

# City of Portland Respiratory Protection Policy

## Table of Contents

<b>Introduction</b>	<b>Training</b>
<b>Permissible Practices</b>	<b>Program Evaluation</b>
<b>Responsibilities</b>	<b>Record Keeping</b>
<b>Definitions</b>	<b>Voluntary Use</b>
<b>Selection</b>	<b>Appendix A</b>
<b>Fit Testing</b>	<b>Appendix B-1</b>
<b>Routine Use Procedures</b>	<b>Appendix B-2</b>
<b>Maintenance</b>	<b>Appendix C</b>
<b>Medical Evaluations</b>	<b>Appendix D</b>
<b>Breathing Air Quality and Use</b>	<b>Appendix E</b>
<b>Identification of Filters, Cartridges, and Canisters</b>	<b>Appendix F</b>

## Introduction

In order to comply with the requirements of CFR 1910.134 the State of Maine Respiratory Protection Standard. The following written Respiratory Protection Program has been established for the employees of the City of Portland and applies to all city departments. Each department is required to add any necessary addendum's addressing department specific operations.

A copy of this written program will be available for review in the main office of each department as well as the Human Resources office in City Hall. All interested employee's or their designated representatives are welcome to view the policy during normal working hours.

## Permissible Practices

In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials etc.). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this policy.

The City of Portland shall provide respirators when such equipment is necessary and applicable and suitable for the purpose intended.

## Responsibilities

### ***City:***

The City Safety Coordinator will be responsible for the oversight, training coordination and annual review of the program/ policy.

### ***Departments:***

**1.** Each department is responsible for designating an individual to be in charge of creating any necessary addendum's regarding department specific tasks.

**2.** Shall not assign any employee to a task known to require respiratory protection unless the employee has:

- Completed the medical evaluation and been cleared by the PLHCP.
  - Been fit tested according Appendix A, by a qualified provider.
  - Received proper training on this Program / Policy.

**3.** Shall maintain a record of all employees qualified to wear respirators.

**Employees:**

1. Employees will make every effort to conduct their work activities without entering areas requiring respiratory protection.
2. Individuals assigned to tasks requiring respiratory protection shall wear the appropriate equipment in accordance with this policy.
3. Employees shall clean, disinfect and properly store their respirator.
4. Shared respirators shall be cleaned prior to each use.
5. Employees shall inspect their assigned respirator before each use, and after cleaning/disinfecting.
6. Employees shall report any and all defects to the department representative (see below)
7. Employees shall comply with all provisions of this policy.
8. Each employee shall attend a respirator-training course on an annual basis.

**Department Coordinators**

City Wide - City Safety Coordinator	Fire Dept.- Safety and Training Officer
Public Works- Safety & Training Officer	Public Assembly Facilities-
Parking -	Police Dept. -
Parks & Recreation - Safety & Training Officer	Public Buildings -
Neighborhood Services -	Public Health -
Barron Center -	Waterfront-
Jetport -	Social Services -

**Definitions:** The following definitions are important terms used in the respiratory protection standard in this section.

Air-purifying respirator means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned protection factor (APF) [Reserved]

Atmosphere-supplying respirator means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

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

Demand respirator means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

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 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) means 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.

Escape-only respirator means a respirator intended to be used only for emergency exit.

Filter or air purifying element means a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering facepiece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

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. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

Helmet means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

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

Immediately dangerous to life or health (IDLH) means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Loose-fitting facepiece means a respiratory inlet covering that is designed to form a partial seal with the face.

Maximum use concentration (MUC) [Reserved].

Negative pressure respirator (tight fitting) means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere means an atmosphere with an oxygen content below 19.5% by volume.

Physician or other licensed health care professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.

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

Powered air-purifying respirator (PAPR) means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

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 facepiece, 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.

Service life means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

Supplied-air respirator (SAR) or airline respirator means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-fitting facepiece means a respiratory inlet covering that forms a complete seal with the face.

User seal check means an action conducted by the respirator user to determine if the respirator is properly seated to the face. Once on the user will block the inhalation portion of the mask and

breathe in; the face piece should collapse against the face with no leaks. The next step is to block the exhalation valve and exhale; the facepiece should puff away from the face with no leaks detected. If either is unsuccessful the respirator must be removed, adjusted and the above steps repeated.

## **Selection**

### ***General:***

In accordance with CFR 1910.134, selection will be limited to NIOSH certified respirators, which must be used in compliance with the manufacturers' certification.

The city shall assign respirators based on workplace hazard evaluations, Manufacturers' recommendations for chemicals used(MSDS'), as well as workplace and user factors affecting respirator performance and reliability.

- Only respirators supplied by the City of Portland shall be permitted for use.
- Air purifying respirators shall not be permitted in atmospheres less than 19.5% O<sub>2</sub>.
- Pre testing of known work environments requiring respiratory protection shall be performed by the city.
  - Employees must evaluate work environments based on the hazards present or likely to be present during the course of work.
  - In the event a work environment has not been tested, selection shall be based on the assumption that the work environment is IDLH (immediately dangerous to life and health).
- Selection shall be based on the following:
  - Oxygen concentration
  - Contaminants physical state (gas, vapor, & particulates)
  - Toxicity
  - Concentration
  - Presence of other contaminants
  - Presence of stress factors in the work area.

### ***IDLH atmospheres - Employees shall use the following respirators:***

- All oxygen-deficient atmospheres (19.5%) shall be considered IDLH (See exception below)
  - Exception: If the employer demonstrates that, under all foreseeable conditions, the oxygen concentration can be maintained within the ranges specified in Table II of this section (i.e., for the altitudes set out in the table), then any atmosphere-supplying respirator may be used. (See table II below).
- A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or

- A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

**Table II**  
**Assigned Protection Factors**

Altitude (FT)	Oxygen deficient atmospheres (%O <sub>2</sub> ) for which employees may rely on atmosphere supplying respirators.
<3001	16 - 19.5
3001 - 4000	16.4 - 19.5
4001 - 5000	17.1 - 19.5
5001 - 6000	17.8 - 19.5
6001 - 7000	18.5 - 19.5
17001 - 8000	19.3 - 19.5
Above 8000 ft the exception Enriched breathing air must be	Does not apply . Oxygen Supplied above 14,000 feet.

***Necessary equipment is as follows: (mandatory for IDLH)***

- Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or;
- Equivalent means for rescue where retrieval equipment is not required

***Escape:***

- Respirators for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.
- All oxygen-deficient atmospheres shall be considered IDLH.

***Non IDLH atmospheres:***

Respirators that are adequate to protect health and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.

- The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

### ***Gases & Vapors:***

- An atmosphere-supplying respirator
- An air-purifying respirator, provided that
  - The respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or
  - All gas & vapor cartridges shall be changed daily (24 hours from time of installation on mask) or as prescribed by the manufacturer.

### ***Particulates:***

- An atmosphere-supplying respirator; or
- An air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter; or
- An air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR part 84; or
- For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.

***Any time an employee notifies their department representative, program administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator facepiece and be re-tested.***

### **Fit Testing**

Before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. Employees using a tight-fitting facepiece respirator must pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT) as outlined in Appendix A.

***Testing schedule:*** Additional fit testing must be performed for any of the following reasons:

- Upon notification from the employee of an unacceptable fit
- Upon notification or observation of facial scarring, dental changes, cosmetic surgery, or obvious change in body weight by the employee, employer, PLHCP, supervisor, or program administrator.
- Upon notification by the employee to the program administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator facepiece and to be retested.
- Whenever a different respirator facepiece (size, style, model or make) is used, and at least annually thereafter.

### **Routine Use Procedures**

**User Seal Check:** Every respirator upon being put on by the wearer shall have a user seal check performed to ensure a quality seal between the face piece and the skin.

**Facepiece seal protection:** Respirators with tight-fitting facepieces shall **NOT** be worn under the following conditions:

- Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function.
- Any condition that interferes with the face-to-facepiece seal or valve function.
- Corrective glasses or goggles or other personal protective equipment, that may interfere with the seal of the facepiece to the face of the user.
- Contact lenses are not to be worn in hazardous environments requiring the use of a respirator. Contacts may be worn with the use of a full facepiece.

***In the event these conditions exist the employee will not be permitted to wear the respirator or work in the area requiring respiratory protection until the above factors are remedied. Any necessary disciplinary actions will be applied by the individual department and follow AR 25.***

**Respirator Effectiveness:** Appropriate surveillance shall be maintained of work area conditions and degree of employee exposure or stress. The employer shall reevaluate the continued effectiveness of the respirator in the event of a change in work area conditions or stress that may effect effectiveness. *Respirators are to be removed from the work area during breaks or between work days.*

**Employees must leave the respirator use area for the following:**

- To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use.
- If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece.
- To replace the respirator or the filter, cartridge, or canister elements.
- To make any adjustments to the respirator which require removal.

***The city will repair or replace the respirator before allowing the employee to return to the work area.***

**IDLH rescue equipment:**

- The Portland fire department will be placed on notice of the need to enter an IDLH atmosphere for rescue purposes.
- One or more employees will be located outside the IDLH atmosphere.

- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere.
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective non-entry rescue.
- The Portland Fire Department will be notified before employee(s) located outside the IDLH atmosphere enter the atmosphere to provide emergency rescue.
- If the space meets the definition of a confined space the employee must reference that policy as well.

## **Maintenance**

***Cleaning / Disinfecting:*** All respirators at initial issue will be clean, sanitary, and in good working order. All cleaning and disinfecting shall be done in accordance with the manufacturers' guidelines or as outlined in Appendix B-2.

***Cleaning Intervals:*** Respirators shall be cleaned according to the following schedule.

- One User - The respirator shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.
- Multiple Users- The respirator shall be cleaned and disinfected before being worn by different individuals.
- Emergency Use - The respirator shall be cleaned and disinfected after each use.
- Fit testing / training - The respirator shall be cleaned and disinfected after each use.

***Storage:*** All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve. Follow manufacturers guidelines.

<sup>TM</sup> Emergency Respirators - Shall be kept accessible to the work area in designated marked locations and in accordance with the manufacturer's recommendations.

***Inspection:*** All respirators used in routine situations shall be inspected before each use and during cleaning. Respirators shall be inspected for: function, tightness of connections, and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, cartridges, canisters or filters and a check of elastomeric parts for pliability and signs of deterioration.

***Emergency Use-*** After each use & monthly. -Inspection must document the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator. The information must be maintained on a tag or log kept with the respirator or on the compartment.

- **Emergency Escape** - Prior to being carried into the workplace for use.
- **SCBA** - After each use & monthly. Bottles must be fully charged and recharged when below 90% of Mfg. recommended pressure level. Warning devices and regulators must function properly.

**Repairs:** Respirators that fail an inspection or are otherwise found to be defective are to be removed from service. Repairs shall only be performed by the manufacturer or a trained technician who shall use NIOSH approved parts designed for the respirator.

**Medical Evaluations**

Prior to performing a task, which requires the use of a respirator, the employee must submit to filling out a medical evaluation questionnaire. The medical evaluation will consist of Part A, section I & II. Part "B" of the medical questionnaire is optional at the discretion of the PLHCP. (See Appendix C)

Evaluations shall be administered confidentially during normal working hours, and shall be explained to the employees filling them out. (See Appendix E)

Periodic medical evaluation shall be administered according to the following schedule:

0 through 35 years of age	- at least every 5 years
36 to 40 years of age	- at least every 2 years
Over 40 years of age	- at least annually

**PLHCP:** The city is currently contracted with

**HealthSouth**  
**55 spring Street**  
**Scarborough, Me 04074**  
**Tel. 883-3988 fax 883-2329**

HealthSouth will perform all evaluations of the Medical Evaluation Questionnaire at a predetermined cost to the city department submitting the evaluations.

**Follow-up:** The department/division coordinator shall ensure that a follow-up medical examination is scheduled for employees whose initial medical evaluation warrants a follow-up as prescribed by the PLHCP. The follow-up shall be scheduled and the employee cleared prior to the employee wearing a respirator.

**Tracking form:** A tracking form shall accompany all medical evaluations being submitted to the PLHCP. The tracking form will be used to track the employees progress and date cleared. The PLHCP will provide an updated copy to the department as individuals are cleared. (See Appendix F)

## **Breathing Air Quality and Use**

Atmosphere supplying respirators will be supplied with breathing gases of high purity.

***Compressed air, oxygen, liquid air, and liquid oxygen used for respiration must meet the following specifications:***

- Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
- Compressed breathing air shall meet at least the requirements for Grade D breathing air as described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
  - Oxygen content (v/v) of 19.5-23.5%;
  - Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less
  - Carbon monoxide (CO) content of 10 ppm or less
  - Carbon dioxide content of 1,000 ppm or less; and
  - Lack of noticeable odor
- Compressed oxygen shall not be used in atmosphere-supplying respirators that have previously been used with compressed air.
- Oxygen concentrations greater than 23.5% are to be used only in equipment designed for oxygen service or distribution.

***Cylinders used to supply breathing air to respirators must meet the following:***

- Cylinders are to be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178);
- Cylinders of purchased breathing air must have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and
- The moisture content in the cylinder does not exceed a dew point of -50 deg.F (-45.6 deg.C) at 1 atmosphere pressure.

***Compressors supplying breathing air to respirators are constructed and situated so as to:***

- Prevent entry of contaminated air into the air-supply system
- Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56 deg.C) below the ambient temperature
- Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality.

- Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions
- Have a tag containing the most recent change date and the signature of the person authorized to perform the change.
- The tag shall be maintained on the compressor
- For compressors that are not oil-lubricated, carbon monoxide levels in the breathing air must not exceed 10 ppm
- For oil-lubricated compressors, a high-temperature or carbon monoxide alarm, or both, shall be used to monitor carbon monoxide levels.
- If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.
- Breathing air couplings must be incompatible with outlets for non-respirable work site air or other gas systems.
- No asphyxiating substance shall be introduced into breathing air lines
- Only breathing gas containers marked in accordance with the NIOSH respirator certification standard, 42 CFR part 84 shall be used.

### **Identification of Filters, Cartridges, and Canisters:**

- Color coding systems may vary depending on the vendor, all filters, cartridges and canisters must be identified based on the manufacturer's wall chart, or label and not by color alone.
- All 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.
- If the label is removed or becomes illegible the filter, cartridge or canister must be discarded.

### **Training**

Training will be required of respirator users on an annual basis and more often if necessary. It will also be required for employees who choose to wear a respirator under the voluntary use.

**Training Outline:** Each employee must be able to demonstrate knowledge of the following

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator
- What the limitations and capabilities of the respirator are
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions
- How to inspect, put on and remove, use, and check the seals of the respirator
- What the procedures are for maintenance and storage of the respirator

- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators
- The general requirements of this standard
- A copy of Appendix D shall be provided to all voluntary use users.
- Training shall be conducted in a manner that is understandable to the employee
- Training shall be provided prior to requiring the employee to use a respirator.

***Training Schedule:*** Retraining shall be administered annually, and when the following situations occur:

- Changes in the workplace or the type of respirator render previous training obsolete
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

## **Program Evaluation**

The City shall conduct evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

***Evaluation Factors:*** Each department shall regularly consult employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected in a timely manor.

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance).
- Appropriate respirator selection for the hazards to which the employee is exposed.
- Proper respirator use under the workplace conditions the employee encounters.
- Proper respirator maintenance.

## **Record Keeping**

All medical evaluations will be maintained by the PLHCP (Healthsouth), in the event that an employee would like a copy of their record, please contact the Risk Division. Each department will be required to maintain the tracking form stating employee clearance to wear a respirator.

***Fit Testing:*** Each department shall establish a record of the qualitative and quantitative fit tests administered to an employee including:

- The name or identification of the employee tested.

- Type of fit test performed; QNFT, QLFT.
- Specific make, model, style, and size of respirator tested.
- Date of test.
- The pass/fail results for QLFT or the fit factor and strip chart recording or other recording of the test results for QNFT.
- Fit test records shall be retained for respirator users until the next fit test is administered.

## **Voluntary Use**

It will be the position of this policy that if an employee wishes to wear a respirator voluntarily that the city will have previously conducted testing to determine the presents of any hazardous environment or the lack there of. The next step will be to educate the employee as to the findings of the test as well as to inform them of the hazards associated with wearing a respirator. If the employee still wishes to wear a respirator the employee shall submit to completing the medical evaluation and to any necessary fit testing required by the manufacture of the respirator. See Appendix D