

**COSTA WATER DISTRICT**  
**RESPIRATORY PROTECTION PROGRAM**

January 1999

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## 1.0 INTRODUCTION

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This Respiratory Protection Program is designed to protect District employees from the harmful effect of dusts, fumes, sprays, mist, fogs, smokes, vapors, gases, and/or oxygen-deficient atmospheres. The primary objective is to prevent injury from atmospheric contamination.

### 1.1 Purpose

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The purpose of this plan is to establish a program and procedures for respiratory protection at the District. This program describes the procedures for identifying airborne hazards, selecting and using proper respirators, medical evaluations of employees and fit testing of respirators, and training and record keeping requirements.

### 1.2 Scope

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This program applies to all District personnel and contractors who are required to wear air purifying respirators to prevent exposure to airborne contaminants. It also applies to employees who voluntarily wear respirators although respirators are not required.

This program complies with the California Code of Regulations, Title 8, General Industry Safety Order, §5144 “Respiratory Protective Equipment” and the Code of Federal Regulations 1910.134 “Respiratory Protection.”

### 1.3 Other Applicable Standards

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- ANSI K13.1 - 1967, “Identification Of Gas Mask Containers.”
- ANSI Z48.1 - 1954, “Method For Marking Portable Compressed Gas Containers To Identify The Material Contained”
- ANSI Z88.2 - 1969, “Practices For Respiratory Protection.”
- Compressed Gas Association (CGA) - G-7.1-1966, “Commodity Specification.”
- GSA Publication GG-B-0067b - 1965, “Air Compressed For Breathing Purposes.”

## 2.0 RESPONSIBILITIES

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Respiratory equipment shall be used when effective engineering controls are not feasible or while they are being evaluated or installed. Respirators shall be provided by the District when such equipment is required to protect the health of employees. Each affected department shall be responsible for the establishment and maintenance of a Respiratory Protection Program which shall be established according to the following:

### 2.1 Management

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Superintendents'/Supervisors' Responsibility. Superintendents/supervisors shall:

- Ensure all employees who work in a respiratory hazard environment are provided with an approved National Institute for Occupational Safety & Health (NIOSH) or Mine Health & Safety Administration (MSHA) respirator designed to protect against the identified respiratory hazard.
- Provide and ensure proper use of respirator equipment by employees consistent with the provisions of this section.
- Ensure that employees attend the annual medical examination as provided by the District, on District time.

### 2.2 Employees

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Employees' Responsibility. Employees shall:

- Use the provided respiratory equipment in accordance with the instructions and training received.
- Guard against damage to their respiratory equipment.
- Immediately report any malfunction of their respiratory equipment to their superintendent/supervisor.
- Attend training in the need, use, sanitary care/storage, and maintenance of their respiratory equipment on District time at District expense.
- Not have facial hair in the sealing perimeter of the face piece.
- Attend scheduled annual medical examinations on District time at District expense.

## 2.3 Safety Officer

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- Conduct Annual Respiratory Protection Program Training.
- Conduct annual qualitative or quantitative fit testing for employees enrolled in the Respiratory Protection Program
- Monitoring departmental compliance with the Respiratory Protection Program.
- Review work environment and conduct air monitoring to assess the need for respiratory protection.
- Ensure medical surveillance is provided annually to ensure employees are medically capable of utilizing respiratory equipment. The medical exams shall consist of at least a pulmonary function test (performed by a NIOSH Certified Clinical Technician) and a general physical examination.
- Maintain Respiratory Protection Program records.

## 3.0 IDENTIFICATION OF AIRBORNE CONTAMINANTS

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### 3.1 Types of Contaminants

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There are two main types of respiratory hazards: oxygen deficiency and airborne contaminants.

The main types of airborne contaminants are:

- dusts: particles, released during work operations such as grinding and sawing.
- mists: particles of liquid, released during operations such as spray painting.
- vapors: gaseous forms of a liquid, such as paint solvents.
- fumes: vaporized condensed metals, as present in welding operations.
- gases: such as chlorine, ammonia, ozone, methane, carbon monoxide and hydrogen sulfide.

### 3.2 Workplace Evaluations/Hazard Assessments

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Each workplace must be evaluated for possible airborne contaminants by the Safety Officer. A hazard assessment will be conducted in workplaces with the possibility of over exposure.

Once a respiratory hazard has been identified, the work area must be monitored for any changes in concentration level or for new hazards. Changes in work processes, substitution of materials, or changes in the ventilation of an area may necessitate re-testing. Supervisors are responsible for monitoring day to day operations and reporting changes to the Safety Officer.

## 4.0 SELECTING PROPER RESPIRATORY PROTECTION

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### 4.1 Controlling Airborne Hazards

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When controlling airborne hazards, engineering and administrative controls will first be considered as a means to reduce the hazards. Engineering controls can include enclosure, substitution, process modification, and ventilation. Administrative controls include scheduling changes to reduce time spent in contaminated areas.

### 4.2 Required Use of Respirators

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In situations where engineering and administrative controls do not sufficiently reduce exposure to levels below Permissible Exposure Levels (PEL's), respirators are required.

### 4.3 Selection of Respirators

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- Only NIOSH/MSHA approved respirators will be used.
- Single strap disposable comfort masks are not approved respirators.
- Respirators will be selected based on the respiratory hazards to which the employee is exposed, and the workplace and user factors that affect performance.
- An employee shall wear only a respirator which has been fit tested and approved for the employee and the hazards of the exposure.
- Respirator types, models, sizes, and cartridges are not interchangeable.
- The following factors are to be considered when determining the proper respiratory protection:
  1. Employee exposure (e.g., concentration, route of exposure, etc.).
  2. Physical form and chemical state of the contaminant.
- If the employee exposure cannot be identified or estimated, then the atmosphere must be considered IDLH.
- For protection against particulates, one of the following respirators shall be provided:
  1. An atmosphere supplying respirator
  2. An air purifying respirator equipped with a filter certified by NIOSH as a HEPA (High Efficiency Particulate Air) filter
- For protection against gases and vapors, one of following respirators shall be provided:
  1. An atmosphere supplying respirator
  2. An air purifying respirator that is either equipped with a chemical cartridge that has an end of service life indicator (ESLI) certified by NIOSH for the contaminant, OR if there is no appropriate ESLI, then a replacement schedule must be in place for cartridges and filters based on information that will assure the cartridges are changed before their end of service life. The replacement schedule must be included in the worksite specific instructions. EHS will assist in determining the cartridge change schedule.

- Consult Appendix B-1 for a description of respirator types, Appendix B-2 for selection flowchart and Appendix B-3 for cartridge/canister selection.

#### 4.4 Voluntary Use of Respirators

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- Employees will be allowed to use respirators voluntarily if the respirator itself will not create a hazard.
- Employees whose only use of a respirator is the voluntary use of a dust mask (filtering face piece) are not subject to the requirements of the written program.
- Employees voluntarily wearing respirators other than dust masks are subject to the requirements of this program, including medical evaluations, training, and maintenance procedures.
- Fit tests are not required for voluntary users, but are encouraged.
- All employees voluntarily wearing respirators will be provided a copy of the information contained in Appendix C “Information for Employees Using Respirators When Not Required Under the Standard.”

The selection of the proper type respirator shall be based upon the following criteria:

- The nature of the hazardous operation or process;
- The type of respiratory hazard. *Note: Respiratory hazards are defined as (1) physical properties, (2) chemical properties, (3) warning properties, (4) psychological effects on the body, (5) concentration of toxic material or airborne radio-activity levels, (6) established permissible time-weighted-average (TWA) concentrations for toxic materials (7) established maximum airborne concentrations for radio-active material, and (8) established immediately dangerous to life and health concentrations for toxic materials.*
- The location of the hazardous area in relation to the nearest area having respirable air;
- The period of time for which respiratory protection is required;
- The types of activities of workers in the hazardous area; and,
- The function of physical characteristics of the various types of respirators.

## 5.0 MAINTENANCE AND CARE OF RESPIRATORS

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### 5.1 Cleaning and Disinfecting

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- Each employee shall be provided with a respirator that is clean, sanitary and in good working order.
- Respirators shall be cleaned and disinfected using the procedures in Appendix D or procedures recommended by the manufacturer if they are equally effective.
- The frequency for cleaning and disinfecting is as follows:
  1. Respirators used by only one employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.
  2. Shared respirators must be cleaned and disinfected prior to use.
  3. Emergency use respirators must be cleaned and disinfected after each use.
  4. Respirators used in fit tests and training exercises must be cleaned and disinfected after use.

### 5.2 Storage

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- Respirators shall be stored so as to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture and damaging chemicals.
- Respirators shall be stored in such a manner as to prevent deformation of the face piece and valves.
- Emergency use respirators shall be kept accessible to the work area, in compartments or covers that are clearly marked as containing emergency respirators, and stored in accordance with the manufacturer's instructions.

### 5.3 Inspection

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- Respirators used in routine situations shall be inspected before each use and during cleaning.
- Emergency use respirators shall be inspected at least monthly, and in accordance with the manufacturer's instructions.
  1. Emergency use respirators shall also be checked for proper function before and after each use.
- Escape-only respirators shall be inspected before being brought into the work area.
- A respirator inspection includes the following:
  1. a check of respirator function, tightness of connections, and the condition of the various parts, including the face piece, head straps, valves, connecting tubes, cartridges, canisters and filters.
  2. a check of the elastic parts for pliability or deterioration.

## 5.4 Repairs

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Respirators that fail inspections or are otherwise found to be defective shall be removed from service and discarded, repaired, or adjusted by appropriately trained persons, with NIOSH approved parts, according to manufacturer's specifications.

- valves, regulators and alarms shall be adjusted or repaired only by the manufacturer or manufacturer's technicians.

## 5.5 Identification of Filters, Cartridges and Canisters

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Filters, cartridges and canisters must be labeled and color coded with the NIOSH approval label. The label is not to be removed and must remain legible.

- Consult Appendix B-3 for cartridge/canister selection.

## 6.0 LIMITATIONS OF AIR PURIFYING RESPIRATORS

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### 6.1 IDLH Atmospheres

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Air purifying respirators shall not be used in oxygen deficient atmospheres, IDLH atmospheres, or unknown atmospheres. All confined spaces shall be considered IDLH unless proven otherwise. If assistance is required to determine an unknown atmosphere, contact the Safety Officer.

### 6.2 Respirator Types

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Respirator types, models, and sizes are not interchangeable. An employee shall only wear a respirator which has been fit tested and approved for the employee's use.

### 6.3 Cartridges and Filters

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Cartridges and filters are specific to certain hazards. Use the cartridge approved for the task. Do not interchange manufacturer's cartridges or filters.

- Consult Appendix B-3 for cartridge/canister selection.

### 6.4 Concentration

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There are limits to the concentration levels that can be used with half mask and full face respirators. Consult the cartridge's Maximum Upper Limit and Environmental Health and Safety to determine if you have the proper level of protection.

### 6.5 Face Seal Protection

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Anything that breaks the seal of a respirator will reduce its effectiveness. Facial hair, temple bars of glasses and head coverings are not to be worn. See Appendix E.

- Corrective lenses can be fitted inside a full face respirator with a special insert kit.

## 7.0 MEDICAL EVALUATIONS

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### 7.1 Initial Evaluations

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- Every employee must be medically evaluated prior to fit testing and initial use of a respirator.
- Medical evaluations shall be conducted by a physician or other licensed health care professional (PLHCP).
- Medical evaluations shall consist of either a medical questionnaire or an initial medical examination that obtains the same information as the questionnaire (See Appendix F).
- The requirements of the questionnaire are mandatory.
- Medical questionnaires and examinations shall be administered confidentially and during normal working hours.

### 7.2 Follow-up Medical Examinations

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Follow-up medical examinations are necessary if an employee gives a positive response to any of the questions numbered 1 through 8 in section 2 of the questionnaire.

- The follow-up medical examination shall include any medical tests, consultations or diagnostic procedures that the PLHCP deems necessary to make a final determination.

### 7.3 Supplemental Information for the PLHCP.

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The following information must be supplied to the PLHCP before a recommendation is made:

1. type and weight of the respirator to be used.
2. duration and frequency of use.
3. expected physical effort.
4. additional protective clothing and equipment to be worn.
5. temperature and humidity that may be encountered.
6. a copy of the written program and the regulation.

### 7.4 Medical Determination

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- The Safety Officer must obtain a written recommendation from the PLHCP on whether or not the employee is medically able to use the respirator.
- The recommendation shall include only the following information:
  1. any limitations on respirator use related to the medical condition of the employee or workplace conditions including whether the employee is medically able to wear the respirator.
  2. the need, if any, for a follow-up medical examination.

3. a statement that the PLHCP has provided the employee with a copy of the recommendation.
- If the PLHCP finds an employee cannot use a negative pressure respirator, a PAPR will be provided, if suitable.

## 7.5 Additional Medical Evaluations

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Additional medical evaluations shall be provided if:

- an employee reports medical signs or symptoms related to the ability to use a respirator.
- a PLHCP, supervisor, or the Safety Officer deems an employee needs re-evaluation.
- Information from the program, observations during fit tests, or evaluations indicate the need for re-evaluation.
- changes in the workplace conditions result in increased physiological burden on the employee.

## 7.6 Employee Access

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- The employee shall receive a copy of the PLHCP's recommendation.
- The employee shall have an opportunity to discuss the questionnaire and examination with the PLHCP.

## 8.0 FIT TESTING

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### 8.1 Initial Fit Tests

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- Before wearing a respirator, employees are required to be fit tested with the same make, model, style and size of respirator that will be used.
- A sufficient number of respirator models and sizes shall be available so that the respirator is acceptable to and correctly fits the user.
- Employees shall wear only respirators which have been fit tested and approved for use.

### 8.2 Fit Test Procedures

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- Fit tests are either qualitative or quantitative, depending on the respirator type and use, and must follow the procedures outlined in the OSHA Standard 1910.134.
- Fit test shall be performed by the District Safety Officer or a qualified fit test technicians.

### 8.3 Frequency

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Fit testing shall be conducted initially, annually, and whenever changes in an employee's physical condition could affect respirator fit, and whenever requested by the employee because the fit is unacceptable.

### 8.4 Records

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Records of fit tests must be maintained by the Safety Officer and should include names, dates, types of tests, results and make, model, style and size of the respirator fitted.

## 9.0 FACE SEAL PROTECTION

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### 9.1 Prohibitions

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Tight fitting face pieces are not to be worn by employees:

- who have facial hair that comes between the sealing surface and the face, or that interferes with valve function.
- who have any condition that interferes with the seal, such as missing dentures, jewelry, or head gear.
- if corrective glasses, goggles or other PPE interfere with the seal.

### 9.2 User Seal Checks

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Employees must perform a user seal check each time they put on the respirator according to the procedures in Appendix E.

### 9.3 Continued Respirator Effectiveness

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Appropriate surveillance of the work area and employee exposure shall be maintained by the supervisor and Program Administrator. Respirator effectiveness must be re-evaluated when there is a change in work area conditions or degree of employee exposure or stress.

### 9.4 Leaving the Respirator Work Area

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Employees must be allowed to leave the respirator use area:

- to wash their faces and respirators as necessary to prevent eye or skin irritation.
- if they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece.
- to replace the respirator or the filter cartridges or canisters.

A defective respirator must be replaced or repaired before returning to the work area.

## 10.0 TRAINING AND INFORMATION

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### 10.1 Required Users of Respirators

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- All employees who are required to wear respirators will receive initial training in their use and maintenance.
- Employees must be trained sufficiently to demonstrate:
  1. a knowledge of why the respirator is required.
  2. how improper fit, usage or maintenance can compromise the protectiveness of the respirator.
  3. the limitations and capabilities of the respirator.
  4. how to deal with emergencies or malfunctions.
  5. how to inspect, don and remove, and check the seal of the respirator.
  6. maintenance and storage procedures.
  7. medical symptoms and signs that may limit or prevent the effective use of respirators.
  8. general requirements of this standard.
- Training shall be provided by qualified persons who are familiar with the regulatory requirements of the Respiratory Protection Standard and trained in respirator use and fit test procedures.

### 10.2 Voluntary Users of Respirators

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Employees voluntarily wearing a respirator shall be provided the information in Appendix B.

### 10.3 Frequency of Re-Training

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Re-training will be provided annually and whenever the following occur:

- changes in the workplace or type of respirator used.
- inadequacies in the employee's knowledge or use of the respirator are apparent.
- any other situation in which re-training is necessary to ensure safe respirator use.

Superintendents/supervisors are responsible for scheduling employee training on an annual basis for respirator use. The Safety Officer is available to provide respiratory protection training. Each employee required to use a respirator shall receive instruction and training which includes the following:

- An explanation of respiratory hazards and what happens if the respirator is not used;
- A discussion of what engineering and/or administrative controls are being used and why respirators are still needed for protection;
- An explanation of why a particular type of respirator has been selected;
- A discussion of the function, capabilities, and limitations of the selected respirator;
- Instruction in the proper wearing of the respirator, including the dangers of removing the respirator in a contaminated area;

- Instruction in respirator maintenance;
- Instruction in recognizing and handling emergency situations;
- Instruction in fit testing to ensure the employee obtains a proper seal. This includes quantitative and qualitative fit tests. Quantitative fit tests include a positive fit test and negative fit test. Qualitative fit tests use isoamyl acetate (banana oil) to detect any leaks in the sealing perimeter;
- Training and re-training shall be provided on an annual basis;
- Superintendents/supervisors are to monitor and schedule these training requirements with the Safety Officer.

## 11.0 RECORDKEEPING

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- Records of training and fit testing shall be kept by the Safety Officer for the duration of the wearer's employment.
- Records of medical evaluations shall be kept by the Risk Management Officer for the duration of the wearer's employment and 30 years following.

## 12.0 PROGRAM EVALUATION

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The Safety Officer shall conduct evaluations of the workplace as necessary to ensure the provisions of this written program are being effectively implemented.

The program evaluation shall include consulting with employees required to wear respirators to assess the employee's views on program effectiveness and to identify any problems. Any problems identified shall be corrected.

Factors to be assessed include respirator fit, appropriate respirator selection, proper use and maintenance.

## DEFINITIONS

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**Administrative Controls:** administrative changes in work schedules or procedures that reduce employee exposure to respiratory hazards.

**Air purifying respirator (APR).** A respirator with an air purifying filter cartridge or canister that removes specific air contaminants by passing ambient air through the air purifying element.

**Atmosphere supplying respirator:** A respirator that supplies the wearer with breathing air from a source independent of the ambient air, including supplied air respirators (SAR) and self contained breathing apparatus (SCBA).

**Canister or cartridge:** means a container with a filter, sorbent or catalyst, or a combination of these items, which removes specific contaminants from the air passed through the container.

**Contaminants:** substances in the air that can cause immediate (acute) or long term (chronic) health problems.

**Concentration:** the amount of contaminant in the air, measured in parts per million (ppm) or milligrams per cubic meter (mg/m<sup>3</sup>).

**Demand respirator:** means an atmosphere supplying respirator that admits breathing air to the face piece only when a negative pressure is created inside the face piece by inhalation.

**Dusts:** are fine particles that are created when solid material breaks down. Operations that typically create dust are grinding, crushing, drilling, sanding and milling.

**Dust Masks (Filtering Face pieces):** 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.

**Emergency situation:** means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

**Employee exposure:** means an exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

**End of Service Life Indicator (ESLI):** a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

**Engineering Controls:** specialized equipment, processes or practices that can reduce employee exposure to respiratory hazards.

**Escape only respirator:** means a respirator that is intended to be used only for emergency exit.

**Exposure:** coming into contact with a hazardous substance through inhalation, ingestion, skin contact or absorption.

**Fit factor:** means 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:** means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

**Fumes:** are created when solid materials vaporize under extreme heat. As the vapor cools it condenses into an extremely small particle, e.g., fumes are created during welding and cutting of steel.

**Gases:** like air have the ability to diffuse and spread throughout an enclosure or area. Examples of gases are nitrogen, carbon monoxide and carbon dioxide.

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

**IDLH:** an OSHA classification “Immediately Dangerous to Life and Health” for atmospheres that are immediately fatal.

**Loose fitting face piece:** a respirator with an inlet covering that is designed to form a partial seal with the face.

**Mists:** are created when liquids are atomized and condensed. Typical sources of mists are spraying operations, mixing and cleaning operations.

**Material Safety Data Sheet (MSDS):** Written or printed material from the product manufacturer which has information about the hazards of a material.

**Maximum Use Limit (MUL).** The maximum amount of protection provided by a respirator. MUL is calculated by multiplying the respirators protection factor by the Permissible Exposure Level (PEL) for the contaminant.

**Negative Pressure Respirator:** a tight fitting respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air outside the respirator.

**National Institute for Occupational Safety and Health (NIOSH):** A federal agency which establishes minimum performance standards for respirators and approves respirators for various uses.

**Oxygen Deficiency:** too little oxygen in the air, which can result in illness or injury to employees. By OSHA definition, it is an oxygen level less than 19.5%.

**Powered Air Purifying Respirator (PAPR):** A respirator that uses a blower to force the ambient air through air purifying elements to the inlet covering.

**Permissible Exposure Level (PEL):** Established by OSHA, PELs are the maximum allowable concentrations of substances in the air that an employee can be exposed to without harmful effects during an 8-hour period.

**Physician or Other Licensed Health Care Professional (PLHCP):** whose legally permitted scope of practice allows him or her to independently provide or be delegated the responsibility to provide some or all of the health care services required by this program.

**Positive Pressure Respirator:** means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

**Personal Protective Equipment (PPE):** Any equipment used to protect an employee from danger, including hard hats, boots, gloves, hoods, goggles, and respirators.

**Qualitative Fit Test (QLFT):** means 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):** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respiratory Inlet Covering:** means 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 face piece, helmet, hood, suit or a mouthpiece respirator with nose-clamp.

**Self Contained Breathing Apparatus (SCBA):** means an atmosphere supplying respirator for which the breathing air source is designed to be carried by the user.

**Supplied Air Respirator (SAR):** means an atmosphere supplying respirator for which the source of breathing air is not designed to be carried by the user. (e.g., an airline respirator).  
**Tight fitting face piece:** a respirator with an inlet covering that forms a complete seal with the face.

**Threshold Limit Value (TLV):** Exposure guidelines established by ACGIH which have been established for airborne concentrations of many chemical compounds.

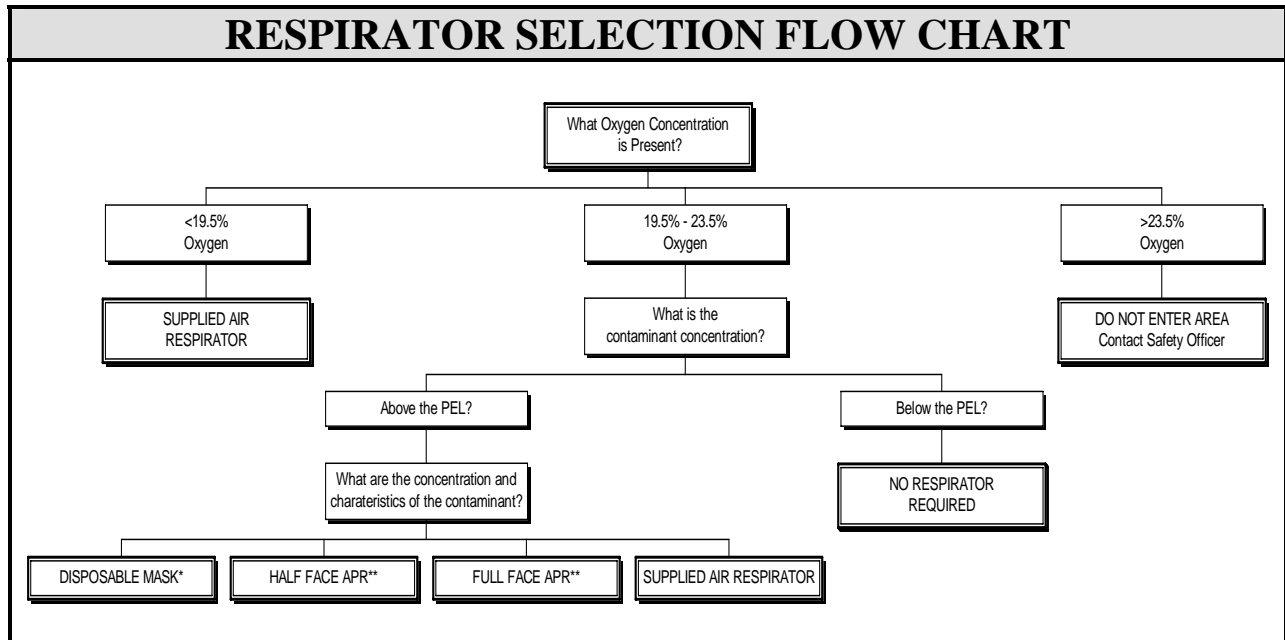
**Time Weighted Average (TWA):** A weighted average exposure level over a given amount of time, usually 8 hours.

**User Seal Check:** means an action conducted by the respirator user to determine if the respirator is properly sealed to the face.

**Vapors:** are formed through the evaporation of liquids or solids. Examples include gasoline, paint thinners, and solvents.

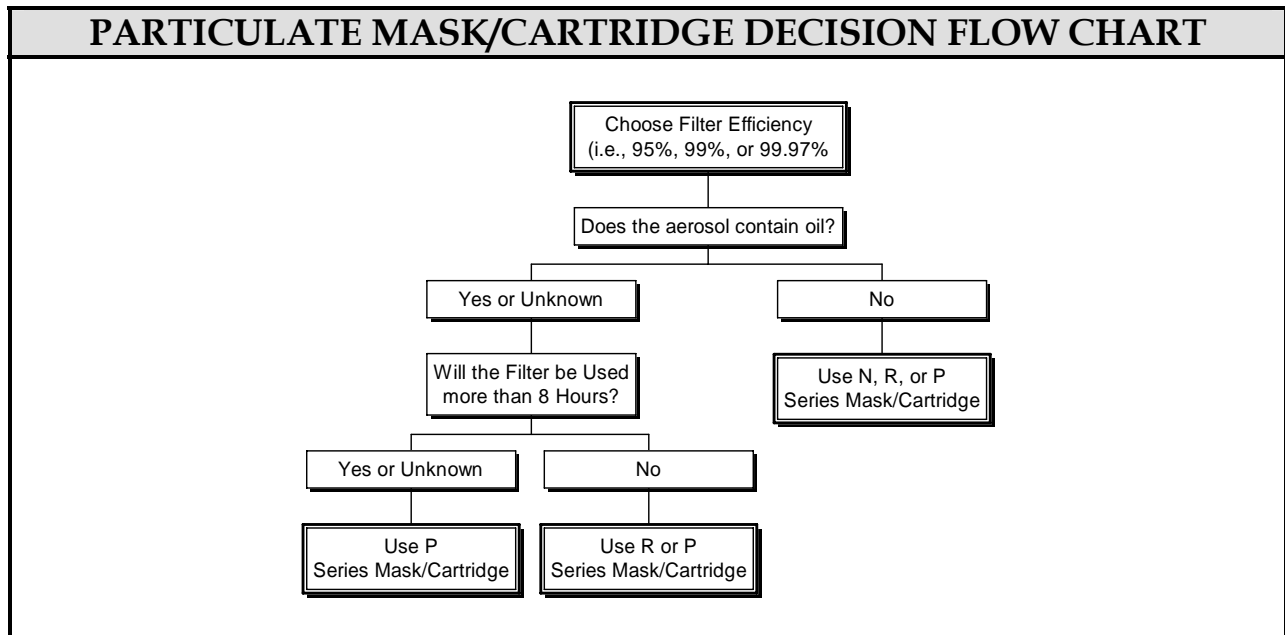
<b>RESPIRATOR GUIDE</b>			
<b>Respirator Type<sup>(1)</sup></b>	<b>Hazard</b>	<b>Limitations</b>	<b>Fit Test</b>
Disposable Dust/Mist Mask	Nuisance Dust/Mists	Not for use in atmospheres with concentrations above the PEL <sup>(2)</sup> .  Not for use for any substance not listed on the mask/cartridge, IDLH or unknown atmospheres. <sup>(3)</sup>	Qualitative (Optional)
½ Mask Respirator <sup>(2)</sup>	Dust, Mists, Vapors, and Gases	Not for use in atmospheres with concentrations above 5 times the PEL. <sup>(2)</sup>  Not for use for any chemical not listed on the cartridge, IDLH or unknown atmospheres. <sup>(3)</sup>	Qualitative
Full Face Respirator <sup>(2)</sup>	Dust, Mists, Vapors, and Gases	Qualitative fit testing is not approved for respirator use in atmospheres above 10 times the PEL. <sup>(2)</sup>  Not for use for any chemical not listed on the cartridge, IDLH or unknown atmospheres. <sup>(3)</sup>	Qualitative or Quantitative
Powered-Air Purifying Respirator (PAPR) <sup>(2)</sup>	Dusts, Mists, Vapors, and Gases	Qualitative fit testing is not approved for respirator use in atmospheres above 10 times the PEL. <sup>(2)</sup>  Not for use for any chemical not listed on the cartridge, IDLH or unknown atmospheres. <sup>(3)</sup>	Qualitative or Quantitative
Self-Contained Breathing Apparatus (SCBA) <sup>(4)</sup>	Dusts, Mists, Vapors, Gases and Oxygen deficient environments	Qualitative fit testing is not approved for respirator use in atmospheres above 10 times the PEL. <sup>(2)</sup>	Qualitative or Quantitative
Supplied-Air Respirator <sup>(4)</sup>	Dusts, Mists, Vapors, Gases and Oxygen deficient environments	Qualitative fit testing is not approved for respirator use in atmospheres above 10 times the PEL. <sup>(2)</sup>	Qualitative or Quantitative
Self-Contained Escape Pack (SKAPAC) <sup>(4)</sup>	Emergency Escape	Qualitative fit testing is not approved for respirator use in atmospheres above 10 times the PEL. <sup>(2)</sup>	Qualitative or Quantitative

Note: (1) Respirator type can be determined by using the Respirator Selection Flow Chart. (2) Consult Safety Officer for OSHA Permissible Exposure Limits. (3) Cartridge for specific contaminant must be selected from Cartridge Selection Guide. (4) Compressed air used for respiration shall meet at least the requirements for Grade D breathing air (ANSI Z86.1-1978). Oxygen 19.5 to 23.5%, Hydrocarbons less than 5 mg/M<sup>3</sup> at NTP, Carbon Monoxide less than 20 ppm, no pronounced color, Carbon Dioxide less than 1000 ppm.



\* Select appropriate disposable mask or cartridge by using the Particulate Mask/Cartridge Decision Flow Chart.

\*\* Select appropriate cartridge or canister by using the Respirator Cartridge/Canister Selection Guide



Note: The P100 particulate mask/cartridge provides the highest protection level for all working conditions requiring particulate protection.

<b>RESPIRATOR CARTRIDGE/CANISTER SELECTION GUIDE</b>	
<b>Atmospheric Contaminant to be protected against</b>	<b>Cartridge/Canister Color</b>
Acid gases	White
Hydrocyanic acid gas	White with ½ inch green stripe completely around the canister near the bottom.
Chlorine gas	White with ½ inch yellow stripe completely around the canister near the bottom.
Organic vapors	Black
Ammonia gas	Green
Acid gases and ammonia gas	green with ½ inch white stripe completely around the canister near the bottom.
Hydrocyanic acid gas and chloropicrin vapor	Yellow with ½ inch blue stripe completely around the canister near the bottom
Acid gases, organic vapors, and ammonia gases	Brown
Particulate (dusts, fumes, mists, fogs, or smoke.	Purple (Magenta)
Particulate in combination with any of the above gases or vapors	Canister color for contaminant, with ½ inch gray stripe completely around canister near the top.
Radioactive materials, except tritium and noble gases.	Purple (Magenta)
All of the above atmospheric contaminants	Red with ½ inch gray stripe completely around the canister near the top.



## **Information for Employees Using Respirators When Not Required Under the Standard**

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

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, 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 designed 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.

## Respirator Cleaning Procedures

### Procedures for Cleaning Respirators:

- A. Remove filters, cartridges, or canisters. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- B. 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.
- C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
- D. Disinfect components. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
  1. 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,
  2. 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,
  3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- E. 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 face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- F. Dry components. Components should be hand-dried with a clean lint-free cloth or air-dried.
- G. Reassemble face piece, replacing filters, cartridges, and canisters where necessary.
- H. Test the respirator to ensure that all components work properly.



## User Seal Check Procedures

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on.

Either the positive and negative pressure checks listed below, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

### I. Positive and/or Negative Pressure Checks

#### A. Positive pressure check.

1. Close off the exhalation valve and exhale gently into the face piece.
2. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of air at the seal.
3. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

#### B. Negative pressure check.

1. 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).
2. Inhale gently so that the face piece collapses slightly, and hold the breath for ten seconds.
3. 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.
4. If the face piece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

### II. Manufacturer's Recommended User Seal Check Procedures

- A. 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.