Policy, all UCSB personnel who use respiratory protection equipment including filtering facepiece respirators (dust masks), shall be included in the UCSB Respiratory Protection Program and comply with the procedures contained herein.

## III. Responsibilities

### A. Department Heads and Chairs

Directors and Department Chairs are responsible for:

- Ensuring departmental compliance with the UCSB Respiratory Protection Policy;
- Identifying departmental Supervisors and ensuring they are trained on their health and safety responsibilities; and
- Providing the necessary resources to ensure the health and safety of their employees.

### B. Managers, Supervisors, and Principal Investigators

Managers, Supervisors, and Principal Investigators are responsible for:

- Understanding and complying with Cal/OSHA and UCSB Respiratory Protection Program requirements;
- Ensuring documented Job Hazard Assessments (JHAs) are performed for all job tasks using hazardous substances, or requiring the use of Personal Protective Equipment (PPE);
- Identifying potential respiratory hazards and ensuring that they are eliminated or properly controlled;
- Identifying personnel who may need to be enrolled in the Respiratory Protection Program and contacting the EH&S Program Administrator for further evaluation;
- Ensuring all use of respiratory protection equipment has been evaluated and approved by the EH&S Program Administrator;
- Ensuring personnel who use respiratory protection equipment are enrolled in the Respiratory Protection Program and are in compliance with program requirements.
- Enforcing the use of respiratory protective equipment where required;

- Notifying the EH&S Program Administrator of any changes relating to their Respirator Users' health status, or the hazards for which their respiratory protection equipment will be used;
- Ensuring their Respirator Users complete their Respirator/Cartridge Usage Logs, and that they receive new cartridges when needed;
- Ensuring that respiratory protection equipment is discarded, or returned to the EH&S Program Administrator when Respirator Users are unenrolled from the program, or leave UCSB; and
- Ensuring their units understand and comply with all other UCSB Respiratory Protection Program requirements.

### **C. Respirator Users (Faculty, Staff, Students and Volunteers)**

UCSB personnel who utilize respiratory protection equipment while engaged in University related activities are responsible for:

- Understanding and complying with all UCSB Respiratory Protection Program requirements;
- Notifying their Supervisor or the EH&S about any hazardous conditions observed on the worksite;
- Not using respiratory protection equipment unless it has been evaluated and approved by the EH&S Program Administrator;
- Only using respiratory protection equipment if they are currently enrolled in the Respiratory Protection Program and are in compliance with all program requirements;
- Using respiratory protection equipment where required and in accordance with instruction and training provided by EH&S Program Administrator and their Supervisor;
- Only using respiratory protection equipment for which they have been trained and fitted;
- Informing the Occupational Health Physician, their Supervisor, or the EH&S Program Administrator, of any discomfort or personal health problems, caused by, or that could be aggravated by the use of respiratory protection equipment;
- Guarding their respirator against damage and ensuring it is not disassembled, modified, or otherwise altered in any way;
- Reporting any observed or suspected malfunctioning of respiratory protection equipment to their Supervisor or the EH&S Program Administrator;
- Recording their respirator use on their Respirator Usage Log after each use (Attachment I);
- Obtaining and replacing filters/cartridges in accordance with the UCSB Cartridge Change Schedule. (Attachment H); and
- Discarding or returning respiratory protection equipment to the EH&S Program Administrator when they are unenrolled from the program, or leave UCSB.

### **D. Occupational Health Physician or other Licensed Health Care Professional**

The Occupational Health Physician or other licensed health care professional (PLHCP) is responsible for:

- Conducting medical evaluations to determine the prospective Respirator User's ability to use a respirator;
- Informing the EH&S Program Administrator and prospective Respirator User of any restrictions regarding respirator use.
- Informing the EH&S Program Administrator if a prospective Respirator User needs to be reevaluated.

### **E. Office of Environmental, Health and Safety (EH&S)**

The UCSB Respiratory Protection Program is administered by the Office of Environmental Health and Safety. EH&S is responsible for:

- Designating an individual who is qualified by appropriate training and/or experience to administer the program.

#### F. Program Administrator

The Program Administrator will function as a technical resource to departments and will assist them in carrying out their responsibilities outlined within as necessary. Additionally, the Respiratory Protection Program Administrator is responsible for:

- Developing and maintaining the UCSB Respiratory Protection Program and ensuring it meets all applicable regulatory requirements;
- Assisting departments and Supervisors in evaluating potential respiratory hazards as necessary, and recommending appropriate controls;
- Ensuring appropriate respiratory protection equipment is issued, and developing cartridge change schedules where applicable;
- Providing training, fit-testing, and other technical assistance related to respirator use;
- Monitoring for unauthorized and/or improper respiratory protection equipment use;
- Periodically review health and safety journals, publications, hazard alerts, and NIOSH respiratory protection updates for information and findings which may affect the use of respiratory protection at UCSB;
- Continually assessing the overall effectiveness of the UCSB Respiratory Protection Program to ensure it is being properly implemented and/or updated to reflect changes in the work environment; and
- Consult employees to ensure that they are using respirators properly.

### IV. 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.

**Assigned protection factor (APF)** means the level of respiratory protection that a respirator or class of respirators is expected to provide.

**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.

**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 respirator (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.

**Hood** means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

**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.

**Maximum use concentration (MUC)** means the maximum atmospheric concentration of a hazardous substance from which an individual can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

**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.

**Program Administrator** is the individual appointed by the Office of Environmental Health and Safety (EH&S) who is qualified by appropriate training and/or experience to carry out the duties of the Respiratory Protection Program Administer outlined within.

**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.

**Respirator Use Area** is an area where the use of respiratory protection is required. Respirator Use Areas shall be clearly marked using appropriate signage or by other effective means.

**Respirator Users** are UCSB personnel (e.g., faculty, staff, students and volunteers) who utilize respiratory protection while engaged in University related activities.

**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 protection equipment provides adequate protection to the wearer.

**Supervisors** are UCSB personnel with direct supervisory authority, and includes staff administrators, class instructors, teaching assistants, research assistants and faculty.

**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.

**Voluntary Use** is when the use of the respirator by a UCSB employee is not required to protect the employee from harmful exposures, but the employee elects to still wear a respirator.

## V. Respirator Types - Use and Limitations

This section contains information about the various types of respiratory protection equipment commonly used at UCSB. It includes information on respirator use, limitations and maximum allowable protection factors. The maximum allowable protection factor is the maximum level of respiratory protection that a class of respirators shall be used for at UCSB.



The ability of a respirator to protect a user depends on the respirator type, filter or canister type, contaminant type and concentration, environmental conditions and respirator fit. At UCSB, all respiratory protection equipment selection shall be performed by the EH&S Program Administrator.

#### A. Air-Purifying Respirators (APRs)

Air-purifying respirators have filters, cartridges, and/or canisters that remove contaminants by passing the ambient air through the air-purifying element before it reaches the user. The maximum contaminant concentration against which an APR will protect is determined by the design efficiency, capability of the filter, and the facepiece-to-face seal on the user. Since APRs use filters and do not provide uncontaminated air separate from the surrounding atmosphere, it is crucial to know what contaminants are present and their relative concentrations. APRs do not protect users against oxygen-deficient atmospheres or chemical absorption through exposed skin, and shall not be used in unknown, oxygen deficient or IDLH atmospheres.

##### Negative Pressure APRs

Negative pressure APRs are tight-fitting respirators which use the negative pressure created inside the respirator facepiece when a user inhales, to draw ambient air through an air-purifying element in order to remove contaminants. It is important that negative pressure APRs be fit tested to ensure proper fit, because poor fit may allow contaminants to be drawn around the seal unfiltered and into the mask. Due to this feature users of tight-fitting negative pressure respirators shall not have any facial hair which interferes with the respirator-to-face seal. Additionally, negative pressure air-purifying respirators may cause pulmonary strain and/or discomfort to the user due to breathing resistance caused by the filtration media, therefore it is important that users are medically cleared and in good health. The three main types of negative pressure APRs used on campus are:

#### 1. Dust Masks and other non-NIOSH certified masks

##### **UCSB Assigned Protection Factor: 0**

**Use** – Disposable non-NIOSH certified masks that may only be worn for comfort against non-toxic nuisance dusts.

**Limitations** – Does not protect against hazardous dust, gases, or vapors. If used in an occupational environment, its use would fall under “voluntary use” of respiratory protection.

#### 2. Filtering Facepiece Respirators

**UCSB Assigned Protection Factor: 5**  
**Use** – NIOSH approved filtering facepiece respirators are typically single use (one shift) and are designed to reduce inhalation exposure to low hazard particulate contaminants such as wood dust, animal dander, wild fire smoke, and some bioaerosols. N95 is the most common type of filtering facepiece respirator, however, there are N100 and P100 filtering facepieces in the market. In healthcare there are N95 surgical masks which are designed to prevent droplets, splashes, and splatters from reaching the nose and mouth of the wearer. The N95 aspect of the N95 surgical mask is to protect the wearer from certain bioaerosols. The surgical mask part, which protects from droplets, splashes, and splatter is approved by the FDA.

**Limitations** – Because filtering facepiece respirators generally have poor respirator-to-face sealing properties they offer only limited contaminant protection. Additionally, their design makes it difficult for users to perform respirator seal checks to ensure proper fit prior to use. If respirator fit is not adequate, contaminant leakage around the respirator-to-face seal may occur. Filtering facepiece respirators do not provide protection against gases, vapors or oxygen deficient atmospheres, and shall not be used for protection against highly toxic contaminants.<sup>3</sup>



### 3. Half-facepiece Elastomeric APRs

**Cal/OSHA Assigned Protection Factor: 10**

**Use** - Half-face respirators are typically equipped with High Efficiency Particulate Air (HEPA) filters, gas/vapor cartridges, or a combination of the two. It is very important that the proper filter or cartridge is selected for use based on the contaminant type.

**Limitations** – Air-purifying respirators can only be used for specific contaminants which is based on the filter/cartridge type. Certain cartridges have a designated maximum use concentration, which should never be exceeded. Furthermore, cartridges must be replaced regularly as they may become saturated over time. The wearer should leave an area immediately if he or she detects an odor, experiences nose or throat irritation, or if breathing becomes difficult.

### 4. Full-facepiece Elastomeric APRs

**Cal/OSHA Assigned Protection Factor: 50**

**Use** - Full face respirators typically provide more protection than half-masks because their shape allows a better respirator-to-face seal. They also protect the user's eyes from irritating chemicals or particulate atmospheres.

**Limitations** - Air-purifying full face-masks have the same limitations for use as half-mask respirators. Additionally, standard eyeglasses interfere with the mask-to-face seal; therefore, individuals who require corrective lenses may need to acquire special lenses for use with the mask. Contact the EH&S Program Administrator for assistance with, or questions about, obtaining special lenses for respirator use.

### Positive Pressure APRs

Positive pressure APRs are typically known as powered air-purifying respirators (PAPRs). PAPRs use a blower to create positive pressure inside the respirator face and can be either tight or loose fitting.

#### 1. Tight-fitting PAPRs

**Cal/OSHA Assigned Protection Factor: 50 Half-face/1,000 Full-face**

**Uses** – This PAPR has an elastomeric facepiece made of rubber or silicone. It has filters and a blower that operate as they do on a loose-fitting facepiece PAPR. Because this PAPR has a tight-fitting facepiece, it must be fit tested.

**Limitations** - Tight-fitting PAPRs have the same limitations as other air-purifying respirators. Additionally, they can be bulky and cumbersome due to the need for a motor and battery pack which is usually worn on the user's belt.

#### 2. Loose-fitting PAPRs

**Cal/OSHA Assigned Protection Factor: 25 or 1,000 (Helmets/Hoods with manufacturer data supporting 1,000 APF only)**

**Use** – This is a loose-fitting facepiece powered air-purifying respirator, or PAPR. Since it is loose-fitting, it does not need to be fit tested and can be used by workers with facial hair. Tight-fitting respirators may cause issues for people with facial hair, glasses or facial prosthetics. These problems can be greatly reduced or eliminated through the use of a PAPR. PAPRs use a blower to force ambient air through the air-purifying elements and into the user's facepiece creating a positive pressure in the facemask or loose fitting hood.

**Limitations** - They can be bulky and cumbersome due to the need for a motor and battery pack

which is usually worn on the user's belt.

## **B. Atmosphere Supplying Respirators (ASR)**

Atmosphere-supplying respirators supply users with breathing air from a source independent of the work environment. The maximum contaminant concentration against which an atmosphere supplying respirator will protect is determined by the face piece type and design. When using these devices it is important to ensure that the location of the air tank is not near a source of carbon monoxide or other contaminants, and that Grade D air is supplied as described by the compressed gas association. Departments wanting to utilize ASR units must notify the EH&S Program Administrator prior to use and are responsible for ensuring all requirements of use are met. The two most common types of ASRs are:

### **1. Airline Atmosphere Supplying Respirators**

#### **Cal/OSHA Assigned Protection Factor: Varies by facepiece type**

**Use** - Supplied-air respirator (SAR) or airline respirator is an atmosphere-supplying respirator for which supply air is provided by an external, fixed compressed gas source or compressor.

**Limitations** - The wearer's movements are restricted by the hose and they must return to a respirable atmosphere by retracing their route of entry. In addition, supply hoses may become severed or pinched, or the external compressed gas source may fail. The maximum hose length allowed for airline respirators is 300 feet.

### **2. Self-Contained Breathing Apparatus (SCBA)**

#### **Cal/OSHA Assigned Protection Factor: Varies by facepiece type**

**Use** - 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.

**Limitations** - The air supply in a SCBA cylinder is normally rated for a specified limited time; however, heavy exertion and stress will increase breathing rates and may deplete the air in less than the rated time. For this reason most units come with built-in alarms which alert the user when the air supply is low. Additional limitations are their weight and bulk, their limited service-life, and the need for specialized training for their maintenance and safe use.

### **3. Emergency Escape Respirator**

**Use** - Respirators which provide wears with safe breathing air in locations where the air quality has been compromised. Typically emergency escape respirators provide anywhere from 3 to 15 minutes of breathing air.

**Limitations** – Emergency escape respirators are only to be used for escape purposes only. They are not to be used for rescue.

## **VI. Requirements/Procedures**

### **A. Hazard Assessment and Control**

Departments and their Supervisors have the primary responsibility for ensuring workplace hazards are identified and controlled. Specifically, Supervisors are responsible for ensuring documented Job Hazard Assessments (JHAs) are conducted for all jobs and job tasks prior to their commencement. Job Hazard Assessments should encompass the entire process and identify both real and potential

hazards. Workplace hazards should be eliminated or reduced whenever possible. When workplace hazards cannot be completely eliminated, or controlled below acceptable exposure limits, engineering controls shall be implemented to eliminate or reduce the risk of exposure. The best time to introduce engineering controls is when a facility or process is in the design phase. An example of engineering controls would be the use of ventilation to capture and remove contaminants before they enter a worker's breathing zone. When engineering controls are not feasible, or have yet to be installed, administrative controls may be used to keep exposures below applicable regulatory limits. Examples of administrative controls are work period reduction, job rotation, appropriate work practices, proper maintenance, and personal hygiene.

Personal Protective Equipment (PPE) such as respirators are the last line of defense against workplace hazards and should only be considered when; (1) it has been determined that engineering and administrative controls are not feasible, (2) while they are being implemented, or (3) they are not sufficient to achieve acceptable levels of exposure. If it is determined that respiratory protection equipment is required to keep personnel exposure below applicable regulatory limits, those individuals shall be enrolled in the UCSB Respiratory Protection Program.

To assist Supervisors with the Hazard Assessment process, the Respiratory Protection Program has created the [Respirator Job Hazard Assessment & PPE Selection Tool](#) (Attachment G). Additionally, EH&S will provide Supervisors with Job Hazard Assessment assistance and training upon request.

## **B. Authorization for Use of Respiratory Protection Equipment**

Per the UCSB Respiratory Protection Policy (P-5440), the purchase and use of all respiratory protection equipment by UCSB personnel shall be reviewed and approved by the EH&S Program Administrator. If it is determined that respiratory protection equipment is required to reduce exposures below applicable exposure limits, those individuals who are required to use respiratory protection equipment shall be enrolled in the UCSB Respiratory Protection Program.

In order to remain enrolled in the UCSB Respiratory Protection Program individuals must be up to date on all training, medical evaluation and fit testing requirements. The EH&S Program Administrator will notify Respirator Users and their Supervisors approximately one (1) month before the user becomes due for training, fit testing or a medical evaluation. When a Respirator User becomes past due for training, fit testing, or medical evaluation, the Supervisor shall ensure that the respirator user is no longer assigned to tasks requiring the use of respirators until all the program enrollment requirements are met. When an individual is thirty (30) days or more overdue for one or more of the enrollment requirements, the EH&S Program Administrator will notify the Respirator User and their Supervisor that the user has been unenrolled from the program, and that they must return or discard their respirator.

Supervisors have the primary responsibility for ensuring their users continue to comply with program requirements and are using respiratory protection equipment properly. EH&S will also monitor for proper use during audits and inspections.

## **C. Respiratory Protection Equipment Selection**

The EH&S Program Administrator will make the final determination on the type of respiratory protection equipment required for each user through the use of the following methods:

- Reviewing information provided by, or obtained through Job Hazard Assessments (JHAs)
- Evaluating Safety Data Sheets and/or other information related to the respiratory hazards
- Consultation with the Supervisor and/or Respirator User
- Observation of operations and work practices
- Evaluating existing or alternative engineering controls
- Evaluating exposure monitoring data

Selection choices for new operations shall be added to the Respiratory Protection Equipment Selection Chart and Cartridge Change Schedule. Only NIOSH-certified respirators shall be used.

#### D. Costs

Where respiratory protection equipment is required, the cost of the required equipment and medical evaluation shall be covered by the Respirator User's department or research group.

#### E. Medical Evaluations

Prior to fit testing or use, UCSB personnel required to wear respiratory protection equipment shall successfully complete a medical evaluation performed by a physician or other licensed health care professional (PLHCP) to determine the Respirator User's ability to use such equipment. The PLHCP is responsible for conducting medical evaluations using the Health Status Questionnaire and any follow-up medical examinations, tests, consultations, or diagnostic procedures that the PLHCP deems necessary (any cost will be recharged to the appropriate department recharge number). The Health Status Questionnaire and examinations will be administered confidentially during the Respirator User's normal working hours.

At UCSB Medical Evaluations are conducted using the 3M Online Respirator Medical Evaluation service or by Sansum Occupational Health Clinic. Individuals who are required to complete a Respirator Medical Evaluation will be instructed on how to do so by the EH&S Program Administrator.

The following information must be provided to the PLHCP before the PLHCP makes a recommendation concerning an individual's ability to use a respirator:

- The type and weight of the respirator to be used by the Respirator User;
- The duration and frequency of respirator use (including use for rescue and escape);
- The expected physical work effort;
- Additional protective clothing and equipment to be worn;
- If the employee will be wearing contact lenses while wearing a respirator; and
- Temperature and humidity extremes that may be encountered.

The PLHCP shall provide the prospective Respirator User and the EH&S Program Administrator with a written recommendation regarding individual's ability to use the respirator. The recommendation shall provide only the following information:

- Any limitations on respirator use related to the medical condition of the individual, or relating to the workplace conditions in which the respirator will be used, including whether or not the individual is medically able to use the respirator;
- Special precautionary procedures which the employee must follow if the employee wears contact lenses with respiratory protection; and
- The need, if any, for follow-up medical evaluations.

Respirator Users shall stop using respiratory protection equipment and be reevaluated immediately if any of the following occur:

- They report adverse medical signs or symptoms that are related to ability to use a respirator;
- A PLHCP, Supervisor, or Program Administrator informs the Respirator User that they need to be reevaluated;
- Observations made during fit testing and program evaluation, indicates a need for reevaluation; or
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed upon the Respirator User.

## F. Training

UCSB personnel required to wear respiratory protection equipment shall receive training prior to respirator use, and at least annually thereafter. Topics covered by the training shall include:

- Their responsibilities under the UCSB Respiratory Protection Program;
- Why their respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
- Proper respirator selection and cartridge type;
- The limitations and capabilities of their respirator;
- How to use their respirator effectively in emergency situations, including situations in which the respirator malfunctions;
- How to inspect, don, doff, use, and check the seals of their respirator;
- Procedures for maintenance and storage of their respirator;
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
- The requirements of the Cal/OSHA Respiratory Protection Standard.

Respirator Users shall be retrained immediately if one or more of the following occurs:

- Changes in the workplace or the type of respirator render previous training obsolete;
- Inadequacies in the individual's knowledge or use of the respirator indicate that the individual has not retained the requisite understanding or skill; or
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

## G. Fit Testing

UCSB personnel required to utilize tight-fitting respiratory protection equipment shall undergo and pass a respirator fit test prior to use, and at least annually thereafter. The fit test shall be administered using an OSHA-accepted protocol outlined in Attachment C. OSHA-accepted QLFT and QNFT protocols and procedures are further detailed in CCR, Title 8, Section 5144 Appendix A. Fit testing shall be stopped and recorded as a fail under any of the following conditions:

- Hair interferes with the fit or operation of any tight-fitting facepiece if it extends under the facepiece sealing area. If this condition exists, no attempt will be made to fit such personnel under any circumstances. One day's growth of facial hair has been found to create leakage for respirator wearers;
- An individual exhibits difficulty in breathing during the test. If this happens the individual shall be referred back to the PLHCP to determine whether the individual can wear a respirator while performing his or her duties; or
- If for any reason an individual is unable to obtain a satisfactory facepiece seal when presented with a variety of sizes and models of respirators, that individual shall not be assigned to nor allowed to engage in a task requiring suitable respiratory protection equipment.

Additionally, fit testing shall be repeated if the user experiences one or more of the following after their last fit test:

- Signs or symptoms of contaminant breakthrough;
- A weight change of 20 pounds or more;
- Significant facial scarring in the area of the facepiece seal;
- Significant dental changes, i.e., multiple extractions without prosthesis, or dentures;
- Reconstructive or cosmetic surgery; or
- Any other condition that may interfere with facepiece sealing.

## H. Respirator Use

This section outlines procedures for safe and effective use of respiratory protection equipment. Respirator Users are responsible for adhering to these requirements, and Supervisors are responsible for ensuring they are adhered to.

### Facepiece Seal Protection

All Respirator Users wearing tight-fitting respirators shall perform a user seal check using one of the following methods each time they put on the respirator:

- **Positive pressure check:** Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal.
- **Negative pressure check:** Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.
- **Manufacturer's Recommended User Seal Check Procedures:** The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

If an individual wears corrective glasses or goggles or other personal protective equipment, they shall ensure that such equipment is worn in a manner that does not interfere with the seal of the facepiece. Individuals shall not be permitted to wear tight-fitting respirators under the following conditions:

- They 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.

### Effective Respirator Operation

If contaminate breakthrough, changes in breathing resistance, or leakage of the respirator facepiece is detected, the Respirator User shall leave the Respirator Use Area as soon as it is safe to do so. Respirators shall be repaired or replaced as needed, prior to the Respirator User returning Respirator Use Area. Respirator Users shall also leave the Respirator Use Area to:

- Wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or
- Replace the respirator or the filter, cartridge, or canister elements.

### Procedures for IDLH Atmospheres

For all IDLH atmospheres, Supervisors shall ensure that:

- One individual or, when needed, more than one individual is located outside the IDLH atmosphere;
- Visual, voice, or signal line communication is maintained between the individuals in the IDLH atmosphere and the individuals located outside the IDLH atmosphere;
- The individuals located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;



- The Supervisor or designee is notified before the individuals located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;
- The Supervisor or designee authorized, once notified, provides necessary assistance appropriate to the situation; and
- Individuals located outside the IDLH atmospheres are equipped with:
  - i. Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SBA; and either
  - ii. Appropriate retrieval equipment for removing individuals who enter hazardous atmospheres where retrieval equipment would contribute to the rescue of individuals and would not increase the overall risk resulting from entry; or
  - iii. Equivalent means for rescue where retrieval equipment is not required under Title 8, Cal. Code Regs., section 5144(g)(3)(F)2.

## I. Equipment Maintenance and Care

### General Requirements

Respirator Users have the primary responsibility for ensuring their respiratory protection equipment is clean, sanitary, and in good working order. Supervisors shall monitor Respirator Users for proper equipment care as needed, and the EH&S Program Administrator will perform inspections of equipment during fit testing. Damaged or altered respiratory protection equipment shall not be used. Respirator Users are responsible for the following:

- Inspecting their equipment before and after each use;
- Cleaning and disinfecting equipment after each use, or as needed to ensure a clean and sanitary condition;
- Properly storing their equipment;
- Replacing filters/cartridges in accordance with the UCSB Cartridge Change Schedule; and
- Notifying their Supervisor or Program Administrator if equipment becomes damaged or defective.

### Cleaning and Disinfecting

Respiratory protection equipment shall be cleaned and disinfected at the following intervals:

- Respirators issued for the exclusive use of a single individual shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;
- Respirators issued to more than one individual shall be cleaned and disinfected before being worn by different individuals;
- Respirators maintained for emergency use shall be cleaned and disinfected after each use; and
- Respirators used in fit testing and training shall be cleaned and disinfected after each use.

### Storage

All respirators shall be stored to 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.

Furthermore, emergency respirators shall be:

- Kept accessible to the work area;
- Stored in compartments or in covers that are clearly marked as containing emergency respirators; and
- Stored in accordance with any applicable manufacturer instructions.



## Inspections

Respiratory protection equipment shall be inspected as follows:

- All respirators used in routine situations shall be inspected before each use and during cleaning;
- 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; and
- Emergency escape-only respirators shall be inspected before being carried into the workplace for use.

Respiratory protection equipment inspections shall include the following:

- 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
- A check of elastomeric parts for pliability and signs of deterioration.
- Self-contained breathing apparatus shall be inspected monthly. 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 employer shall determine that the regulator and warning devices function properly.

For respiratory protection equipment maintained for emergency use, Supervisors shall ensure the information below is provided 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, and is maintained until it is updated following a subsequent certification:

- 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.

## Repairs

Respirators that fail an inspection or are otherwise found to be defective shall be immediately removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:

- Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;
- Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

## J. Breathing Air Quality and Use

### General Requirements

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

### Breathing Air Quality

Local protocols and procedures shall be established and maintained to ensure compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration meets the following specifications:

- Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
- 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:
  - i. Oxygen content (v/v) of 19.5-23.5%;
  - ii. Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
  - iii. Carbon monoxide (CO) content of 10 ppm or less;
  - iv. Carbon dioxide content of 1,000 ppm or less; and
  - v. Lack of noticeable odor.

### Breathing Air Cylinders

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

- Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 180);
- 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;
- The moisture content in the cylinder does not exceed a dew point of -50 deg. F (-45.6 deg. C) at 1 atmosphere pressure; and
- Only the respirator manufacturer's NIOSH approved breathing-gas containers, marked and maintained in accordance with the Quality Assurance provisions of the NIOSH approval for the SCBA as issued in accordance with the NIOSH respirator-certification standard at 42 CFR part 84 shall be used.

### Compressors

For compressors that are not oil-lubricated, carbon monoxide levels in the breathing air shall not exceed 10 ppm. For oil lubricated compressors, 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. Additionally, compressors used to supply breathing air to respirators shall be constructed and situated so as to:

- Prevent entry of contaminated air into the air-supply system;
- Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (-5.56 deg. C) below the ambient temperature;
- 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; and

- 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.

#### **K. Voluntary Use**

UCSB personnel who are not required to use respiratory protection, but would like to do so voluntarily must first receive approval by the EH&S Program Administrator. If voluntary use is approved, they shall meet all respirator use requirements and be enrolled into the UCSB Respiratory Protection Program.

Exception: Individuals whose only use of respirators involves the voluntary use of filtering facepiece respirators are not required to be enrolled in the UCSB Respiratory Protection Program. Instead they must read and sign the UCSB Filtering Facepiece Respirator Voluntary Use Form (Attachment F)

#### **L. Program Effectiveness**

Supervisors shall continually survey work area conditions and degree of Respirator Users' exposure or stress while using respiratory protection. When there is a change in work conditions or degree of Respirator Users' exposure or stress that may affect respirator effectiveness, the Supervisor shall reevaluate the continued effectiveness of the respirator and/or notify the EH&S Program Administrator.

The EH&S Program Administrator will also evaluate program effectiveness using the following methods:

##### **Periodic Worksite Evaluations**

The EH&S Program Administrator will conduct periodic evaluations of the workplace to ensure that the written Respiratory Protection Program is being properly implemented, and that respiratory protection equipment is being used properly.

##### **Evaluations During Fit Testing**

The EH&S Program Administrator will consult with Respirator Users to assess their views on program effectiveness, and to identify any problems during annual fit test appointments. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
- Appropriate respirator selection for the hazards to which the individual is exposed;
- Proper respirator use under the workplace conditions the individual encounters; and
- Proper respirator maintenance.

##### **Annual Industrial Hygiene Program Review**

The EH&S Program Administrator will also perform and document the following tasks during the annual Industrial Hygiene Program Review:

- Review and update written materials and the Respiratory Protection Program website as needed;
- Audit for Delinquent Users and ensure Respirator Users and Supervisors have been notified;
- Audit the UCSB Procurement System for improperly purchased respiratory protection equipment; and

- Review overall program effectiveness by evaluating information collected using the above methods, and make amendments to the Respiratory Protection Program Manual as needed.

## **VII. Record Keeping Requirements**

### **A. Training**

Departments shall retain training records for at least one (1) year after the person has retired or left University employment. Training completed or recorded on the Learning Management System (LMS) is kept indefinitely.

### **B. Medical Evaluations**

Records of medical evaluations shall be preserved for at least the duration of employment plus thirty (30) years, and shall maintained in accordance with section Cal. Code Regs., Title 8, Section 3204.

### **C. Fit Test Records**

Fit tests records shall be kept for as long as an individual is enrolled in the UCSB Respiratory Protection Program.

## **VIII. References**

Cal/OSHA Respiratory Protection Standard (Cal. Code Regs., Title 8, Section 5144)

Federal OSHA Respiratory Protection Standard 29 CFR 1910.134

## **IX. Issued By and Next Review Date**

Issued by: Jesse Bickley, Industrial Safety & Hygiene Services Manager

Date: August 1<sup>st</sup>, 2023

Next Review Date: Every 5 years unless required soon by regulatory update or deficiencies note.

## **X. Attachments**

Attachment A: Respiratory Protection Policy P-5440

Attachment B: New Enrollee and Annual Refresher Protocol

Attachment C: Respirator Fit Test Protocol

Attachment D: Instructions for Enrolling in the UCSB Respiratory Protection Program

Attachment E: Annual Respirator Refresher Form

Attachment F: Filtering Facepiece Respirator Voluntary Use Form

Attachment G: Respirator Job Hazard Assessment & PPE Selection and Training Tool

Attachment H: Respiratory Protection Equipment Selection Chart and Cartridge Change Schedule

Attachment I: Respirator Usage Log

Attachment J: Respirator and Cartridge Weight Chart

## Attachment A

# UC SANTA BARBARA

## POLICY AND PROCEDURE

## Respiratory Protection

Contact: Environmental Health &amp; Safety

Issued: July \_\_, 2019

Supersedes: Respiratory Protection (5440); dated May 1, 1987

Pages: 3

## RESPIRATORY PROTECTION

## I. SCOPE

This policy applies to University of California, Santa Barbara (UCSB) faculty, staff, students, visitors, and volunteers while engaged in University-related activities.

## II. DEFINITIONS

Respiratory Protection Standard: Set forth by [California Code of Regulations, Title 8, Section 5144](#)

Job hazard assessment (JHA): The analysis of an individual's job tasks, tools, equipment, and procedures that determine the safety risk and how to control such risk.

## III. POLICY

Insofar as it is reasonably within the control of the University to do so, the University shall maintain an environment that will not adversely affect the health, safety, and well-being of students, employees, visitors, volunteers, and neighboring populations.

Hazardous atmospheres must be eliminated or reduced below applicable exposure limits using effective control measures whenever possible.

Utilization of respiratory protection equipment should only occur after implementation of all feasible engineering and administrative controls or while such controls are being developed.

The UCSB Respiratory Protection Program is administered by the Office of Environmental Health and Safety (EH&S). All use of respiratory protection equipment, including filtering facepiece respirators (dust masks), must be reviewed and approved by EH&S. Campus procedures, requirements, and responsibilities for the use of respiratory protection equipment are outlined in the [UCSB Respiratory Protection Program Manual](#). All use of respiratory protection equipment must comply with [Title 8 of the California Code of Regulations, General Safety Order 5144](#) and UCSB Respiratory Protection Program requirements.

## III. RESPONSIBILITIES

Chancellor: Must provide the resources needed to comply with the Respiratory Protection Standard.

Deans and Vice Chancellors: Must ensure units under their authority comply with this policy.

Directors and Department Chairs:

- Must provide the resources needed to ensure the health and safety of their employees;
- Ensure their department complies with this policy; and
- Identify supervisors and ensure supervisors complete training on health and safety responsibilities prior to supervising any person using hazardous materials.

Managers, Supervisors, Faculty, and Principal Investigators:

- Must ensure documented Job Hazard Assessments are conducted for all tasks where hazards are, or are likely to be, present and require the use of personal protective equipment per [Title 8 of the California Code of Regulations, General Safety Order 3380](#);
- Ensure hazards identified are eliminated or adequately controlled;
- Identify individuals who may need to be enrolled in the Respiratory Protection Program and contact EH&S for evaluation;
- Ensure all use of respiratory protection equipment has been evaluated and approved by EH&S;
- Ensure direct reports utilizing respiratory protection equipment are enrolled in, and in compliance with, the UCSB Respiratory Protection Program;
- Enforce the use of respiratory protection equipment and safe work practices where required;
- Notify EH&S of any changes in a direct report's health status or the hazards for which their respiratory protection equipment is used;
- Ensure direct reports complete Respirator & Cartridge Usage Logs and receive new cartridges when needed; and
- Ensure direct reports comply with all other UCSB Respiratory Protection Program requirements.

Employees, Students, Visitors, and Volunteers:

- Must understand and comply with campus health and safety regulations, policies, and procedures;
- Notify their supervisor or EH&S about any hazardous conditions observed;
- Use respiratory protection equipment only after it has been evaluated and approved by EH&S;
- Use respiratory protection equipment only if currently enrolled in the Respiratory Protection Program and in compliance with all program requirements;
- Use only respiratory protection equipment for which they have been trained and fitted;
- Use respiratory protection equipment in accordance with instruction and training provided by EH&S personnel and their supervisor;
- Inform the Occupational Health Physician, their supervisor, or EH&S, of any discomfort or personal health problems caused by, or that could be aggravated by, the use of respiratory equipment;
- Guard their respirator against damage and ensure it is not disassembled, modified, or otherwise altered in any way;
- Report any observed damage or suspected malfunctioning of respiratory protection equipment to their supervisor or EH&S;

- Record respirator use on their Respirator Usage Log after each use, and obtain and replace filters/cartridges per the UCSB Cartridge Change Schedule.

Office of Environmental Health and Safety:

- Must designate an individual who is qualified by appropriate training and/or experience to administer the program.

Program Administrator:

- Serves as a technical resource to departments and assists them in carrying out their responsibilities as necessary;
- Must develop and maintain the UCSB Respiratory Protection Program and ensure it meets applicable regulatory requirements;
- Ensure appropriate respiratory protection equipment is issued and develop a cartridge change schedule where applicable;
- Provide training, fit-testing, and other technical assistance to UCSB personnel, students, visitors, and volunteers regarding respirator use;
- Monitor for unauthorized and/or improper respiratory protection equipment use; and
- Assess the effectiveness of the UCSB Respiratory Protection Program.

IV. PROCEDURES [or IMPLEMENTING GUIDELINES]

I. Campus procedures, requirements, and responsibilities for the use of respiratory protection equipment are outlined in the [UCSB Respiratory Protection Program Manual](#). All use of respiratory protection equipment must comply with [Title 8 of the California Code of Regulations, General Safety Order 5144](#) and UCSB Respiratory Protection Program requirements.

V. REFERENCES [or RELATED POLICIES AND RESOURCES]

[UCSB Respiratory Protection Program Website](#)  
[UCSB Respiratory Protection Program Manual](#)  
[California Code of Regulations, Title 8, Section 5144 - Respiratory Protection](#)  
[California Code of Regulations, Title 8, Section 3380 – Personal Protective Devices](#)

## Attachment B

### New Enrollee and Annual Refresher Protocol

#### A. New Enrollee Protocol

1. Obtain the following information for the prospective user:
  - a. Respirator User's full name, UCSB ID number, and email address;
  - b. Department and Supervisor's name;
  - c. A valid Recharge Number (8-\_\_\_\_ - \_\_\_\_ - \_\_) for medical evaluation (currently \$29) and any respiratory protection equipment issued by EH&S.



- d. A completed JHA or SOP for the task(s) to be performed while using respiratory protection, with documentation of employee training included.
  - e. Safety Data Sheets (SDSs), or other hazard information for the materials to which individuals may be exposed.
  - f. Find out if humidity (less than 30% or greater than 65%), temperature (less than 50F or greater than 77F), or oxygen-deficient atmospheres will be encountered while wearing the respirator.
  - g. Obtain a list of PPE that will be worn in addition to respirator when performing tasks.
2. Determine if new users' profile matches with an established Exposure Group. If not, perform a documented Exposure Assessment to establish new exposure group. File the completed IH Exposure Assessment Form on the DFS under Exposure Assessments & Reports/Department Name/Exposure Group along with supporting documents (JHA/SOP, SDSs, emails, etc.) and update the Cartridge Selection/Change Chart.
3. If applicable, verify that new user has completed Hazard Communication/GHS training. If they have not, send them information on how to complete.
4. 3M Online Respirator Medical Evaluation. Create new Respirator Profile(s) using Exposure Group as Profile Name, or Provide new user with a log-in ID for the 3M Respirator Evaluation website:
  - If medical evaluation is failed, person should receive information in the mail from 3M. Sansum is available as an alternative method for medical evaluation.
5. When contacted for training and fit-test appointment:
  - Do not make an appointment until the medical evaluation and Respirator Job Hazard Assessment and training documentation have been completed.
  - Verify that they have completed Hazard Communication Training, if applicable. If not, ensure it is completed prior to respirator fit-testing.
  - Remind the user to be clean shaved if male and that they must bring any PPE or other equipment/clothing that may be worn during actual respirator use which may interfere with respirator fit.
6. Training and Quiz:
  - Deliver New User training and quiz.
  - Grade quiz and review with new user.
  - Have them review the "Important Things to Remember When Using Air Purifying Respirators" sheet (if applicable).
  - **Emphasize that they can only use their respirator/cartridges against certain air contaminants** (e.g. if they are using a respirator with particulate filters, inform them that they must not use it for gases/vapors).
7. Conduct Fit-Test

## B. Refresher Protocol

1. Send user and their Supervisor the Annual Refresher Notification email notifying them that the user is due for training, fit-testing or medical approximately one month prior to the due date. Include a copy of the approved JHA for review and approval, Annual Refresher Form (Form C), and/or 3M Respirator Evaluation ID if user is due for a medical evaluation. Keep records of all notification emails. Verify that they have completed Hazard Communication Training, if applicable. If not, ensure it is completed prior to respirator fit-testing.
2. If necessary, send user a second email to user and supervisor around their due date reminding them that the user will be unenrolled and unable to use their respirator if they do not complete the required steps within 90 days.

3. Send enrollment email to user and supervisor when user is 90 days overdue for respirator training, fit-testing or medical evaluation. Print email and staple it to the top of their packet and close-out their file.
4. Ensure they bring completed Annual Refresher Form (Form C) fit test appointment. If they do not, have them complete a copy onsite.
5. Verify that user has brought all respiratory protection equipment issued in for fit-testing. If not, send email to user and supervisor specifying which equipment user is authorized to use.
6. Consult the Respirator User on the following items to ensure program effectiveness and to identify any problems:
  - 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 individual is exposed;
  - c) Proper respirator use under the workplace conditions the individual encounters; and
  - d) Proper respirator maintenance.
7. Conduct training and fit-testing.

**Attachment C****Respirator Fit-Test Protocols****A. Quantitative Fit-Test Protocol****1. Fit Test Equipment Set-Up****PortaCount**

1. Insert alcohol cartridge into Porta Count.
2. Turn on PortaCount.
3. Perform daily check when prompted or by clicking on the Daily Check icon or selecting the daily check option from the “PortaCount” drop-down menu at the top of the software screen.
4. Follow the directions on screen to complete the daily checks, it may be necessary to use the TSI particulate generator if ambient particulate counts are less than 1,000 pt/cc

**Computer**

1. Turn on the computer.
2. Enter user ID and password.
3. Open the FitPro+ software on desktop

**2. Respirator and Cartridge Verification/Selection**

1. Consult Respirator JHA for required respirator(s) and cartridge(s).
2. Obtain and review respirator usage log if applicable.
3. Ask the user what they will be using their respirator for to verify the information on the Respirator JHA is accurate.
4. If they haven't already been issued a respirator or need a new respirator select new respirator brand and size. For half-face respirators try 3M brand respirator first. Medium is always a good size to start with unless it is apparent the individual will require a large or small. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
5. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
6. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
  - i. Position of the mask on the nose
  - ii. Room for eye protection
  - iii. Room to talk
  - iv. Position of mask on face and cheeks
7. The following criteria shall be used to help determine the adequacy of the respirator fit:

- a. Chin properly placed;
  - b. Adequate strap tension, not overly tightened;
  - c. Fit across nose bridge;
  - d. Respirator of proper size to span distance from nose to chin;
  - e. Tendency of respirator to slip;
  - f. Self-observation in mirror to evaluate fit and respirator position.
8. Look up the cartridge type necessary for the user by referring to the Respiratory Protection Equipment Selection Chart and Cartridge Change Schedule. Typically two sets of cartridges are issued. However, ask them how often they will use their respirator and/or how many cartridges they think they need.
9. Ask user if they need any additional equipment such as cover lens for full face respirators or pre-filters for cartridges.
10. Consult with CIH if there are any discrepancies or if you have any questions.

### **3. Conducting the Fit-test**

#### **Step 1 – Positive/Negative Pressure Fit Checks**

1. Prior to installing fit-test adaptor and probe ask the user to don respirator and conduct positive and negative pressure fit-checks if they haven't done so already. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Cal. Code Regs., Title 8, Section 5144 Appendix B-1 or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
2. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.
3. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
4. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
5. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which would interfere with respirator fit.

#### **Step 2 – Install Fit-Test Adaptor and Probe**

1. Properly install fit-test adaptor and probe. The probe shall be positioned to allow sampling inside of the facepiece in the breathing zone of the user, midway between the nose and the mouth. Make sure the probe tube is not crimped and the cartridges and adapter are not cross-threaded.

#### **Step 3 – Enter/update user information**

1. Click on "Play" icon located near top of software screen
2. The correct protocol should already be selected (OSHA FAST-FULL/HALF\_FACE)

3. Type name of IH conducting fit test in the “Operator” box near the middle/top of the screen
4. If the user is already in the database, use the “Person 1” drop-down menu to find the individual and select their name. Verify their information and update as necessary.
5. If the person is not in the database, select “ADD NEW PERSON” field at the top of the menu and enter the required information:
  - i. For “company” enter the department where the person works
  - ii. For “location” enter “UCSB”
  - iii. For custom 1, enter the supervisor’s name
  - iv. For custom 2, enter the due date of the next physical
6. Using the Respirator drop-down menu, select a respirator
7. Select the appropriate Respirator size from the “Mask Size” drop-down menu

#### Step 4 - Conduct Fit-Test

1. Explain to user how the test will be performed. Make sure they understand what to do during each test and explain to them what the numbers/results mean and how the PortaCount works.
2. Test Exercises.
3. (a) Employers must perform the following test exercises for all fit testing methods prescribed in this appendix, except for the CNP quantitative fit testing protocol and the CNP REDON quantitative fit testing protocol. For these two protocols, employers must ensure that the test subjects (i.e., employees) perform the exercise procedure specified in section I.C.4(b) of this appendix for the CNP quantitative fit testing protocol, or the exercise procedure described in section I.C.5(b) of this appendix for the CNP REDON quantitative fit-testing protocol. For the remaining fit testing methods, employers must ensure that employees perform the test exercises in the appropriate test environment in the following manner:
  4. (1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
  5. (2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
  6. (3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
  7. (4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
  8. (5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.
9. Rainbow Passage
10. When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.
11. (6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)
12. (7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
13. (8) Normal breathing. Same as exercise (1).

14. (b) Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.
15. Click start to begin the Fit Test.
16. Make sure users follow the fit-test directions.
17. If fit test is failed make necessary adjustments and redo test.

#### **Step 5 - Additional Items and Recordkeeping**

1. If person is a new user have them read the “Important Things to Remember When Using Air Purifying Respirators (APR’s)” sheet.
2. When fit test is passed print report and have user sign.
3. Fill-out fit-test certification card and give to user.
4. Provide user with a Respirator/Cartridge Usage Log and explain how to use it.
5. Each user should have a bag for their respirator, one or more sets of new cartridges and lens covers, cleaning wipes, etc. as needed.
6. Attach users completed Form A/C, usage log, quiz and fit-test report (in that order top to bottom) add to existing file if applicable.
7. File packet by last name in filing cabinet.

#### **4. Recharges**

1. Fill out a respirator recharge form with the proper information from their Form A/C during or after the user’s fit test. The Recharge form can be accessed using the “Shortcut to RPP Recharge Forms” located on the Desktop.
2. To fill out the form, enter the User’s information including their name, supervisor, department, recharge number and include the date of the fit test. NOTE: For EH&S personnel, the recharge number does not need to be completed.
3. Next, fill out the quantity of equipment recharged on their designated lines and the cost will auto complete (leave the Sansum section blank).
4. If the user does not need equipment, fill out the top portion and leave the equipment portion blank, also under notes write, “Fit Test Only”
5. If a user comes in for new respiratory protection equipment and they have not had a recent medical evaluation , fill out the recharge form and under notes write, “Equipment Only”
6. Place completed for into Gayle’s box for processing.

#### **5. Equipment Shutdown and Clean-up**

1. Exit Fitplus software and turn off PortaCount.
2. Remove alcohol cartridge and place in its container. Make sure alcohol level is properly filled up to line.
3. Shut down computer.
4. Put all extra plastic bags in drawer F7.

**B. Qualitative Fit-Test Protocol for Filtering Facepiece Respirators**

(Only for negative pressure air-purifying respirators that must achieve a fit factor of 100 or less)

The person(s) administering QLFT must be able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order. The fit test administrator shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

**1. Fit Test Equipment Set-Up**

1. Retrieve QLFT box from the glass cabinet, remove components, and attach fit test hood to collar by placing drawstring between flanges on collar. Tighten drawstring and tie with square knot or bow.
2. Pour a small amount (~ one teaspoonful) of the sensitivity test solution (#1) into the nebulizer labeled #1 sensitivity test solution.
3. Pour the same amount of fit test solution (#2) into the second nebulizer labeled #2 fit test solution.
4. The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

**2. Respirator and Cartridge Verification/Selection (follow steps outlined in QNFT Protocol)****3. Sensitivity Test**

This test is done to assure that the person being fit tested can detect the taste of the test solution at very low levels. The Sensitivity Test Solution is a very dilute version of the Fit Test Solution. The test subject should not eat, drink (except water), or chew gum for 15 minutes before the test.

1. Have the test subject put on the hood and collar assembly without a respirator.
2. Position the hood assembly forward so that there is about six inches between the subject's face and the hood window.
3. Instruct the test subject to breathe through his/her mouth with tongue extended.
4. Using Nebulizer #1 with the Sensitivity Test Solution (#1), inject the aerosol into the hood through the hole in the hood window. Inject ten squeezes of the bulb, fully collapsing and allowing the bulb to expand fully on each squeeze. The nozzle is directed away from the nose and mouth of the person. Both plugs on the nebulizer must be removed from the openings during use. The nebulizer must be held in an upright position to ensure aerosol generation.
5. Ask the test subject if he/she can detect the taste of the solution. If tasted, note the number of squeezes as 10 and proceed to the Fit Test. The test subject shall be asked to take note of the taste for reference in the fit test.
6. If not tasted, inject an additional ten squeezes of the aerosol into the hood. Repeat with ten more squeezes if necessary. Note whether 20 or 30 squeezes produced a taste response.
7. If 30 squeezes are inadequate, in that the subject does not detect the taste, the test is ended. Another type of fit test must be used.
8. Remove the test hood, and give the subject a few minutes to clear the taste from his/her mouth. It may be helpful to have the subject rinse his/her mouth with water.

**4. Conducting the Fit-test**

1. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in CCR Title 8, Section 5144 Appendix B-1 or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the



- mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.
2. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
  3. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.
  4. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
  5. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
  6. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which would interfere with respirator fit. The respirator shall be properly adjusted and equipped with a particulate filter(s).
  7. Have the subject put on and position the test hood as before, and breathe through his/her mouth with tongue extended.
  8. Using Nebulizer #2 with Fit Test Solution (#2), inject the fit test aerosol using the same number of squeezes as required in the Sensitivity Test (10, 20, or 30). A minimum of ten squeezes is required, fully collapsing and allowing the bulb to expand fully on each squeeze. The nebulizer must be held in an upright position to ensure aerosol generation.
  9. To maintain an adequate concentration of aerosol during this test, inject one-half the number of squeezes (5, 10, or 15) every 30 seconds for the duration of the fit test procedure.
  10. After the initial injection of aerosol, ask the test subject to perform the following test exercises for 60 seconds each:
    - a. Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
    - b. Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
    - c. Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
    - d. Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
    - e. Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.
    - f. Bending over - Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
    - g. Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
  11. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall

- be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.
12. The test is terminated at any time the taste of aerosol is detected by the subject because this indicates an inadequate fit. Wait 15 minutes and perform the fit test again.
  13. Repeat the fit test after redonning and readjusting the respirator. If the taste of saccharin is detected again, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).
  14. If the entire test is completed without the subject detecting the aerosol, the test is successful and respirator fit has been demonstrated.
  15. Periodically check the nebulizer to make sure that it is not clogged. If clogging is found, clean the nebulizer and retest.

## 16. Recordkeeping

1. Retrieve Qualitative Fit-Test Reports from drawer B11
2. Have user sign and date on form
3. Fill in Respirator data
4. Sign and date
5. Fill-out fit-test certification card and give to user.
6. If the individual is a new user from the Psychology department inform IACUC Coordinator that individual has been enrolled in the Respiratory Protection Program
7. Add individual's next fit-test due date to Respirator User database.
8. Attach users completed Form A/C, quiz and fit-test report (in that order top to bottom) add to existing file if applicable.
9. File packet by last name in filing cabinet.

## 17. Recharges

1. Fill out a respirator recharge form with the proper information from their Form A/C during or after the user's fit test. The Recharge form can be accessed using the "Shortcut to RPP Recharge Forms" located on the Desktop.
2. To fill out the form, enter the User's information including their name, supervisor, department, recharge number and include the date of the fit test. NOTE: For EH&S personnel, the recharge number does not need to be completed.
3. Next, fill out the quantity of equipment recharged on their designated lines and the cost will auto complete (leave the Sansum section blank).
4. If the user does not need equipment, fill out the top portion and leave the equipment portion blank, also under notes write, "Fit Test Only"
5. If a user comes in for new respiratory protection equipment and they have not had a recent medical evaluation, fill out the recharge form and under notes write, "Equipment Only"
6. Place completed form into Gayle's box for processing.

## 18. Equipment Clean-up

1. Immediately after completing the test, discard the unused solutions. DO NOT pour unused solutions back into bottles. Rinse the nebulizers with warm water to prevent clogging. Wipe out the inside of the hood with a paper towel to remove any deposited test solution.

## Attachment D

### Directions for Enrolling in the Respiratory Protection Program

#### New Enrollee Protocol

Per the UCSB Respiratory Protection Policy (P-5440), supervisors must ensure that all use of respiratory protection equipment by their direct reports has been reviewed and approved by the Office of Environmental, Health, and Safety (EH&S). All individuals required to use respiratory must be enrolled [UCSB Respiratory Protection Program](#) (RPP) and up to date on all requirements. To enroll in the program, individuals must complete a respirator medical evaluation, respirator fit testing, and the training requirements outlined below. Please contact the RPP using the contact information at the bottom of the page if you have any questions.

#### Step 1: Obtain a JHA or SOP from your supervisor/PI

Per Cal/OSHA regulations, a documented Job Hazard Assessment (JHA) or Standard Operating Procedure (SOP) must be developed for each job task using hazardous substances or requiring the use of Personal Protective Equipment (PPE). At a minimum, the JHA or SOP must include a description of the job task, its frequency, and duration, a list of real and potential hazards, and required PPE. The JHA/SOP process should focus on identifying and reducing hazards by following the [Hierarchy of Controls](#). Employees must receive documented training covering hazards and required PPE related to each job task. To assist supervisors in this process, the Respiratory Protection Program has created the Respiratory Protection Job Hazard Assessment and PPE Training Tool available here:

<https://www.ehs.ucsb.edu/ih/respiratory-protection-program>

EH&S will provide JHA/SOP development assistance upon request. Additional information on completing a JHA can be found here: <http://www.osha.gov/Publications/osh3071.pdf>

#### Step 2: Submit a UCSB RPP Enrollment Form using the link below:

<https://forms.gle/fAF46eh6Y1ehaeqa7>

You will need the following information to complete the form:

- Respirator User's full name, UCSB ID number, and email address;
- Department and Supervisor's name;
- A valid Recharge Number (8-\_\_\_\_ - \_\_\_\_ - \_\_) for medical evaluation (currently \$29) and any respiratory protection equipment issued by EH&S.
- A completed JHA or SOP for the task(s) to be performed while using respiratory protection, with documentation of employee training included.
- Safety Data Sheets (SDSs), or other hazard information for the materials to which individuals may be exposed.
- Find out if humidity (less than 30% or greater than 65%), temperature (less than 50F or greater than 77F), or oxygen-deficient atmospheres will be encountered while wearing the respirator.
- Attain a list of PPE that will be worn in addition to respirator when performing tasks.

This information will be used to determine if respiratory protection is required, and if so, which type. If additional information is required, you will be notified. If not, a login ID number for the online respirator medical evaluation will be provided to the User.

#### Step 3: Complete the online medical evaluation

Once you have a login ID number, go to [www.respexam.com](http://www.respexam.com) and click on the link for employees. Enter your login ID and complete the medical questionnaire. Please contact the RPP or 3M at 1-800-383-3393 if you have any questions regarding the medical evaluation process.

**Step 4:** If you are cleared for respirator use, proceed to Step 5. If you are not cleared for use, contact the RPP for further directions.

#### **Step 5: Review the RPP Manual**

Familiarize yourself with the “UCSB Respiratory Protection Manual” which can be accessed online at:

<https://www.ehs.ucsb.edu/programs-services/industrial-hygiene/respiratory-protection-program>

As an employee/student please pay special attention to “G. Fit testing” pg. 13, “H. Respiratory Use” pg. 13, and “I. Equipment Maintenance and Care” pg. 15. in order to better prepare for fit test.

#### **Step 6: Enroll in the UCSB Hazard Communication Program (non-laboratory personnel only)**

Employees working with hazardous substances not covered by a laboratory Chemical Hygiene Plan must be included in the UCSB Hazard Communication Program (HCP). HCP requirements include training, an inventory of hazardous substances, proper labeling, and readily available safety data sheets. Below are instructions on how to complete documented Hazard Communication Program training online through the UCSB Learning Management System (LMS). Additional HCP information and requirements can be found here:

<http://www.ehs.ucsb.edu/ih/hazard-communication-program>

a. Using a compatible internet browser (see link below for updated list), enter <https://www.learningcenter.ucsb.edu/> in the Address box and press Enter.

Important Note: Browsers must be set to allow/enable cookies (small text files that store messages). We also recommend that you disable pop-up blockers, which can affect the function of the Learning Center application. Upon the first login to the Learning Center, the program may detect the existence of pop-up blockers and remind you to disable them. For more information about Learning Center computer requirements and compatible browsers go to:

<https://www.learningcenter.ucsb.edu/faq/learning-center-computer-requirements>

b. Follow the instruction for logging into the Learning Center. For UCSB employees, your UCSBnetID is your online identity for accessing the UCSB Directory, Corporate Time, Kronos, and other UCSB online systems and services.

c. To find the Hazard Communication course, search for: Hazard Communication

d. Click on the little arrow to the left of the training you would like to complete, click on the title of the eCourse, then click on the register button.

e. Check the box at the bottom of the window and click "Submit."

f. Click "Start" and follow the prompts to complete the training.

#### **Step 7: Respirator Fit Test and Training**

Make an appointment for respirator fit testing by emailing the RPP at [ehs-ih@ucsb.edu](mailto:ehs-ih@ucsb.edu) or by calling (805)893-3743; you will be issued your respirator at the time of your fit test. There must be no facial hair between the user's respirator's seal and their face. Please review the [CDC's Guide to Acceptable Facial Hair](#) and ensure that you have shaved according prior to coming to your appointment. Per OSHA regulations, fit testing will not be conducted for individuals with interfering facial hair. Users must also bring any PPE or other equipment/clothing that may interfere with respirator fit. Fit-testing typically takes less than 30 minutes but on rare occasions, it may take longer.

If you have any questions regarding these directions, please email the Respiratory Protection Program at [ehs-ih@ucsb.edu](mailto:ehs-ih@ucsb.edu) or call 893-3743 or 893-8787.

**Attachment E****UCSB Annual Respirator Refresher Form**

Respirator User's Name: \_\_\_\_\_ Date: \_\_\_\_\_

Respirator User's Email: \_\_\_\_\_ Phone: \_\_\_\_\_

Supervisor/Dept. Head Name (please print): \_\_\_\_\_

Valid Recharge (account-fund-sub) Number\*: 8- \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

\*The cost of the medical evaluation (if needed) and any respiratory protection equipment issued will be charged to the account-fund-sub number listed above.

**Annual Respirator Effectiveness and Health Status Questionnaire**

Please answer the following questions to help evaluate Respiratory Protection Program effectiveness, and determine if a follow-up medical evaluation is needed:

1) Does your respirator use match what is stated in your Respirator JHA? If not, what has changed? (If no, JHA must be updated) \_\_\_\_\_

2) Are there any issues with how your respirator fits, or does it impact your ability to work safely? \_\_\_\_\_

3) Have there been any changes in your health that may affect your ability to wear a respirator? \*

4) Have you experienced any health symptoms, medical issues or discomfort while using your respirator over the past year? \*

**\*If the answer is "yes", a follow-up medical evaluation may be required.**

**Annual Refresher Training**

Annual refresher training is required by the Cal/OSHA Respiratory Protection Standard. Individuals shall at a minimum demonstrate knowledge of the following to ensure safe and proper use of their respiratory protection:

- a. Why it is necessary, and how facial hair, or improper fit, usage, or maintenance can compromise the protective effect of their respirator(s);
- b. The limitations and capabilities of their respirator(s);
- c. How to use their respirator(s) effectively in emergency situations, including situations in which the respirator malfunctions;
- d. How to inspect, don, doff, use, and check the seals of their respirator(s);
- e. What the procedures are for maintenance and storage of their respirator(s);
- f. Usage log requirements and cartridge change schedules for their respirator(s);
- g. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
- h. The general requirements of the Respiratory Protection Standard.

**I certify that I've been trained and have a sufficient knowledge of the items listed above.**

Respirator User's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Instructor's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Attachment F**

## **UCSB Respiratory Protection Program Filtering Facepiece Respirator Voluntary Use Requirements**

**Personnel who will wear filtering facepiece respirators (FFRs) on a voluntary basis must read the Filtering Facepiece Respirator Voluntary Use Requirements and sign the Voluntary Use Consent Form. If individuals are required to wear a filtering facepiece respirator or another form of respiratory protection to perform their job duties, they must first enroll in the UCSB Respiratory Protection Program.**

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

Respirators are an effective method of protection against designated hazards when appropriately 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.

FFR users should do the following:

1. Read and heed all instructions provided by the manufacturer on use, seal checks, maintenance, cleaning and care, and warnings regarding the respirator's 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.
5. Air purifying respirators DO NOT supply oxygen. Do not use in situations where the oxygen levels are questionable or unknown.

**At UCSB the voluntary use of filtering facepiece respirators must be approved by EH&S and is only allowed under the following conditions:**

1. Individuals have read and understood all information provided by the manufacturer regarding the respirator's use and limitations.
2. The FFR is certified by the National Institute for Occupational Safety and Health (NIOSH) of the U.S. Department of Health and Human Services.
3. Safety Data Sheets for all materials have been reviewed, and a documented Job Hazard Analysis has been completed (if applicable).
4. FFRs are only used for protection against known contaminants below their applicable exposure limits. FFRs shall not be used in oxygen-deficient atmospheres, atmospheres containing contaminants above their Permissible Exposure Limits (PELs), unknown atmospheres, known hazardous atmospheres, or for protection against contaminants which they are not designed for.

**If you have any questions regarding the proper usage of FFRs, please contact the EH&S Industrial Hygiene Division using the information at the bottom of the page.**



## Filtering Facepiece Respirator Voluntary Use Consent Form

**A copy of this form with all approved user signatures must be kept at the location where the approved filtering facepiece respirators are stored along with a copy of the voluntary use requirements (previous page).**

**Approved Usage:** Voluntary use of filtering facepiece respirators (use not required by hazard assessment or regulatory statute)

**By signing below, I acknowledge that I have read and understood the UCSB Respiratory Protection Program Filtering Facepiece Respirator Voluntary Use Requirements and will only use filtering facepiece respirators for the contaminants and conditions listed on this form. All other uses must be reviewed and approved by the UCSB Respiratory Protection Program Manager or designee.**

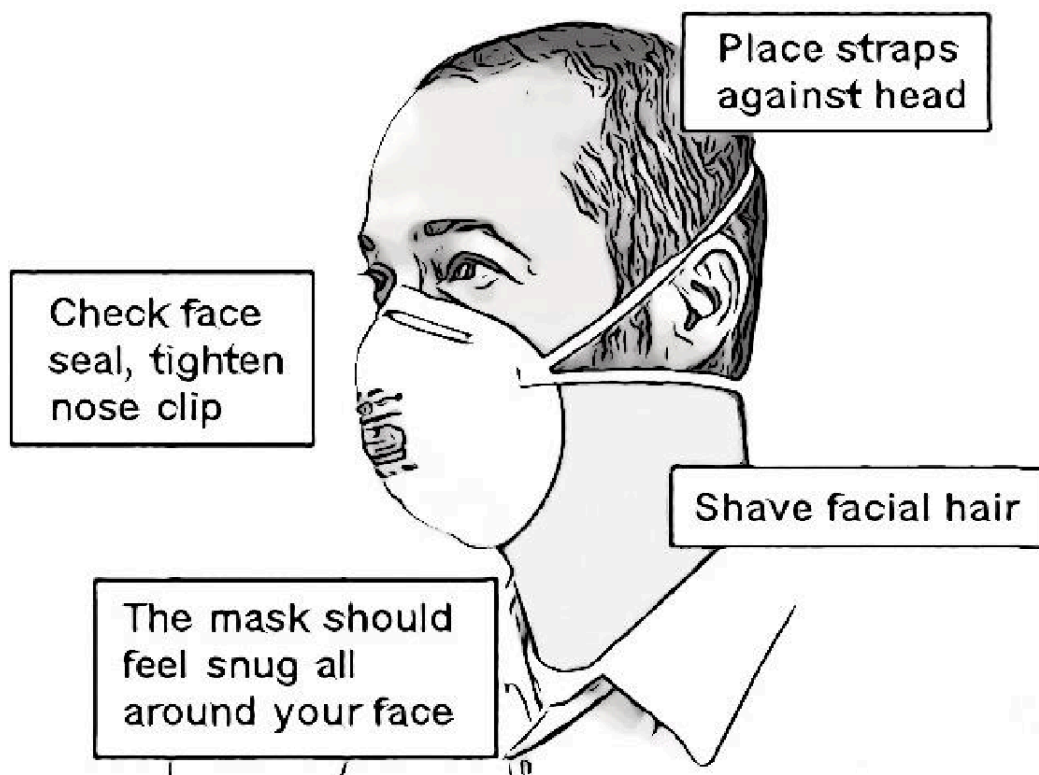
[illegible]

**How to properly put on, use, and maintain respirators.**

To get the most protection from a respirator, there must be a tight seal around the face. A respirator will provide much less protection if facial hair interferes with the seal.

For N95s or other filtering facepiece respirator mask that is made of filter material:

- (1) Place the mask over the nose and under the chin, with one strap placed below the ears and one strap above.
- (2) Pinch the metal part (if there is one) of the respirator over the top of the nose so it fits securely.



**Figure 1. Drawing Showing Proper Fitting of a Filtering Facepiece Respirator (shaving is not required for voluntary respirator use)**

For a respirator that relies on a tight seal to the face, check how well it seals to the face by following the manufacturer's instructions for user seal checks. Adjust the respirator if air leaks between the seal and the face. The more air leaks under the seal, the less protection the user receives.

Respirator filters should be replaced if they get damaged, deformed, dirty, or difficult to breathe through. Filtering facepiece respirators are disposable respirators that cannot be cleaned or disinfected. A best practice is to replace filtering facepiece respirators at the beginning of each shift.

If you have symptoms such as difficulty breathing, dizziness, or nausea, go to an area with cleaner air, take off the respirator, and get medical help.



## Attachment G

## UCSB Respiratory Protection Program

### Respirator Job Hazard Assessment and PPE Training Tool

### Evaluation

NAME OF SUPERVISOR PERFORMING EVALUATION:	DATE OF EVALUATION:
EVALUATION FOR (Individual(s)/Job/Process):	
EH&S REVIEWER:	

### Job Hazard Assessment

**Instructions:** 1) Use this form to perform a documented Job Hazard Assessment (JHA) for **each job task** that necessitates the use of personal protective equipment (PPE), 2) Provide training and document on the (attached) training roster, and 3) Maintain this documentation until the tasks are no longer being performed. Example of hazards include: Impact, penetration, compression, laceration, exposure, heat, noise and light (optical) radiation. Note that these Personal Protective Equipment (PPE) controls should be used in conjunction with other controls (engineering, administrative, and work practices).

Task	Frequency & Duration	Hazards	PPE (please specify)
<i>Welding (example)</i>	<i>Weekly, up to 4 hours each time.</i>	<i>Welding fumes, UV light, noise, and heat.</i>	RESPIRATOR: <i>Half-face APR w/ P100 Cartridges or P-100 Filtering Facepiece Respirator (FFR)</i> EYE / FACE: <i>Welding Helmet</i> HAND: <i>Leather Welding Gloves</i> FOOT: <i>Work Boots</i> BODY: <i>Flame Resistant Clothing/Apron</i> OTHER: <i>Hearing Protection (ear muffs or plugs)</i>
			RESPIRATOR: EYE / FACE: HAND: FOOT: BODY: OTHER:
			RESPIRATOR: EYE / FACE: HAND: FOOT: BODY: OTHER:
			RESPIRATOR: EYE / FACE: HAND: FOOT: BODY: OTHER:
			RESPIRATOR: EYE / FACE: HAND: FOOT: BODY: OTHER:

(Use additional pages if needed)

**Class: Job Hazard Assessment Review & Personal Protective Equipment Requirements**

## Job Title

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**When PPE is necessary; What PPE is necessary; How to properly don, doff, adjust, and wear PPE; Limitations of PPE; Proper care, maintenance, useful life, and disposal of PPE; Demonstration of ability to use PPE. [8 CCR 3380]**

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## Attachment H

# UCSB Respiratory Protection Equipment Selection Chart and Cartridge Change Schedule

### Introduction

UCSB Environmental Health & Safety has developed the Cartridge Change Schedule Chart for the university respirator users, using the methods listed below.

### Methods Used to Develop Cartridge Change Schedules

#### 1. Exposure Assessments

The use of quantitative and qualitative exposure assessments to determine contaminate type and concentration.

#### 2. Respirator and Cartridge Manufacturer Recommendations

Respirator and cartridge manufacturer's tools, data and expertise are used to help calculate cartridge change schedules when applicable. Service Life Indicators (ESLI) are also used when available.

#### 3. Literature Review and Professional Judgment

When manufacturer tools and/or data is not available, EHS will use the following information to calculate cartridge change schedules: The type, quantity, concentration, toxicity, physical characteristics (state, boiling point, vapor pressure) and other relevant information from SDSs and other literature for hazardous substances used, breathing rate, working conditions (indoor/outdoor), evaluation of controls, temperature, relative humidity and additional safety factors.

#### 4. Rule of Thumb

Available rules of thumb: driven or resulted from experimental work by scientific organizations (AIHA, NIOSH). One such "Rule of Thumb" for estimating *organic vapor cartridge* service life is found in Chapter 36 of the AIHA publication "The Occupational Environment – Its Evaluation and Control." It suggests that:

- The chemical's boiling point is  $> 70^{\circ}\text{C}$  and the concentration is less than 200 ppm you can expect a service life of 8 hours at a normal work rate.
- Service life is inversely proportional to work-rate (breathing rate). Most cartridge studies have used the high end of moderate work-rate of 50-60 liters per minutes.
- Reducing concentration by a factor of 10 will increase service life by a factor of 5.
- Humidity above 85% will reduce service life by 50%.
- The higher the temperature the lower the service life. Temperature effects alone have been reported to reduce the service life 1-10% for every 10 degrees Celsius rise depending on the specific solvent (Nelson, et. Al., 1976)

**UCSB Respiratory Protection Equipment Selection Chart and Cartridge Change Schedule**

Based on the above four principals the following respiratory protection equipment and cartridge change schedule is recommended (\*Note: If users think they are experiencing contaminant breakthrough (where air contaminants are not being filtered properly) prior to this time they should stop using respirator immediately and contact EH&S):

<b>Respirator Exposure Group</b> (By Department and/or Hazard)	<b>Primary Respiratory Hazard(s)</b>	<b>Respirator Type(s)</b>	<b>Cartridge Type(s)</b>	<b>Cartridge/FFR Change Schedule*</b>	<b>Justification for Change Schedule</b>
<b>ARC - LAA</b>	Animal dander	Routine work: N95+ filtering facepiece respirator	NA	<b>After each shift*</b>	OSHA Required
		Cage Cleaning: Half-face APR	P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>ARC – H2O2 (HaloFogger Room Clearance)</b>	Hydrogen peroxide mist and vapor	Entry <1 ppm H2O2: N95+ Filtering Facepiece Respirator w/ goggles	NA	<b>After each shift*</b>	OSHA Required
		Entry 1 ppm < 10 ppm H2O: Half-face w/ goggles	OV w/ particulate filter	<b>After 40 hours of use*</b>	Conservative estimate calculated using worst case scenario and safety factor.
<b>Chemistry – Crystalline Silica</b>	Crystalline Silica	Half face APR	P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>D&amp;CS - Lead &amp; Asbestos</b>	Lead, asbestos and other particulates below applicable PELs	Half-face or Full-face APR	P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>Earth Sciences - Rock Shop</b>	Silica and other particulates from rock samples	N95+ filtering facepiece respirator, or	NA	<b>After each shift*</b>	OSHA Required
		Half-face APR	P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear

<b>Respirator Exposure Group</b> (By Department and/or Hazard)	<b>Primary Respiratory Hazard(s)</b>	<b>Respirator Type(s)</b>	<b>Cartridge Type(s)</b>	<b>Cartridge/FFR Change Schedule*</b>	<b>Justification for Change Schedule</b>
<b>Earth Sciences - Volcano Lab</b>	Hazardous Volcanic Gases: CO, CO <sub>2</sub> , SO <sub>2</sub> , H <sub>2</sub> S, HCl, Oxygen deficiency	Full-face APR	Acid Gas w/ N95 prefilter	<b>40 hours of use*</b>	Conservative estimate calculated using worst case scenario and safety factor.
<b>EEMB-Boatyard</b>	Cyclohexanone, methyl ethyl ketone, styrene, wood, dust, Dusts - Particulates - Fibers, Solvents (acetone, toluene, xylene), Fumes (welding)	Half-face APR	OV/P100	<b>40 hours of use*</b>	
<b>EH&amp;S - Campus Hazardous Waste</b>	Organic Solvents Acids Mercury	Collection/ segregation/ over pack: Half-face APR  Bulking: Full-face APR  Spill response/ cleanup: Based on hazard assessment.	Multi Gas Vapor/ P100  Mercury (Hg)	<b>Bulking: After 16 hours of use*</b>  <b>Collection/Segregation/ Over-packing: After 40 hours of use*</b>  <b>ESLI for Mercury</b>  <b>Spill response: Based on hazard assessment and monitoring results</b>	Conservative estimate calculated using exposure monitoring data and significant safety factor.
<b>EH&amp;S - Community Hazardous Waste</b>	Organic Solvents, Acids, Oil & Water-based Paints, Pesticides, Asbestos, Waste Engine Oil, Engine coolants, Consumer products	Bulking: Full-face APR	Multi Gas Vapor/ P100	<b>Bulking paints/ solvents: After 16 hours of use*</b>	Conservative estimate calculated using exposure monitoring data and significant safety factor.
<b>EH&amp;S - Emergency Response</b>	Identified and evaluated during response.	Half-face/full-face/SC BA based on hazard assessment.	Based on hazard assessment.	<b>After each use when responding to an emergency*</b>	Frequency of use.



<b>Respirator Exposure Group</b> (By Department and/or Hazard)	<b>Primary Respiratory Hazard(s)</b>	<b>Respirator Type(s)</b>	<b>Cartridge Type(s)</b>	<b>Cartridge/FFR Change Schedule*</b>	<b>Justification for Change Schedule</b>
<b>FM - Building Maintenance Workers</b>	Nuisance level particulates and VOCs	Half face APR	P100/, OV/P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>FM - Custodial</b>	Nuisance level particulates and VOCs	Half face APR	P100/, OV/P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>FM - Grounds</b>	Roundup Pro, nuisance level articulates	N95+ Filtering Facepiece Respirator	NA  OV/P100  P100	<b>After each use shift*</b>  <b>After 40 hours of use*</b>  <b>After 40 hours of use*</b>	OSHA Required
<b>FM - HVAC</b>	Nuisance level particulates and VOCs	Half face APR	P100, OV/P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>FM - Painters</b>	Oil/latex/water-based Paints, Lead, Acetone, Solvents, Isocyanates, Particulates	Half face APR.  Full face APR for spraying and isocyanate use.	OV/P100	<b>Oil-based paints, solvents and isocyanates:</b> <b>After 16 hours of use*</b>  <b>Lead Paint scraping:</b> <b>After 40 hours of use*</b>  <b>Latex/Water-based Paints:</b> <b>After 40 hours of use*</b>	Conservative estimate calculated using exposure monitoring data and significant safety factor.
<b>FM - Water Engineers</b>	Hydrochloric Acid, Sodium Hypochlorite, Chlorine	Full-face APR	OV/AG/ P100	<b>After 40 hours of use*</b>	Conservative estimate using exposure assessment and significant safety factor.
<b>HRS - Carpenter</b>	Nuisance level particulates and VOCs	N95+ Filtering Facepiece Respirator	NA	<b>After each shift*</b>	OSHA required

<b>Respirator Exposure Group</b> (By Department and/or Hazard)	<b>Primary Respiratory Hazard(s)</b>	<b>Respirator Type(s)</b>	<b>Cartridge Type(s)</b>	<b>Cartridge/FFR Change Schedule*</b>	<b>Justification for Change Schedule</b>
<b>HRS - Grounds</b>	Roundup Pro and nuisance level particulates	N95+ Filtering Facepiece Respirator	NA	<b>After each shift*</b>	OSHA required
<b>HRS - Painters</b>	Oil/latex/water-based paints, Lead, Solvents, Particulates, Wood dust, Laquer Thinner, Paint Thinner, Bondo, Adhesives	Half face APR  Full face APR for spraying.	OV - P100	<b>Oil-based paints &amp; Solvents: After 40 hours of use*</b>  <b>Lead Paint scraping: After 40 hours of use*</b>  <b>Latex/Water-based Paints: After 40 hours of use*</b>	Conservative estimate using exposure assessment and significant safety factor.
<b>Lab Animal Allergens (LAA)</b>	Animal dander	Routine work:N95+ Filtering Facepiece Respirator Cage Cleaning: Half-face APR	NA  P100	<b>After each shift*</b>  <b>After 40 hours of use*</b>	OSHA Required  Filter loading/wear and tear
<b>Materials -MBE</b> (English, Gossard, Olsson Palmstrom)	Isopropanol, Acetone, Arsenic, Phosphorous, Gallium, Aluminum, Iron, Silicon, Manganese, Indium, Antimony, Beryllium	Half face APR	OV/AG/ P100	<b>Cartridges will be changed after each shutdown or service to equipment. No more than 40 hours of use for each cartridge*</b>	Conservative estimate using exposure assessments and significant safety factor.
<b>Materials -SSLE</b> (Nakamura, DenBaars, Speck)	Ammonia, heavy metals, organic vapors	Full-face APR	GME/P100	<b>Cartridges will be changed after each shutdown or service to equipment. No more than 40 hours of use for each cartridge*</b>	Conservative estimate using exposure assessments and significant safety factor.

<b>Respirator Exposure Group</b> (By Department and/or Hazard)	<b>Primary Respiratory Hazard(s)</b>	<b>Respirator Type(s)</b>	<b>Cartridge Type(s)</b>	<b>Cartridge/FFR Change Schedule*</b>	<b>Justification for Change Schedule</b>
<b>Nuisance Particulates (All departments)</b>	Non-hazardous dusts or other particulates well below applicable exposure limits.	N95+ Filtering Facepiece Respirator, or Half-face APR	NA	<b>After each shift*</b>	OSHA Required
			P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>Police</b>	Tear gas, biological agents, mace, pepper spray	Full face gas mask	CN/CS/P100-CTCF50 (riot control gases/particulates)	<b>After 24 hours of use*</b>	Recommendation from manufacturer.
<b>SHS – Influenza/ATD</b>	Aerosol transmissible diseases	N95+ Filtering Facepiece Respirator	NA	<b>After each shift*</b>	OSHA Required
<b>Thermal Evaporator</b>	Toluene and other organic solvents, metal particles.	Half-face APR	OV/P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>TPS - Garage</b>	Nuisance level particulates and VOCs	Half face APR	OV/P100	<b>After 40 hours of use*</b>	Conservative estimate using exposure assessments and significant safety factor.
<b>Welding &amp; Hot work</b>	Metal Fumes	P100 FFR	P100	<b>After 40 hours of use*</b>	Filter loading/wear and tear
<b>Wildfire Smoke</b>	Wildfire Smoke	N95+ Filtering Facepiece Respirator	N/A	<b>After each shift*</b>	OSHA Required

\*Note: If users think they are experiencing contaminant breakthrough (where air contaminants are not being properly filtered) prior to this time they should stop using respirator immediately and contact EH&S.

### Respirator/Cartridge Usage Log

*(To be filled out by Respirator Users)*

(To be filled out by Respirator Users)

[illegible]

\* If you think you are experiencing contaminate breakthrough prior to this time stop using respirator immediately and contact EH&S.

**\*\*\*If this number is greater or equal to the EH&S recommended cartridge change-out, properly dispose of cartridges and replace with a new pair.**

**Attachment J****UCSB Respirator and Cartridge Weight Chart**

TYPE	SIZE	WEIGHT (oz)
<b>MSA RESPIRATORS</b>		
Comfo Elite	Small	6.5
	Medium	6.5
	Large	7.5
Comfo Classic	Small	6.0
	Medium	6.4
	Large	6.5
Ultra -Twin	Small	20.5
	Medium	21.1
	Large	21.0
<b>3M RESPIRATORS</b>		
6100	Small	2.8
6200	Medium	2.9
6300	Large	3.0
6700	Small	14
6800	Medium	15
6900	Large	16

**WEIGHT OF ONE PAIR OF CARTRIDGES (oz)****MSA CARTRIDGES**

P100	2.7
GMC-P100	7.5, 7.8
GME-P100	9.0, 9.5

**3M CARTRIDGES**

6000 Org Vap	6.0
60923 OV. AG, P100	8.0
P100 filters	0.6
N95 +retainer	1.0