

Respiratory Protection Program

1.0 PURPOSE AND SCOPE

This document is intended to establish uniform guidelines for respirator selection, use, and care in accordance with the requirements of 29 CFR 1910.134 and any other OSHA standard that may set workplace standards for respiratory protection. This Respiratory Protection Program applies to all employees who may be required to wear respiratory protection.

2.0 TRAINING

All County employees required to wear respiratory protection shall receive instruction on the care, use, limitations, inspection and maintenance of the type of respiratory protective device used for the completion of work assignments. Annual refresher training will review the initial instruction, which includes:

1. The purpose of respiratory protection.
2. The nature of contaminants to be encountered and the signs and symptoms of exposure.
3. Description of the work practices and engineering controls to be used to reduce exposure.
4. Cleaning, disinfection, inspection, maintenance and storage.
5. Respirator limitations and capabilities

3.0 RESPIRATORY EQUIPMENT SELECTION GUIDELINES

Choosing the proper respiratory equipment involves several steps:

1. Determining the nature and extent of the hazard present
2. Assessing the work place conditions and worker exposures
3. Choosing equipment that is appropriate to the contaminant hazard and work place use conditions.

OSHA requires that all respiratory protection equipment will be NIOSH approved.

The following sections provide some general guidance and discussion concerning respirator selection.

3.1 Classes of Respirators, Respirators are divided into two basic classes:

1. Air purifying respirators
2. Atmosphere supplying respirators

Air purifying respirators (APRs) use filters, canisters or cartridges to reduce the wearer's exposure to harmful contaminants. APRs do not provide a separate source of breathing air and therefore cannot be used in an oxygen deficient atmosphere or in one that is immediately dangerous to life or health (IDLH). IDLH refers to an atmosphere that poses either an immediate threat to life, would cause irreversible health effects, or would impair an individual's ability to escape from a dangerous atmosphere. Atmospheres that are oxygen deficient, or have the potential to become oxygen deficient, are always considered to be IDLH conditions.

For IDLH conditions, or when conditions are unknown, atmosphere-supplying respirators will be used. These are designed to provide the user with breathable air from a clean source and consist of two basic types:

1. Self Contained Breathing Apparatus (SCBA) which supplies air from a source carried by the user.

2. Supplied Air Respirator (SAR) which supplies air from a source at a distance and is connected to the user with an airline hose (sometime referred to as an airline respirator).

APRs, SCBAs and SARs can be further differentiated by the type of air flow (positive or negative pressure) that is supplied to the face piece.

Positive pressure respirators maintain a positive pressure in the face piece during both inhalation and exhalation. Positive pressure respirators can be either pressure-demand or continuous flow. Pressure-demand respirators employ a pressure regulator and an exhalation valve on the mask to maintain the positive pressure. If a leak develops in a pressure demand device, the regulator provides a constant flow of clean air into the face piece, thus preventing the user from breathing contaminated air. Continuous flow respirators send a continuous stream of air into the face piece at all times. The continuous air flow prevents infiltration of ambient air but also uses up the supply of air much more quickly than does a pressure demand device.

Negative pressure respirators draw air into the face piece by using the negative pressure created during inhalation. The main disadvantage of a negative pressure respirator is that if a leak should develop, the user would then draw contaminated air into the face piece during inhalation.

Depending on the site demography and specific tasks involved, workers shall be issued either a self-contained breathing apparatus (SCBA) or an airline respirator equipped with a 5-minute escape bottle.

Code of Federal Regulations 29 1910.134 states breathing air shall meet the requirement of the specification for Grade "D" breathing air as described in the compressed Gas Association Specification G 7.1-1989. A certificate of analysis from vendors of breathing air shall be required in order to show that the air meets this standard.

All compressed air cylinders must be tested in accordance with the US Department of Transportation (USDOT) (49 CFR 173 and 178) and labeled to identify their contents in accordance with ANSI standard Z48.1, Federal Specifications BB-A-103a, or Interim Federal Specification GG-B-00675b.

Airline couplings must be incompatible with other gas systems to prevent accidental introduction of non-respirable gases.

3.2 Filters, Cartridges and Canisters

3.2.1 Identification

All filters, cartridges and canisters used for respiratory protection will be labeled and color-coded with the NIOSH approval label. This label will not be removed and must remain legible.

3.2.2 Selection Criteria

Filter, cartridge and canister selection shall be made based upon the type and concentration of contaminant to be encountered and in accordance with the manufacturer's requirements.

3.2.3 Change Schedule

P-100, or high efficiency filters used for protection against particulates, fumes and will be changed whenever the wearer experiences increased breathing resistance.

A change schedule for cartridges and canisters that are used for protection against chemical vapors or acid gases that do not have an end of service life indicator (ESLI), will be developed using the following procedure:

1. Identify the maximum exposure concentration for the contaminant of concern.

2. Select the appropriate type of respirator and filter. If the type and/or concentration of the contaminant is unknown, select a supplied air respirator (SAR).
3. Assign a workload rating on a scale of 1 to 5 for the task to be performed.
4. Calculate the average ambient temperature and humidity.
5. Contact the manufacturer of the respirator with this information and receive a suggested life cycle for the contaminant of concern.

4.0 ASSIGNMENT OF RESPIRATORS

The safe and effective use of respiratory protection equipment, especially negative pressure respirators, requires that the respirator be properly fitted to the user. A poorly fitted respirator may leak and fail to provide the intended protection. The procedure for issuance is as follows:

1. The employee shall be issued a respirator of proper size/model to provide a proper fit.
2. The employee 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 a comfortable fit. All donning and adjustments of the facepiece shall be performed by the employee without assistance.
3. The adequacy of respirator fit may be determined by the proper placement of the chin; the strap tension,; the fit across the bridge of the nose; the distance from nose to chin; and the tendency of the mask to slip.
4. If the employee experiences increasing discomfort when using a particular facepiece, they shall be given the opportunity to select a different facepiece and be refitted.
5. Once a properly fitting mask has been selected, a positive/negative pressure test shall be conducted to determine effective sealing of the mask prior to fit testing.

4.1 Fit Testing

A fit test will be performed at the time of initial fitting and at least annually thereafter. Fit testing shall not be performed until an employee has been deemed medically fit to wear a respirator. Fit testing will be repeated when a change occurs which may alter respirator fit, such as:

1. A weight change of 20 pounds or more.
2. Significant facial scarring in the area of the facial seal.
3. Major dental surgery.
4. Reconstructive or cosmetic surgery.
5. Any other condition that might interrupt the face seal.

4.2 User Seal Check

Before conducting the negative or positive pressure test, the subject shall be told to "seat" the mask by moving the head from side-to-side and up and down, while taking a few deep breaths.

With the intake port(s) sealed with the palms of the hands, the wearer inhales slightly. The respirator should collapse slightly on the wearer's face. No leakage around the face seal should be noted while maintaining a negative pressure inside the respirator for several seconds. This test is not feasible with all brands of respirators.

With the exhaust port(s) covered, the wearer exhales gently to generate a slight positive pressure within the facepiece. No leakage outward around the seal should be noted. This test is not feasible with all brands of respirators.

If the wearer fails to obtain a good facial fit on either the negative or positive tests, the head straps should be adjusted and the testing procedure repeated.

If the respirator cannot be made to fit by adjusting the straps, a different model or size should be tried.

Once a satisfactory fit is obtained on the negative and positive pressure fit tests, fit testing shall be conducted as described below.

4.3 Fit Testing Procedures

Qualitative fit testing may only be used to fit test negative pressure respirators that must achieve a fit factor of 100 or less. Fit testing of tight-fitting atmosphere supplying respirators and powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.

Methods for qualitative and quantitative fit testing are detailed in Appendix A of 29 CFR 1910.134. Fit testing shall be performed by a qualified and competent individual. The following procedures shall be followed for all fit testing:

1. The test subject shall be trained to use the respirator to be tested prior to testing and shall wear the respirator for at least five minutes prior to beginning the test.
2. The test shall not be performed if there is any facial hair growth between the skin and facepiece sealing surface.
3. The subject shall perform each of the following exercises during the test:
 - a) Normal breathing
 - b) Deep breathing
 - c) Turning head side to side
 - d) Moving head up and down
 - e) Talking
 - f) Grimace
 - g) Bending over
 - h) Normal breathing

Each exercise shall be performed for one minute. The grimace shall be performed for 15 seconds.

All fit testing of County employees will be performed using qualitative methods by a qualified person. If necessary, quantitative methods will be used.

5.0 MEDICAL SURVEILLANCE

All persons required to wear a respirator on the job will be provided with a medical evaluation to determine their ability to use a respirator. Such an evaluation shall be provided to the employee before assignment and prior to fit testing. This program includes a pre-placement physical examination and a follow-up exam at least annually.

The medical questionnaire and any required evaluation shall be administered in a confidential manner during normal working hours or at a time and place that is convenient to the employee. Employees shall be afforded the opportunity to discuss the questionnaire and any results of examinations with the PLHCP.

6.0 MAINTENANCE AND CARE OF RESPIRATORS

This section details the minimum requirements for cleaning and disinfecting, maintenance and storage of respirators.

6.1 Cleaning and Disinfecting

Respirators issued for the exclusive use by an employee shall be cleaned and disinfected as often as necessary. Respirators used by more than one employee or that are used for fit testing shall be cleaned and disinfected before and after each use.

General cleaning and disinfecting procedures are as follows:

1. Remove respirator filters, cartridges, or canisters and disassemble face pieces by removing speaking diaphragms, valve assemblies, hoses or any other component recommended by the manufacturer.
2. Wash the components in warm water with a mild detergent. A soft bristle brush may be used if necessary. If possible the detergent should contain a disinfecting agent.
3. Rinse the components in clean, warm water (preferably running) and drain.
4. If the detergent used for washing does not contain a disinfectant, immerse the respirator components for two minutes in a commercially available disinfectant that is approved by the manufacturer of the respirator.
5. Rinse the components in clean, warm water (preferably running) and drain.
6. Air dry components or hand dry with a clean, lint free cloth.
7. Reassemble the face pieces and replace filters, cartridges, or canisters and test the respirator to ensure that all of its components work properly.

6.2 Inspection

Respirators shall be inspected prior to use and during cleaning. The wearer shall be responsible for inspecting his or her own respirator and will receive training and the proper inspection methods for the type of respirator being used. Inspection shall include checking the respirator function, condition of all parts, and signs of deterioration.

6.3 Repair of Respirators

Repair or replacement shall be performed only using parts designed for that particular respirator. Minor repair may be conducted by the employee to whom the respirator was issued.

No attempt shall be made to replace components or to make adjustment or repair beyond the manufacturer's recommendations.

Reducing of admission valves or regulators shall be returned to the manufacturer, or to a trained technician, for adjustment or repair.

6.4 Storage of Respirators

Respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. Respirators shall be stored in a manner that will not cause damage or deformation to components such as the face piece and exhalation valve.

After inspection, cleaning, and necessary repairs, respirators shall be stored to protect against dust, sunlight heat, extreme cold, excessive moisture, or damaging chemicals.

Respirators placed at work areas for emergency should be stored in manufacturer's containers built for that purpose, be accessible at all times, and be clearly marked.

Respirators shall be packed or stored so the facepiece is not distorted, and/or according to the manufacturer's instructions.

7.0 WORK AREA SURVEILLANCE

Work areas shall be monitored to safeguard employees against the increased risks associated with working in hazardous environments, while wearing a respirator and associated PPE.

7.1 Exposure Assessment

Workplace exposure levels have been estimated based on review of material safety data sheets. Work area engineering controls will be implemented as needed to reduce employee exposure to airborne contaminants. Exposure monitoring may be conducted using direct reading instruments or chemical detector tubes.

7.2 Stress Monitoring

Due to the increased environmental stresses created by the wearing of PPE, employees shall be monitored for heat stress and cold stress symptoms. Precautions may be taken to help prevent heat stress; they are as follows:

1. Lightweight breathable disposable suits used where appropriate.
2. Take breaks in a cool area.
3. Implement engineering controls to eliminate or minimize the need for respiratory protection or other PPE.
4. Maintain adequate fluid replenishment.

8.0 EVALUATION OF RESPIRATOR PROGRAM

An annual review shall be made of this written program to assure compliance with current industry standards and regulations.

8.1 Wearer Acceptance

This respirator program should lead to user confidence in the effectiveness of the program to protect them and to minimize the impact on worker performance in areas such as:

1. Comfort
2. Ability to Breathe Without Objectionable Effort
3. Adequate Visibility
4. Provisions For Prescription Glasses
5. Ability to Perform Without Excessive Interference
6. Confidence in Facepiece Fit.