



Respiratory Protection Program

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INTRODUCTION

The City has established the Respiratory Protection Program (Program) for the safety and well-being of its employees because not all working environments can be made completely safe from potentially hazardous substances and atmospheres. The Program applies to all City employees who may work in potentially hazardous atmospheres. It sets forth accepted practices for respiratory equipment users and provides information and guidance for the proper selection, use, and care of the equipment and requirements governing its use. It addresses requirements for protection of the respiratory system from particulate matter, toxic gases, and vapors.

The City of Palm Springs is committed to making every effort to protect employees from harmful airborne substances. Whenever it is feasible to do so, this is accomplished through engineering controls such as ventilation or substitution with less harmful substances, and through administrative controls limiting the duration of exposure. When these methods are not adequate, or if the exposures are brief, intermittent or simply to minimize employee exposure to airborne substances, respirators are provided to allow employees to breathe safely in potentially hazardous work environments. This program satisfies state and federal respiratory protection requirements outlined in:

- California Code of Regulations (CCR), Title 8, § 5144
- Code of Federal Regulations Title 29, Section 1910.134

RESPONSIBILITY

The City Engineer is the plan administrator for the Respiratory Protection Program and has overall responsibility for implementation.

Department Heads

- All department heads are responsible for the overall health and safety of employees under their supervision. They are responsible for ensuring the adherence of the requirements of this program.
- Provide instruction and training for respiratory protection and criteria for selection, respirator fitting, use, and maintenance.
- Coordinate annual medical fit testing.
- Perform exposure assessment and monitoring to determine appropriate respiratory protection requirements.

Supervisors

- Enforce the use of respiratory protection equipment and safe work practices when applicable.
- Ensure inspections occur prior to use.
- Confirm that the face to face-piece seal is unobstructed.

Employees

- Utilize the issued respiratory protection equipment in accordance with instruction and training provided by the City.
- Inform the supervisor of any personal health problems that could be aggravated by the use of respiratory equipment.
- Guard against damage and ensuring respirators are not disassembled, modified or altered in any unauthorized manner.
- Report any observed or suspected malfunctioning respirator to Supervisor.
- Use only those brands, sizes and types of respiratory protection equipment for which they have been trained and fitted.

- Utilize proper filter cartridges for anticipated exposure.
- Ensure an effective face to face-piece seal during respirator use.

EXPOSURE DETERMINATION

Some employees in our city have occupational exposure to potentially hazardous atmospheres. Our policy is to conduct exposure determinations throughout our facilities without regard to the use of personal protective equipment (PPE). This process involves identifying all the job classifications, tasks, or procedures in which our employees may have occupational exposure to potentially hazardous atmospheres. It has been determined that employees in the following classifications have been determined to be at risk for occupational exposure:

- Fire Employees (except administration)
- Police Employees (sworn officers only)
- Facilities, Co-Generation Plant Technicians

PROCEDURES

Authorization

Only employees working in their designated classifications may wear respirators. Respirator users shall annually complete respirator fit testing and training and required medical surveillance.

- **Respirator Selection**
 - **Dust Masks** - The N-95 filtering face-piece respirators (dust masks) shall be made available to those who voluntarily choose to use them. Employees shall be fit tested. Voluntary users have not been identified as having hazardous exposures and are not fit-tested.
 - **Air-purifying Full Face-piece Respirators** – These respirators provide more protection than half-masks because their shape allows a better mask-to-face seal, and they protect the eyes. They utilize the same filtering cartridges as do the half face-piece respirators.
 - **Full Face-piece Respirators (Avon)** – Law enforcement and fire suppression employees use specialized masks and filters from Avon Technical Products that have been approved by NIOSH as protective against certain biological, chemical, and radiological agents.

Filter Cartridges

HEPA filters protect against particulates such as asbestos, lead, and low levels of toxic and radioactive particulates. Other filters protecting against specific contaminants such as acid gases or organic vapors. Combination filters protect against all or a few of these specific contaminants. Generally replace the cartridge filters when contaminants are detected through the mask by smell or taste or when breathing becomes difficult.

Medical Monitoring

Only those individuals medically able to wear respirators and have completed the associated requirements shall be issued a respirator (this includes the N95 masks). Those who voluntarily choose to use N-95 filtering face-piece respirators as a dust mask are not monitored.

Employee Training

Program respirator wearers, shall complete training describing available respiratory protective equipment and the care, maintenance, purpose, and function of the equipment. The instruction discusses proper wearing of each respirator, pertinent State and Federal regulations and standards, and this policy.

Respirator Fit Testing

Program requires both daily tests and annual qualitative or quantitative fit tests. In addition, respirator wearers shall complete the daily tests prior to use. Archive and current fit test records shall be maintained by respective Departments.

- **Daily Test** – Prior to each use, the respirator wearer will complete a negative pressure test. Don the respirator, and place the hands over the inlet of the filter cartridges to restrict air from passing through; inhale gently so the face-piece slightly collapses; and hold their breath for about 10 seconds. If the face-piece remains slightly collapsed and no inward leakage occurs, the test is successful. Next, complete a positive pressure test by covering the exhalation valve and exhaling gently into the face-piece. If no outward air leakage occurs the test succeeds.
- **Qualitative Test** – Options for fit testing include Irritant smoke (stannic chloride), Bitrex® solution, or banana oil applied to the face to face-piece seal. Irritant smoke is applied approximately six inches from the seal as the respirator wearer counts loudly from 100 to 1 or repeats the OSHA “Rainbow Passage” while moving the head from side-to-side and up-and-down. The test simulates movements and conversation the wearer will use during the workday. Infiltration of the smoke will cause the wearer to cough involuntarily and result in an unsuccessful test. If no smoke infiltrates the seal, the test succeeds. The Bitrex® solution or banana oil is used with the employee inside of a test enclosure. The test succeeds if the wearer cannot taste the solution upon infiltration of the mask. A sensitivity test confirms that the wearer can detect the solution.
- **Quantitative Test** – The Port-a-Count® machine used for quantitative fit testing uses isopropyl alcohol to help determine the ratio of ambient particulate concentrations versus concentrations within the respirator (fit factor). The EH&S conducts this procedure and the testing equipment is housed at T-1475. The test provides overall fit factors and those for specific activities.
- **General Information** – Fit testing can detect and help correct poorly fitting or performing respirators based upon contaminant leakage into the respirator. During fit tests, adjust the straps properly to simulate working conditions. Cal/OSHA lists fit testing procedures in Appendix A.

Protection Factors

Quantitative tests provide a numerical fit factor for each respirator. These fit factors relate to a specific respirator, but Cal/OSHA has assigned protection factors to different classes of respirators as guidance on proper selection. Like the fit factor, the protection factor (PF) equals the ambient concentration of a contaminant divided by the concentration within the respirator ($PF = \text{ambient concentration} / \text{inside concentration}$). PF generally equal 10 for half face-piece respirators and 50 for full face-piece respirators. Example: Work with a half face-piece respirator in an atmosphere with 10 ppm contaminant concentration equates to an exposure of 1 ppm.

Voluntary Use

Employees may voluntarily use N-95 filtering face-piece respirators at their own expense. Voluntary users are exempt from medical monitoring.

Respirator Care

Respirator wearers must continually care for their respirators. If a respirator exhibits any defects, then it should be replaced with a new respirator, preferably the same brand and size.

- **Inspection** – Prior to and after each use, the respirator wearer must inspect the following respirator parts to ensure they are not cracked, decomposed, distorted, frayed, loose, pitted, stretched, stiffened, swollen, torn, or warped: rubberized face-piece, plastic adapters, inhalation valves flaps, headband straps, plastic exhalation valve seats, exhalation valve covers, and filter elements.
- **Maintenance** – Clean the respirator after use with either respirator wipe pads or by removing the filters and straps and using a mild soap solution and a soft brush. After using soap, rinse with clean warm water and air dry. Store the respirators in a cool dry location without distorting the face-piece.

RECORDKEEPING

The Human Resources Department shall keep program records, except Police and Fire, which are kept in their respective departments, including employee names, training completion, completed fit tests, and medical monitoring. The medical monitoring program addresses those records in more detail, but medical reports are locked up and confidential.

APPENDIX A – DEFINITIONS

Approved - Tested and listed as satisfactory by the National Institute for Occupational Safety and Health (NIOSH).

Cartridge - A small container filled with air-purifying media.

Contaminant - A harmful, irritating, or nuisance agent foreign to the normal atmosphere.

Exhalation Valve - A device which allows exhaled air to leave a respirator and prevents infiltration of outside air.

Face-piece - The portion of a respirator that covers the wearer's nose and mouth in a half face-piece and nose, mouth, and eyes in a full face-piece. It seals to the face and includes the headbands, exhalation valve(s), and connections for an air-purifying device.

Filter - A medium used in respirators to remove solid or liquid particles from the air stream entering the respiratory enclosure.

Filtering Face-piece - (Dust mask) means a negative pressure particulate respirator with a filter as an integral part of the face-piece or with the entire face-piece composed of the filtering medium.

High-Efficiency Particulate Air (HEPA) Filter - A filter that removes 99.97% of specific particulates from an air stream.

Inhalation Valve - A device that allows air to enter the face-piece and prevents exhaled air from leaving the face-piece.

National Institute for Occupational Safety and Health (NIOSH) - A Federal agency that tests, approves, and certifies respirators.

Oxygen Deficient Atmospheres - Air that contains less than 19.5% oxygen by volume.

Particulate – Airborne solid or liquid dusts, fogs, fumes, mists, smokes, or sprays.

Permissible Exposure Limit (PEL) – Contaminant exposure concentrations listed by the California Occupational Health and Safety Administration (Cal/OSHA) that a healthy individual normally can tolerate for 8 hours a day, five days a week, without harmful effects. Particulate concentrations are listed as milligrams per cubic meter of air (mg/m^3), and gaseous concentrations are listed as parts per million by volume (ppm).

Qualitative Fit Test - A test procedure to determine the effectiveness of the seal between the respirator and the wearer's face and usually performed during the fitting process.

Quantitative Fit Test - An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respirator - A device that protects the wearer from inhalation of harmful contaminants.

Threshold Limit Value (TLV) - Contaminant exposure concentrations published by the American Conference of Governmental Hygienists that a healthy individual normally can tolerate for 8 hours a day, five days a week, and without harmful effects. Particulate concentrations are listed as mg/m^3 , and gaseous concentrations are listed as ppm.

Vapor - The gaseous state of a substance.

APPENDIX B – RESPIRATOR TRAINING AND FIT TESTING

(Reserved for Future Use)