

Respiratory Protection Program



California State University, Chico

Department of Environmental Health and Safety
March 2011

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1.0 INTRODUCTION AND OVERVIEW

In order to control the risk of inhaling air contaminated with hazardous dust, pesticides, vapors, smoke, gases, mists, or fumes, the primary objective should be to prevent atmospheric contamination. This goal may be accomplished by providing protection through the use of proper engineering controls such as exhaust systems or fume hoods. Another step to ensure that the potential for hazardous atmospheres does not exist is by promoting administrative controls, this would include: substituting a harmful material with a less toxic substance, and/or shift rotations to reduce employee's amount of exposure. Finally, if the above techniques cannot be met, as in any emergency situation, the use of personal respiratory equipment is necessary.

Individual department supervisors and/or managers will determine if air-purifying respirators will be required for an employee's use. While specific job duties may not require the use of a respirator to be used daily, the occasional use of a respirator will require the employee to be a part of the Respiratory Protection Program. At the University, only air purified respirators will be used.

The first process in respirator selection and usage is a medical examination. A medical examination is conducted to determine if the employee is capable to wear a respirator safely. Upon passing the medical examination, the Department of Environmental Health and Safety (EHS) will conduct training on the Respiratory Protection Program. Upon completion of employee training, the Department of Environmental Health and Safety will conduct a qualitative or a quantitative fit test for University employee's with their designated respirator. Upon passing the medical examination, training of the Respiratory Protection Program, and the quantitative fit test, the employee may use the respirator at their will.

Activities involving the use of respiratory protection equipment are conducted in compliance with Title 8 and Title 3 of the California Code of Regulations (CCR), and Title 29 of the Code of Federal Regulations (CFR).

2.0

ENVIRONMENTAL HEALTH AND SAFETY RESPONSIBILITIES

2.1 Environmental Health and Safety Responsibilities

- Develop, implement, and update as necessary a written Respiratory Protection Program.
- Provide respirator instructions which include: maintenance, storage, limitations and capabilities, training, and fit testing.
- Conduct initial, annual, and other required fit tests for employee's who utilize respiratory protective equipment.
- Coordinate medical evaluations for employee's required to use a respirator.
- Conduct inspections, upon request, for respiratory equipment usage, maintenance, and storage.

2.2 Retraining

It is also the responsibility of EHS to retrain employees in the Respiratory Protection Program annually and/or when the following occur:

- Changes in the workplace or the type of respirator renders the previous training obsolete;
- Inadequacies in the employee's knowledge or use of the respirator;
- Any additional situation that may arise in which retraining appears necessary to ensure proper use.

3.0

MEDICAL EVALUATIONS

It is the University's responsibility to provide medical evaluations to determine the employee's ability to use a respirator before the employee is fit tested or required to use a respirator in the workplace. Each employee whose duties require the use of a respirator is required to complete a medical examination before using a respirator. This medical examination will consist of a Medical History Form and satisfactory completion of a pulmonary function test. A copy of the Respirator Medical Evaluation Questionnaire is available by contacting EHS at ext. 5126.

3.1 Medical Re-evaluations

Additional medical evaluations shall be conducted if any of the following exist:

- An employee reports medical signs or symptoms that change their ability to use a respirator.
- A doctor, supervisor, or respirator protection program administrator informs the employee they need to be re-evaluated.
- Information from the Respiratory Protection Program, including observations made during fit testing and program evaluation indicates a need for employee re-evaluation.
- A change occurs in workplace conditions such as physical work effort, protective clothing, temperature, or any other situation which may result in a substantial increase in the physiological burden placed on an employee.

4.0

FIT TESTING PROCEDURES

It is only when a respirator fits properly that it protects the employee. Many different factors can affect the fit of the respirator, such as face shape, facial hair, eye glasses, missing teeth, and certain skin conditions. In addition, facial hair or any facial condition that interferes with the proper seal of the respirator to the face will not be permitted to wear a respirator and a fit test will not be conducted. When choosing a respirator, it must fit properly and provide protection from the specific type of contaminant.

When an employee requires a fit test, the employee must provide their designated respirator for use during the test.

4.1 Pre-Fit Testing Assessment

The respirator must be donned and worn to assess comfort prior to the fit test. During this time, assessment on the comfort of the respirator will be conducted. This assessment includes the following:

- The position of the mask on the nose;
- Room for eye protection;
- Room to talk;
- Position of mask on face and cheeks.

The following criteria will help determine the adequacy of the respirator fit:

- Chin properly placed;
- Adequate strap tension, not overly tightened;
- Fit across nose bridge;
- Respirator of proper size to span distance from nose to chin;
- Tendency of respirator to slip;
- Self-observation in mirror to evaluate fit and respirator position.

4.2 Fit Testing Exercises

Test exercises consist of the following:

- Normal breathing. In normal standing position, without talking, the subject shall breathe normally.
- Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply.
- Standing in place and turning head from side to side.
- Standing in place and moving the head up and down.
- Speaking out loud slowly and loud enough to be heard clearly. The subject shall read the *Rainbow Passage*. (Text to be provided at time of fit test.)
- Grimace. The test subject shall grimace by smiling or frowning.
- Standing in a bent over position. The employee will bend at the waist and touch their toes.
- Normal breathing for conclusion of the fit test.

4.3 Repeated Fit Testing

Fit testing must be repeated at least annually or sooner if there is any change to an employee's health or environment. Some of these changes include, weight change of 20 pounds or more, significant facial scarring, significant dental changes, cosmetic surgery, and any other condition that may interfere with the seal. If an employee experiences changes in work conditions, degree of exposure, or stress that may affect the effectiveness of the respirator, they need to be re-evaluated.

5.0

FIT TESTING TECHNIQUES

Each employee who is required to wear a respirator must be fit tested before any equipment may be used. There are two different types of fit testing techniques, qualitative, and quantitative.

5.1 Qualitative Fit Testing Techniques

Qualitative fit testing is a pass or fail test that relies on the sensory response of the individual being tested to detect the agent being introduced. The protocol outlined by OSHA for respirator fit testing is followed using an irritant smoke (stannic chloride).

5.2 Quantitative Fit Testing Techniques

Quantitative fit testing measures the effectiveness of the respirator seal in the ambient atmosphere. A special device is used to measure the pressure concentration both outside the mask and inside the mask. This ratio is known as the fit factor. A fit factor of 100 is considered for passing in a half face respirator and 500 fit factor minimum for passing in a full face respirator based on regulatory guidelines.

5.3 Positive & Negative Pressure Check

When using a respirator with tight-fitting seals, an employee shall perform a respirator seal-check each time they put on the respirator. This can be done through positive pressure check, as well as, negative pressure check.

- Positive pressure check requires the user to block the exhaust port(s) with the palm of the hand and exhale gently into the face-piece to cause a slight positive pressure inside the face-piece. If the face-piece bulges slightly, and no air leaks are detected between the face and the face-piece, then a proper fit has been obtained.
- Negative pressure check requires the user to block the intake ports with the palm of the hand and inhale for five to ten seconds. If the face-piece collapses slightly and no air leakage is detected between the face and the face-piece, a proper fit has been obtained.

6.0

RESPIRATOR SELECTION

Each respirator issued is equipped with a filter cartridge(s) for the specific hazard to be protected against. Respiratory protective equipment such as air supplied respirators, which include airline respirators, and Self-Contained Breathing Apparatus (SCBA), that are used when ambient air is harmful to breathe, will not be used by University employees. If conditions exist where there is the possibility that air supplied respirators are necessary, emergency personnel will respond appropriately.

6.1 General Requirements to Follow when Selecting a Respirator

- Respirators must be worn based on the hazard to which the worker is (or has the potential to be) exposed to, the workplace and the possibility of the work performed to affect the respirator's reliability.
- Respirators shall be National Institute for Occupational Safety & Health (NIOSH) certified and shall be used according to manufacturer's recommendations.
- The supervisor or manager shall identify hazards in the work place. This evaluation shall demonstrate a reasonable estimate of employee exposure to respiratory hazard(s) and an identification of the contaminants properties.
- Improper use of a respirator may result in the decline of an individual's health.
- Air-purifying respirators are not designed to be in any atmosphere that:
 - is immediately dangerous to your life or health;
 - atmospheres where oxygen is less than 19.5% or greater than 23.5%;
 - an area with unknown contaminants.
- Respirators can only be worn after medical examinations have been approved, and EHS has conducted a quantitative fit test with passing results.
- Before using a respirator, check for cleanliness, signs of tear, wear, or other signs of damage.

6.2 Filter Selection

When selecting a respirator filter, be aware that each filter is made to filter out a specific or a few specific contaminants. Protection of filters varies in three levels of filter efficiency, 95%, 99%, and 100%. There are three categories of resistance to filter efficiency labeled N, R, and P. The selection of N, R, or P series filters depends on the presence or absence of oil particles as follows:

- If there are no oil particles present, all filters N, P, and R are acceptable.
- If there is the possibility for oil to be present, N filters are NOT acceptable. Only P or R filters may be used.
- If there are oil particles and the filter may be used in more than one, eight (8) hour work shift, only a P filter may be used.

Cartridges and canisters are color coded, as specified in the American National Standards Institute (1973), and are as follows:

<u>Contaminant</u>	<u>Cartridge Color</u>
Acid gas	White
Organic vapor	Black
Particulate	Gray
Ammonia gas	Green
Acid gas and organic vapor	Yellow
Radioactive material	Magenta/Purple
High Efficiency Particulate Air	Magenta/Purple

6.3 Filter Change Schedule

Do not wait to smell or taste a chemical through the filter of the respirator. Filters need to be changed out before the end of their filter life. The University's policy on changing filters relies on a number of factors, which will determine the length of the filter.

- The concentration of the chemical being used.
- How long the employee is being exposed.
- Manufacturer's recommendations for filter use found on the MSDS.
- If in doubt change it out.

7.0 VOLUNTARY USE OF RESPIRATORS

An employee may voluntarily use a respirator as long as his/her workplace atmosphere does/will not exceed threshold limits. Employee's voluntarily wearing respirators are required to follow the rules established in the Respiratory Protection Program.

7.1 Voluntary Use Guidelines

If a supervisor provides respirators for voluntary use, or if an employee provides their own respirator, certain precautions need to be done to ensure that the respirator itself does not present a hazard. These precautions include the following:

- Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning, and warnings regarding the respirator limitations.
- Respirators should be chosen which protect against the contaminant of concern. Only NIOSH certified respirators shall be worn. A label or statement of certification should appear on the respirator or respirator packaging.
- Employees shall not wear respirators into atmospheres containing contaminants for which the respirator is not designed to protect against.
- It is important that the employee store their respirator in a safe place where it can easily be found and properly labeled, so another employee does not accidentally use the respirator.

7.2 Dust / Mist Masks

Dust/mist masks may be worn at any time where an employee feels necessary to protect against any non-hazardous dust, fume, or mist. Dust/mist masks shall be changed out regularly. No medical examination is required for an employee to wear a dust/mist mask.

8.0 PROPER USE OF RESPIRATORS

Training of employee's in the use of respirators shall include a complete description of the equipment. Instructions will be provided in the proper donning of a respirator and the negative and positive pressure fit check procedures. Training will also include the care, inspection, maintenance, cleaning, and storage of the respirators, and limitations of respirator use.

9.0 MAINTENANCE OF RESPIRATORS

The responsibility for maintaining respirators is with the employee.

9.1 Storage

The maintenance and care of respirators includes inspecting for defects, cleaning and disinfecting, and storage. All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, moisture, and damaging chemicals. Respirators shall be packed or stored to prevent deformation of the face-piece and exhalation valve. Do not store your respirator in the trunk of your car.

9.2 Cleaning and Disinfecting

After a respirator has been used, the employee shall clean and disinfect the respirator using a disinfecting agent. During this operation, it is also a good opportunity to examine the respirator and check for damage. Procedures for proper cleaning of respirators include:

1. Removing filters or cartridges. Discard or repair any defective parts.
2. Wash components in warm water (110F; 43C maximum) with a mild detergent or with a manufacturer recommended cleaner. A non-wire stiff bristle brush may be used to facilitate the removal of dirt.
3. Rinse components in clean, warm, (110F; 43C maximum) running water.

9.3 Inspection for Defects

Before each use, inspect equipment for defects, signs of wear, or damage. This process requires a check of the respirators function, tightness of connections, condition of the face-piece, head straps, connecting tube, and filters. If repairs or adjustments need to be made to respirators that have the potential for affecting the effectiveness of the respirator, bring the respirator to EHS located at Aymer J. Hamilton, Room 130, for inspection.

10.0 RESPIRATORS FOR EMERGENCY USE

An emergency can be defined as an unforeseen combination of circumstances that calls for immediate action. Each respiratory device has a limited ability to protect health. In the event of an emergency, if the atmosphere is known to be contaminated with a known chemical, proper filters need to be used. In environments where there is an unknown atmosphere, the atmosphere shall be considered to be immediately dangerous to life and health (IDLH). In an IDLH situation, properly trained emergency personnel should be contacted immediately by calling 911 from any campus telephone.

10.1 Emergency Respirator Maintenance

Respirators for use in emergency situations shall be inspected monthly and in accordance with the manufacturer's recommendations; and shall be checked for proper function before and after each use. This is to be done by documenting the date the inspection was performed, the name of the person who conducted the inspection, any findings, and serial number of the respirator. 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 compliance with the manufacturer's instructions.

11.0

ADDITIONAL INFORMATION

If a University employee has any questions and would like to schedule a medical evaluation, fit test or fit-test re-evaluation, more information regarding the Respiratory Protection Program, or if your department has a new employee who would like to be a part of the Respiratory Protection Program, please contact the Department of Environmental Health and Safety at ext. 5126 located in Aymer J. Hamilton, Room 130.