



SOUTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT

RESPIRATORY PROTECTION PROGRAM

I. Purpose

The purpose of this operating procedure is to protect our employees from respiratory hazards that may be encountered in the workplace. Wherever toxic substances are present in the workplace and engineering controls are inadequate to reduce or eliminate them, respirators are necessary. Respirators are an effective method of protection against chemical hazards when properly selected and worn. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Respirator use is encouraged even when exposures are below the Permissible Exposure Limit (PEL) set by Cal/OSHA, to provide an additional level of comfort and protection for workers.

II. Scope

This program applies to all areas within the South Orange County Community College District (District) where employees who work with hazardous substances would benefit from the use of a respirator.

III. Program Review

To ensure that the written Respiratory Protection Program remains a viable working document that reflects the current needs and status of the District, the program will be reviewed annually by Risk Management.

IV. Responsibility

The District Office of Risk Management is responsible for this program and its work areas and the colleges (Irvine Valley College, Saddleback College) have the authority to make decisions to ensure the success of the program. The Dean/Supervisor or his/her designee has the responsibility to halt any operation where danger is perceived to any individuals in a location or work area in the District where respirators may be used. Employees are responsible for operating in accordance with this program and using respirators in a safe and healthful manner. In accordance with CalOSHA regulations, individuals must have a medical clearance by a licensed physician, receive training, and be fit test on their respiratory equipment prior to use.

V. Airborne Hazards & Controls

Respiratory hazards can include airborne contaminants such as biological contaminants, dusts, mists, fumes, and gases, or oxygen-deficient atmospheres. Note that more than one respiratory hazard can be present at the same time. Respiratory equipment provides protection against airborne hazards associated with chemical vapors, infectious agents, asbestos and toxic metals. In general, areas that may require the use of respiratory equipment include locations with biological and chemical hazards, welding and cutting sites, and confined spaces. Employees should use respiratory equipment for protection from contaminants in the air only if other hazard control methods are not practical or possible under the circumstances.

A. Types of Airborne Hazards:

- 1) **Dusts and fibers** are solid particles that are formed or generated from solid materials through mechanical processes such as crushing, grinding, drilling, abrading or blasting. Examples are lead, silica, and asbestos.
- 2) **Fumes** are solid particles that are formed when a metal or other solid vaporizes and the molecules condense (or solidify) in cool air. Examples are metal fumes from smelting or welding. Fumes also may be formed from processes such as plastic injection or extrusion molding.
- 3) **Mists** are tiny droplets of liquid suspended in the air. Examples are oil mist produced from lubricants used in metal cutting operations, acid mists from electroplating, and paint spray mist from spraying operations.
- 4) **Gases** are materials that exist as individual molecules in the air at room temperature. Examples are welding gases, such as acetylene and nitrogen, and carbon monoxide produced from internal combustion engines.

- 5) **Vapors** are the gaseous form of substances that are normally in the solid or liquid state at room temperature and pressure. They are formed by evaporation. Most solvents produce vapors. Examples include toluene and methylene chloride.
- 6) **Biological hazards** include bacteria, viruses, fungi, and other living organisms that are respirable and can cause acute and chronic infections. Examples include Legionnaire's Disease and animal waste products (e.g. feces)

B. Hierarchy of Control:

- 1) **Elimination** – process modification to eliminate the hazardous material(s) where possible.
- 2) **Substitution** – process modification to substitute for a less hazardous material(s) where possible.
- 3) **Engineering** – measures that reduce or eliminate workers' exposures to chemical and physical hazards through the use of equipment or devices, such as mechanical ventilation, enclosure or isolation of the process or work equipment.
- 4) **Administrative** – procedures that limit workers' exposures by scheduling reduced work times in contaminant areas or by implementing other such work rules. Note that this type of control does not remove the hazard.

C. Respirators should only be used:

- 1) When following the hierarchy of control is not possible
- 2) While engineering controls are being installed or repaired.
- 3) When emergencies or other temporary situations arise (e.g. maintenance operations)
- 4) When in compliance with state/federal regulations and the criteria set forth in this program.

VII. Respirator Use Requirements

It is mandatory for employees who use respiratory equipment to follow this program. Employees must inform their supervisor if they become ineligible to use respiratory equipment or if they are unable to meet the requirements set forth in this program.

A. Respirator Use Requirements:

1. Medical evaluations are necessary to determine whether the user is fit to wear a respirator without adverse health effects. This includes the completion of the OSHA Respirator Medical Evaluation Questionnaire and may include a spirometry test as needed. Medical evaluations by a licensed physician are required every three (3) years or as needed to ensure safe practices.
2. Employees will not be assigned to tasks requiring the use of respirators unless they have read this program in its entirety, completed the Pulmonary Medical Clearance Procedures and received training. If any person knows of any condition that would interfere with the use of the respirator, that person must notify the area supervisor/Dean. No one will be required to use any respirator that he/she feels unable to use in a safe manner.
3. The user will be instructed and trained in the proper use of respirators and their limitations. Training on procedures for proper use and maintenance will help assure the wearer is using the respirator in a safe and healthful manner. The colleges are responsible to provide employees with training on respiratory protection. The supervisor/Dean should ensure that employees receive refresher training, or retraining, on an annual basis. It will be the discretion of the supervisor/Dean or designee to determine if additional training is necessary at any time.
 - a. Training should provide the user an opportunity to handle the respirator, have it fitted properly, test its facepiece-to-face seal, wear it in normal air for a period to provide familiarity and finally wear it in a test atmosphere.
 - b. Employees must be fit test on each make/model of respirator assigned to their use. The fit test should be done annually, and after any physical change that may affect a good face seal.
 - c. The user may also be required to view any safety videos concerning the proper use of respirators.

4. Respirators will be assigned to individuals for their exclusive use. Employees should keep track of their respirator and appropriate cartridges so that they are not mistakenly used by someone else.
5. Read/heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations. Respirators will be cleaned after each use.
6. Respirators will be stored in a sealed plastic bag and kept in a clean and accessible location.
7. Respirators will be routinely inspected prior to and after use by the wearer. The employee will notify the supervisor of any damage, defects, wear or deterioration found in their equipment. The Department will provide parts for repair and replacement respiratory protective equipment as required due to wear or deterioration.
8. Respirators will not be used when conditions prevent a good face seal. Such conditions include facial hair or temple pieces on eyeglasses that prevents or breaks the face-to-facepiece seal. To assure proper protection, the wearer will check the facepiece fit each time it is in use. The wearer will perform negative and positive fit checks prior to each use.
 - a. Positive pressure fit check – performed by placing the palms of both hands over the exhalation valve cover, pressing lightly and exhaling gently. The face piece should bulge slightly with no air leaks detected between the face and face piece.
 - b. Negative pressure fit check – performed by placing the palms of both hands over the filter holes or inhalation valves and gently inhaling for 5 to 10 seconds. The face piece should collapse slightly with no air leaks detected between face and face piece.

If air leakage is detected for either of the two checks, then

- a. The respirator should be repositioned on the face;
 - b. The straps tension should be readjusted; or
 - c. The respirator should be changed.
9. 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. In addition, respirator wearers should date their cartridges with indelible ink upon each new use.
10. Facial hair which interferes with the sealing surface of a respirator renders the respirator ineffective against protecting from harmful air contaminants. Therefore, the District will not permit any employee to be fit tested or wear a respirator in a restricted area if that employee has facial or any other hair which contacts or interferes with the respirator sealing surface. Any such interfering hair must be moved or removed to avoid compromising the respirator seal.
11. The District will not assume responsibility for the physical condition of any person using a respirator. If an individual is uncertain about his or her physical health or condition, that individual must consult a physician and notify their supervisor/Dean or Risk Management prior to the use of a respirator.
12. The District will retain written information regarding medical evaluations, fit testing, and the respirator program. This information will facilitate employee involvement in the respirator program, assist the District in auditing the adequacy of the program, and provide a record for compliance determinations by Cal/OSHA.

VI. Respirator Classifications

There is a wide range of respirator types and sizes used for various purposes. The two main categories of respirators are: Air-Purifying Respirators (APR), which force contaminated air through a filtering component, and Air-Supplied Respirator (ASR), in which an alternate supply of fresh air is delivered to the user.

A. Air-purifying Respirators may be further divided into two major classes:

- 1) Particulate Removing (N-95 respirators) - The removal process depends primarily on the size of the particulate, regardless of the composition.
- 2) Vapor and Gas Removing (Half-face and full-face respirators) - The vapor or gas is adsorbed onto an activated charcoal media or chemical, which may be selective in the material adsorbed.

- B. Air-supplied Respirators** depend on air or oxygen supplied from an external source. The air or oxygen is delivered to the user, protecting them from the inhalation of contaminants in the surrounding environment.

VII. Respirator Acquisition & Selection

Proper selection and, if appropriate, fit testing of tight fitting face pieces will assure that the respirator will provide adequate protection against the contaminants that affect use. Medical evaluations are necessary to determine whether the user is fit to wear a respirator without adverse health effects. The fundamentals of respiratory equipment acquisition and selection are as follows:

A. Respirator Acquisition

The department to which the user is assigned will need to follow District Purchasing procedures for acquisition of equipment. The colleges will approve the purchase of any respirators or respiratory equipment purchased from budget accounts assigned to the department.

B. Respirator Selection

Selecting the proper respiratory protective equipment is important to ensure employee health and safety. Choose respirators certified for use to protect against the contaminant of concern. Select respirators that are appropriate for the chemical state and physical form of the contaminant. You need different types of filters, cartridges, and canisters depending on the type of airborne hazard (see Section V. part A) are present in your workplace and depending on the kinds and concentrations of the substances present. The following procedures will assist in the proper selection of respiratory equipment.

- 1) Employees and their supervisor/Dean should conduct an exposure assessment to determine the type and amount of hazardous exposures. Take into account the factors that can influence respirator selection such as job-site and worker characteristics. Complete the District's Respiratory Hazard Assessment Form and submit it to the Office of Risk Management.
- 2) Respirators must be certified by The National Institute for Occupational Safety and Health (NIOSH) of the U.S. Department of Health and Human Services. A label or statement of certification should appear on the respirator or respirator packing that tells what the respirator is designed for and how much it will protect the user. Refer to CCR Title 8, Section 5144.
- 3) Respirators will be selected on the basis of hazards to which the user will be exposed. It is important that employees know the various kinds of respirator and their relevant characteristics. A general guide for types of respirators and common uses can be seen in Table 1 of this program.

VIII. Cleaning, Maintenance & Storage

A. Change Schedule

It is suggested that employees change respirator cartridges before the service life expires. A cartridge's useful service life is how long it provides adequate protection from harmful chemicals in the air. The service life of a cartridge depends upon many factors, including environmental conditions, breathing rate, cartridge filtering capacity, and the amount of contaminants in the air.

Note: Organic vapor cartridges may contain activated charcoal and has a finite shelf life with an expiration date. Dispose of charcoal cartridges if they exceed the expiration date.

B. Cleaning Your Respirator

These procedures are provided for employee use when cleaning respirators (Reference: OSHA under 29 CFR, part 1910.134 Appendix B-2). They are general in nature, and the employee should reference the cleaning recommendations provided by the manufacturer of the respirators used, provided such procedures are as effective as those listed here. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth here, and must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user. Procedures for Cleaning Respirators are as follows:

- 2) Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure- demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

- 3) Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- 4) Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
- 5) When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - a. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
 - b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,
 - c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- 6) Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- 7) Components should be hand-dried with a clean lint-free cloth or air-dried.
- 8) Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
- 9) Test the respirator to ensure that all components work properly.

C. Inspecting Your Respirator

Respirators must be inspected before each use and during cleaning after each use. A record of inspection dates, findings, and repairs should be maintained. All respirators maintained for emergency situations must be inspected at least monthly and per the manufacturer's recommendations for proper functioning before and after each use. Inspections must include:

- 1) A check of respirator function, tightness of connections and the condition of the face-piece, head-straps, valves, connecting tube, cartridges, and canister or filters.
- 2) A check of rubber or elastomeric parts for pliability and signs of deterioration.

D. Repairs

When the inspection identifies any defects or damage to the respirator, then it must be removed from service and brought to the supervisor's attention immediately. All repairs must be completed based on manufacturer's recommendations with replacement parts designated for the respirator. District personnel should not attempt to repair respirators beyond the manufacturer's recommendations.

E. Storage

After a respirator has been inspected and cleaned, it must be stored in a manner to protect it from damage, contamination, dust, sunlight, face-piece deterioration, extreme temperatures, excessive moisture, and damaging chemicals. Manufacturer's storage instructions are usually furnished with new respirators, and they should be followed. Each non-emergency respirator must be stored in a plastic bag to protect it from contamination or damage, such as deformation of the face-piece or exhalation valve. Respirators should be allowed to dry after use and cleaning, prior to storage in a plastic bag as the respirator may be damp after use. The sealing of a damp respirator in a plastic bag prevents dryness and encourages microbial growth. Keep in mind that a respirator will become distorted and the straps will lose their elasticity if hung on a peg for a long time. Cartridges must be stored, with their original seals intact, in their sealed plastic bag until ready for use.

Table 1. Major Types of Respirators & Common Uses

Respirator Type	Common Uses	Example
<p>Disposable or Filtering Facepiece Respirator (e.g., N95).</p> <p>Includes all disposables with N, R, or P and 95, 99 or 100 combination ratings (e.g., R99).</p>	<p>Animal Care (DLAM) Nursing EMTs Most Infectious Agents Nuisance Particulates Non-Toxic Dusts / Powder Wood & Metal Shops Mold Custodial Services</p>	
<p>Half-Face Air Purifying Respirator.</p> <p>Requires Chemical-Specific Cartridges and/or Filters.</p>	<p>Organic Vapors & Solvents Toxic Dusts / Powders Asbestos, Lead, Mold Acid Gases Formaldehyde Radionuclides Mercury Most Infectious Agents Nanoparticles Welding Fumes</p>	
<p>Full-Face Air Purifying Respirator.</p> <p>Requires Chemical-Specific Cartridges and/or Filters.</p>	<p>Same uses as Half-Face with added eye protection and increased assigned protection factor.</p> <p><i>NOTE: Requires additional assessment and approval prior to issuance.</i></p>	
<p>Self-Contained Breathing Apparatus (SCBA) or Other Supplied Air Respirator</p>	<p>HazMat Team and other Special Users.</p> <p><i>NOTE: Requires additional assessment and approval prior to issuance.</i></p>	