

<b>Title:</b> Respiratory Protection Program	<b>Document No.:</b> OCS-904
	<b>Revision No.:</b> 01 <b>Date:</b> July 19, 2017
	<b>Approved By:</b> Avraham Boruchowitz, CSP, CHMM

## 1.0 Introduction

The purpose of the Respiratory Protection Program is to protect employees against harmful dust, fogs, fumes, mists, gasses, smokes, sprays, bio-aerosols, and vapors through the use of respirators when engineering controls, substitution of materials, administrative controls, or other personal protective equipment (PPE) are not feasible. When effective engineering controls are not feasible, or while they are being instituted, and when respiratory protection is required, respirators must be used in the context of a comprehensive respiratory protection program (this program) as required under OSHA’s Respiratory Protection standard (OSHA 29CFR 1910.134).

This program includes procedures for respirator selection, fit testing, medical evaluation, proper use and maintenance of the respirator, procedures to ensure adequate air quality, and training of the respiratory hazards to personnel. The program also includes procedures where respirator use is not required but respirators are being worn on a voluntary basis. Environmental Health and Safety (EHS) shall determine the operations or conditions necessitating the use of respirators.

## 2.0 Scope

This program applies to all university personnel required to wear a respirator as part of their job task, class, or university sponsored activity. This program also addresses the voluntary use of respirators by university personnel whose risk assessments do not require the mandatory use of respirators.

The Environmental Health and Safety Specialist will serve as the Respirator Program Administrator.

## 3.0 Responsibilities

### Personnel Required to use Respiratory Protection

- Comply with department or site-specific policies on respirator use.
- Obtain written medical clearance specifically for respirator use prior to initial use, annually, upon a significant change in tasks or medical condition, or as specified in writing by a physician.
- Attend respirator training prior to use and at least annually.
- Obtain a fit-test for each assigned respirator prior to use and at least annually.
- Inspect each assigned respirator prior to and after each use and at least monthly if not used, and clean them after use.
- Wear the assigned respirator only for the identified, intended hazardous environment(s).

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- Immediately notify supervisor of any new or changed hazard or any significant change of medical condition.
- Maintain a facial surface that provides a proper fit with the respirator (e.g. clean shaven).
- Immediately notify supervisor of any problem or questions about an assigned respirator or its use.

Personnel who choose to use respiratory protection shall follow the program elements outlined under *Section 11.0 Voluntary Use*.

Supervisors of Personnel Wearing Respiratory Protection

- Be familiar and comply with this Respiratory Protection Program.
- Ensure employees comply with department or site-specific policies on respirator use.
- Identify potential activities or environments that may require respirator use or changes in tasks, chemicals or other hazardous material usage to Environmental Health and Safety (EHS) so a current exposure assessment is performed.
- Purchase appropriate respirators, cartridges, and approved replacement parts for employees included in the respiratory protection program with EHS assistance.
- Facilitate personnel medical clearance, fit-testing, and respirator use training prior to being assigned a task requiring respirator use and annually thereafter.
- Maintain a current list of all personnel under their supervision who use respirators, and implement a program for cleaning and inspecting respirators.
- Provide a convenient, sanitary storage area for respiratory protection equipment and a means to clean and disinfect reusable equipment.
- Monitor conditions, exposures, and physical stress to minimize detrimental conditions.
- Refer to EHS any questions or problems regarding respiratory protection.

Environmental Health and Safety (EHS)

The overall responsibility to develop and implement occupational health and safety programs for the university falls with the Office of Environmental Health and Safety (EHS). Although it is the overall responsibility of EHS to develop these programs, it is ultimately up to each department or unit supervisor to ensure that employees are provided the vital support and means to adequately carry out the provisions of each program and achieve regulatory compliance with all OSHA requirements. Responsibilities of EHS related to the Radford University Respiratory Protection Program include:

- Develop, implement, and maintain the Respiratory Protection Program.

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- Maintain occupational health records, medical clearance documentation, training, and fit-test documentation and make this documentation available to departments and supervisors with employees in the respiratory program.
- Evaluate hazards, provide assessments of exposure to airborne contaminants, and make appropriate recommendations for respiratory protection.
- Provide training for proper respirator use and care.
- Ensure personnel in the respiratory program have obtained medical clearance prior to fit testing and use of respirators.
- Provide for annual fit testing for personnel required to wear respirators.
- Provide Human Resources with the job position titles that are known to require the use of a respirator.
- Assist departments in developing written respirator policies and additional responsibilities designated in this program.

#### Human Resources (HR)

- Ensure job descriptions identified for positions requiring the use of respirators include pre-employment conditions for respirator use, including, but not limited to the requirement to be deemed medically fit to wear a respirator and to pass a qualitative or quantitative fit test (depending on the type of respirator required) prior to employment.
- Provide guidance if/when personnel fail medical clearance or fit testing.

#### **4.0 Definitions**

**Air-purifying respirator** – a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element. Unless otherwise specified, "air-purifying respirator" refers to an N95 or higher filtering facepiece respirator certified by the CDC/National Institute for Occupational Safety and Health (NIOSH).

Types of air purifying respirators include:

**1. Disposable or filtering face piece respirators** - A respirator face piece entirely composed of filter material, which is discarded when it becomes unsuitable for further use. The N95 respirator is a common disposable filtering face piece respirator.

**2. Elastomeric or reusable respirators** – A respirator with a face piece that can be cleaned, repaired and reused, and is used with cartridges that are discarded and replaced when they become unsuitable for further use. These respirators include the half-mask (covering the mouth

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and nose) and full-mask (covering mouth, nose, and eyes) types. The respirator cartridges for these respirators are specific to different contaminants, including gases, vapors, or specific chemical contaminants. The cartridges must be selected to the specific hazard.

**3. Powered air purifying respirators (PAPRs)** – A respirator with a battery-powered motor that pulls contaminated air through filters, and then moves the filtered air to the wearer's face piece. Although PAPRs may be more expensive than other air purifying respirators they may provide higher levels of protection and reduce physiological burden associated with negative pressure respirators and may increase the comfort by providing a constant flow of air on the face. These respirators may also be used with canisters or cartridges. The use of hooded PAPR's does not require fit testing but does require compliance with all other components of the respirator program.

**4. Surgical respirators** – A type of respiratory protection that offers the combined protective properties of both a filtering face piece respirator and a surgical mask. Surgical N95 respirators are certified by NIOSH as respirators and are also cleared by FDA as medical devices. These certifications verify these respirators have been designed and tested and shown to be equivalent to surgical masks in certain performance characteristics, i.e. resistance to blood penetration and biocompatibility.

**Atmosphere-supplying respirator** – a respirator that supplies the 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** – 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** – 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** – any occurrence such as equipment failure, rupture of containers, or failure of control equipment that results in an uncontrolled significant release of an airborne contaminant.

**Employee exposure** – 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.

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

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

**Filtering facepiece (dust mask)** – 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** – 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** – the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

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

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

**Hood** – 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)** – 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** – a respiratory inlet covering that is designed to form a partial seal with the face.

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

**NIOSH Certified** – OSHA requires all respirators to be tested and certified by the National Institute for Occupational Safety and Health (NIOSH). NIOSH-approved respirators are marked with the manufacturer's name, the part number, the protection provided by the filter (e.g., N-95),

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and "NIOSH." This information is printed on the face piece, exhalation valve cover, or head straps. If a respirator does not have these markings, it is not certified by NIOSH.

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

**Physician or other licensed health care professional (PLHCP)** – an individual 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 standard.

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

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

**Pressure demand respirator** – 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)** – 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)** – an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respiratory inlet covering** – 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.

**Respirator Risk Assessment** – A review of a process, activity, and/or equipment for hazardous substances generated that may create unsafe exposure levels. This usually requires Safety Data Sheet (SDS) review, air sampling, and technical data to calculate a Maximum Use Concentration that is used for respirator selection.

**Self-contained breathing apparatus (SCBA)** – an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

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

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

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

**User seal check** – an action conducted by the respirator user to determine if the respirator is properly seated to the face.

**5.0 Exposure Assessments**

Potential exposures to hazardous materials and conditions at Radford University are routinely evaluated through regular workplace inspections and upon employee or supervisor request. Environmental Health and Safety (EHS) takes all practical efforts to ensure that engineering or other controls are available and implemented to eliminate the need for respiratory protection. Nevertheless, certain situations and operations continue to require the use of respirators where exposures cannot be otherwise managed below the applicable permissible exposure limit. Also, respirators may be required or desired because of the odor or irritation associated with chemical exposures, even though they may be well below all applicable exposure limits.

In the absence of a regulatory exposure limit, commonly accepted guidelines (i.e., TLVs, RELs, WEELs, or manufacturers’ suggested exposure limits) will be used to evaluate the exposure hazard from a particular operation or environment. Airborne concentrations of hazardous agents may be predicted on the basis of past experience, mathematical calculations, published results for similar work, or actual air sampling. Predicted airborne concentrations will be extended to all members of the same job title or function unless specific information indicates that exposures vary substantially, in which case more cross-sectional data will be obtained. Where air sampling is needed, measurements will be made with calibrated equipment operated by trained safety and health personnel from or under the direction of EHS. Monitoring will be repeated when changes occur which could render respiratory protective equipment inadequate or changes in job tasks will require new employees to be included in this Program.

5.1 Respiratory Hazard Assessment

Any job task, class, or university-sponsored activity that results in university personnel potentially being exposed to a hazardous substance (dust, vapor, mist, etc.) must be evaluated for the need to wear respiratory protection. University personnel aware of such task, class, or activity are to contact EHS to initiate a respirator risk assessment.

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Any individual who performs a job task or participates in a class or a university-sponsored activity that has been identified through a respirator risk assessment as having to wear a respirator shall be covered under this program.

**6.0 Respirator Selection**

Respirators are selected on the basis of workplace hazard assessments, as well as guidance from 29CFR1910.134, the American National Standard Practices for Respiratory Protection Z88.2-1992, the NIOSH Guide to Industrial Respiratory Protection, and the latest version of the National Institute for Occupational Safety and Health's Pocket Guide to Chemical Hazards. Final selection of any respiratory protective device must be made in consultation with Environmental Health and Safety. Only respirators with approval from the National Institute of Occupational Safety and Health (NIOSH) may be used.

Respirators are selected on the basis of the anticipated health hazard(s), considering the following factors:

- Chemical, physical, or biological agent(s) present in the work environment;
- Physical state of contaminants (i.e., gas, vapor, dust, aerosol);
- Permissible exposure limit (PEL) and immediately dangerous to life and health (IDLH) levels for the agent. In the absence of a PEL, other suitable exposure guidelines (i.e., ACGIH Threshold Limit Value) or known toxicity of the agent will be considered;
- Anticipated airborne concentration of agent(s) based upon either past experience, mathematical predictions, published results from similar operations, or actual air sampling.
- If the concentration cannot be predicted or the contaminant(s) unknown, respiratory protection must be upgraded to self-contained breathing apparatus;
- Assigned protection factor (NIOSH) for the respirator type;
- Potential for skin absorption or severe eye irritation;
- Potential for oxygen deficiency;
- Nature and duration of the activity requiring respiratory protection.

Only respirators that can provide protection in excess of the anticipated airborne concentration will be selected (i.e., the assigned protection factor times the permissible exposure limit must exceed the anticipated airborne concentration).

At Radford University, negative pressure air purifying respirators (APR) and powered air purifying respirators (PAPR) are typically sufficient for routine work operations requiring respiratory protection. Cartridge selection is made in accordance with the filtration capabilities;



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the appropriate cartridge or filter can be verified by the Respirator Program Administrator. Cartridges for gases and vapors must either have an end-of-service-life indicator (ESLI), or must be changed in accordance with the cartridge change schedule described in Appendix C. Positive pressure-demand self-contained breathing apparatus (SCBA) is used for emergency response, unknown or oxygen deficient atmospheres, when there is no appropriate filtering cartridge available, or in other high hazard situations. A list of approved respirators and their typical uses appears in Appendix E.

6.1 Selection of Respirators for IDLH Atmospheres

All oxygen-deficient atmospheres (<19.5%) will be considered IDLH. If the employee will enter work sites where an IDLH atmosphere is present or expected, or where an unknown respiratory hazard exists, a selection will be made from among the following respirator types:

- Full-face piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes or;
- Combination full-face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
- Respirators proved only for escape from IDLH atmospheres will be NIOSH-certified for escape from the atmosphere in which they will be used.

6.2 Selection of Respirators for Non-IDLH Atmospheres

The respirators selected for non-IDLH work sites shall be adequate to protect the health of the employee and ensure compliance with OSHA regulatory requirements under routine and reasonably foreseeable emergency situations. Respirators selected shall be appropriate for the chemical state and physical form of the contaminant(s) present.

For protection against gases and vapors, the respirator selected shall be:

- An atmosphere-supplying respirator; or
- An air-purifying respirator, provided that:
- The respirator is equipped with an end-of-life indicator (ESLI) certified by NIOSH for the contaminant; or
- If there is no ESLI appropriate for the work site conditions, a change-out schedule to be implemented for canisters and cartridges based on objective information or data that will ensure canisters and cartridges are changed before the end of their service life. This information shall be documented in a department-specific respiratory protection policy.

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For protection against particulates, the respirator selected shall be:

- A filtering facepiece (dust mask) with filter rating of at least 95% to 99.97% rating, in removing monodisperse particles of 0.3 micrometers and larger in diameter, with a P (oil Proof), N (Not resistant to oil), or R (Resistant to oil prefix depending upon application; or,
- An atmosphere-supplying respirator; or,
- An air-purifying respirator equipped with a filter certified by NIOSH as a high efficiency particulate air (HEPA) filter; or,
- An air-purifying respirator equipped with a filter certified for particulates by NIOSH; or,
- For contaminants consisting primarily of particles with diameters of a least 2 micrometers and larger, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.
  - Full-face piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes or;
  - Combination full-face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

**7.0 Preventative Conditions**

Respirators requiring a tight face seal for proper performance may not be worn if certain physical or health conditions prevent obtaining the tight seal. These may include: eyeglasses (with tight fitting full facepiece respirators); facial hair that interferes with the seal; punctured eardrum; articles of clothing that affect fit; other physical, health, or prosthetic conditions that interrupt or preclude an effective respirator fit test. Only loose-fitting respirators are acceptable under these conditions. Each of these conditions may be remedied as follows:

- Eyeglass Temple Pieces – Where a full-face negative pressure respirator must be worn, a spectacle kit that fit the respirator must be provided to the employee free-of-charge. The employee will then need to visit an optometrist during regular working hours to arrange for the lens to be fabricated to the required prescription. Although the practice is strongly discouraged, contact lenses may be worn provided the respirator is of full-face design.
- Facial Hair Impeding Effective Seal – Where an employee is required to wear a tight-fitting negative-pressure respirator, and facial hair impedes an effective facial seal, the hair must be removed before that respirator can be worn.
- Clothing – Clothing, jewelry, or other personal items worn that prevent making an effective facial seal must be removed so that the respirator can be properly worn.

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- Other Issues – Other issues (e.g., prosthetics, handicaps, facial malformations) that could prevent the effective use of a respirator will be addressed on a case-by-case basis with the Physician or other licensed health care professional (PLHCP) during the medical screening.

**8.0 Medical Evaluation**

EHS will ensure an initial medical questionnaire (Appendix H) for all required personnel is performed for those with job tasks indicating respirator use. A medical questionnaire is required and reviewed by a PLHCP. Some responses may require a respiratory physical and pulmonary function test to determine the individual’s ability to wear a respirator. The respirator program requires the individual to pass a medical evaluation annually by completing a medical questionnaire and receiving clearance from the PLHCP. This evaluation will be repeated at intervals specified by EHS (or sooner if there is a change in the employee’s medical condition or level of effort during tasks requiring respirator use). Only those employees required to wear a respirator due to exposure to formaldehyde or asbestos, and HAZWOPER personnel are required to participate in a physical medical evaluation and pulmonary function test in addition to the respirator questionnaire.

The medical questionnaire and examination shall be administered confidentially during the employee’s normal working hours or at a time and place convenient to the employee.

After initial medical examination, EHS will receive a Fit for Duty form, which simply describes the individual’s ability to wear a respirator, thereby indicating the PLHCP’s recommendation regarding any limitations on respirator use or additional follow-up. EHS will maintain the forms in the individuals occupational health file. The employee will be provided a copy of the PLHCP’s recommendations.

**9.0 Fit Testing**

Employees who are required to use a tight-fitting respiratory facepiece for protection against all contaminants must be fit-tested during initial equipment issuance and annually thereafter. In addition to the fit testing, the employee should conduct a respirator seal check prior to each use. User seal check procedures as mandated by OSHA are outlined in Appendix F. Qualitative fit testing (QLFT) using irritant smoke, saccharin, bitrex, or isoamyl acetate (“banana oil”) shall be used only if quantitative fit testing (QNFT) cannot be accomplished. QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less. Both QLFT and QNFT will be performed by a PLHCP. This fit testing is performed following the procedures mandated by OSHA in Appendix A of 29 CFR 1910.134. Fit testing is repeated annually and must also be repeated if the user’s health/physical characteristics significantly

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change (e.g., surgery, accident, change or loss of dentures). Records of fit testing are maintained by Environmental Health and Safety.

If after passing a QLFT or QNFT, the employee notifies the Program Administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable, the employee will be given an opportunity to select a different respirator facepiece and to be retested.

### **10.0 Training**

Employees and supervisors required to wear respirators during employment at the University receive initial and annual training in the proper use, care, and limitations of the selected respirator; details of this program; and on OSHA's requirements under 29 CFR 1910.134. At a minimum, the following items will be covered during the training session:

- The nature of the respiratory hazard (i.e., what specific chemical substances or microbiological species are present; what areas, operations, or conditions involve potentially hazardous exposures; and what effects (symptoms) may result, if respirators are not used).
- An explanation of why engineering controls are not immediately possible and a discussion of what efforts are being made to eliminate or minimize the need for respirators.
- An explanation of why the respirator type selected is the proper one and what factors affect selection.
- A discussion and demonstration on how to use the respirator; i.e., how to inspect, put on and remove, check the seals, etc.
- Instruction on the proper techniques and importance of cleaning, disinfection, inspection, maintenance, and storage of the respirator.
- A discussion of the capabilities and limitations of respirators (i.e., in what environments or under what circumstances (such as oxygen deficiency) the respirator does not offer adequate protection) and any warning signs (odor, etc.) that may indicate the respirator is not functioning properly.
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.
- The general requirements of OSHA's respirator standard.

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The basic advisory information on respirator, as presented in Appendix D of 29 CFR 1910.134, will be provided to employees who respirators when such use is not required by regulation. See Appendix D for an outline of the respirator training program.

**11.0 Voluntary Use**

Under some circumstances, employees may wish to use respiratory protection equipment for their own comfort or sense of wellbeing, even when there is no recognized hazard or overexposure. Respirator use in these circumstances would be considered “voluntary” and many elements of OSHA’s respiratory protection standard would not apply. For voluntary users, annual respirator fit testing is not required but we recommend initial fit testing to help ensure proper size selection. Voluntary users of filtering facepiece respirators (N95, N100) are also not required to undergo medical clearances. However, voluntary users of all other respirators are required to complete the medical clearance questionnaire and be medically cleared. Although not mandated, we strongly recommend that voluntary N95 and N100 respirator users also complete the medical clearance questionnaire to ensure that the respirator itself is not a hazard to the employee.

Those employees who are not required to wear respirators but do so on a voluntary basis are provided with the required information (from 29CFR1910.134, Appendix D) and are requested to attend a pared down version of the respiratory training. Also, the individual must sign a copy of the Radford University Voluntary Respirator Form. See Appendix D for a copy of the required information given to voluntary respirator wearers.

**12.0 Respirator Inspection**

Employees must inspect their respirator before and after each use, including face seals and shield (full face units), cartridge receptacles, straps, and inhalation and exhalation diaphragms. Components made of rubber, silicone, or another elastomer must be inspected for pliability and any signs of deterioration. If any parts are damaged, the unit must be immediately taken out of service and the area supervisor notified so that a suitable replacement or repair can be made.

All respirators maintained for use in emergency situations will be inspected at least monthly and in accordance with the manufacturer's recommendations, and will be checked for proper function before and after each use. Emergency escape-only respirators will be inspected before being carried into the workplace for use.

Respirator inspections will include the following:

- A check of respirator function, tightness of connections, and the condition of the various parts including, the facepiece, head straps, valves, connecting tube, and cartridges, canisters or filters.

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- A check of elastomeric parts for pliability and signs of deterioration. Self-contained breathing apparatus will be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and will be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The regulator and warning devices will be inspected.

For respirators maintained for emergency use, the university will:

- Certify the respirator by documenting the date the inspection was performed, the name of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator.
- Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information will be maintained until replaced following a subsequent certification.

### 13.0 Respirator Use

For all tight-fitting respirators, employees will perform a user seal check each time they put on the respirator using the procedures in Appendix B-1 of the OSHA regulations or procedures recommended by the respirator manufacturer that the employer demonstrates are as effective as those in Appendix B-1.

When donning a respirator, hair must be pulled back and away from the seal area, and negative and/or positive pressure seal checks conducted to evaluate the facial fit and unit integrity. If an airtight seal cannot be made by adjusting the tightening straps, then the respirator must be inspected for damage and either repaired or replaced.

When using a respirator, employees must immediately stop work and leave the area if they:

- Detect vapor or gas breakthrough, changes in breathing resistance, or leakage or the facepiece,
- Develop any signs or symptoms of over-exposure,
- Are alerted to end-of-service life indicator or low air alarm (for SCBA),
- Need to wash their face and respirator facepiece as necessary to prevent eye or skin irritation associated with respirator use, or
- Need to replace the respirator or the filter, cartridge, or canister elements.

In the event that a possible exposure may have occurred during respirator use, notify the area supervisor and EHS for assistance and possible medical follow-up. Remove the respirator from service and inspect it for damage or other problems. If the cause cannot be identified and corrected, contact EHS for guidance.

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	<b>Approved By:</b> Avraham Boruchowitz, CSP, CHMM

**14.0 Emergency Use and SCBA Requirements**

The only respirator approved for entry into all contaminated atmospheres is a Self-Contained Breathing Apparatus (SCBA) used in the pressure-demand mode. All individuals who will be required to wear an SCBA must be trained, tested, and approved by EHS. Other types of respirators may be used for escape from contaminated atmospheres and for tasks performed in atmospheres that are not IDLH (immediately dangerous to life or health). Use of these respirators for emergencies shall be approved by EHS.

To prevent tampering or inadvertent damage, SCBAs must be stored in clearly identified emergency equipment areas (or bags) under the direct control of the users. Compressed air cylinders must be kept fully charged and the equipment inspected on a monthly basis. The inspection includes checking tank pressure, assuring that components are present and in working condition, and evaluating proper function of regulators and warning devices. In areas where a user could, upon respirator failure, be overcome by toxic materials or an oxygen-deficient atmosphere, at least one partner and two additional support or back-up persons must be present. Support personnel will be equipped with SCBAs and other emergency response equipment of equal or greater protection than that worn by the initial entrants. Prior to initial entry into such a work area, EHS will conduct a pre-entry briefing to discuss the area, its potential hazards, and the actions to be taken in the event of an accident or emergency. Depending upon the work area, additional rescue equipment may be needed (e.g., safety harness and retrieval lines). Confined space entry is prohibited unless the requirements for Radford University's Confined Space Entry Program have been met.

Respirator users required to utilize supplied air and SCBA respirators shall be provided breathing gases of high purity as follows:

- Compressed and liquid oxygen will meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and,
- Compressed breathing air will meet at least the requirement for Grade D breathing air 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.

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**15.0 Equipment Maintenance and Storage**

Respirators will be cleaned and disinfected after each use according to the procedures for specific respirators. OSHA has published Respirator Cleaning Procedures (29 CFR 1910.134 Appendix B-2). After cleaning and drying, respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They shall be packed or stored to prevent deformation of the facepiece and exhalation valve. It is not acceptable to hang a respirator by its straps. Store respirators, if possible, in sealable plastic bags away from sources of potential contamination, and never stack them under heavy items that could deform the elastomer facepiece.

In general, air purifying cartridges and canisters should be removed from the respirator after use and discarded. However, when used for only a short duration against relatively low concentrations of contaminants, cartridges may be sealed in an impermeable plastic bag and reused at a later date. See cartridge change schedule in Appendix C. Cartridges can be reused until an end-of-service life indicator activates, the time period indicated in the cartridge change schedule has elapsed, breakthrough has occurred (i.e., odor detected), or resistance to breathing is detected, whichever comes first. When storing cartridges for reuse, a written record showing the date, contaminant(s), and duration of use must be kept with the cartridges. Discard N-95 and other disposable respirators and dust masks at the end of your shift, or after use.

Repairs to respirators may only be made by the manufacturer, authorized equipment service contractor, or by University staff trained in such repair. No adjustments or modifications can be made beyond the manufacturer's recommendations.

The entire respirator, including all parts, must be NIOSH or MSHA approved. The approval is for the entire unit, and any mixing of brands (i.e. North cartridges on an MSA respirator, or inhalation valves for a Survivair respirator on an AO respirator) voids the approval and is prohibited.

**16.0 Program Evaluation**

Workplace evaluations will be conducted during normal area walkthroughs and during respirator training classes. The Respirator Program Administrator will continually evaluate the work areas to ensure that this program is being properly implemented and that it continues to be effective.

Affected employees shall be regularly consulted about the effectiveness of the respirator program during walkthroughs and during annual respirator training. Any problems that are identified during this assessment will be corrected. Factors to be assessed include, but are not limited to:



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- 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.

This Respiratory Protection Program shall be updated as needed.

### **17.0 Recordkeeping**

Records of medical evaluations will be retained and made available in accordance with 29 CFR 1910.1020.

A record of qualitative and quantitative fit tests administered to an employee will be maintained including:

- The name of the employee tested.
- Type of fit test performed.
- Specific make, model, style, and size of respirator tested.
- Date of test.
- The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs.

Fit test records will be retained for respirator users until the next fit test is administered.

A written copy of this program will be retained by the EHS.

Written materials required to be retained under this paragraph will be made available upon request to affected employees.

### **18.0 Appendices**

- Appendix A – Respiratory Hazard Assessment Form
- Appendix B – Respirator Decision Flow Chart
- Appendix C – Respirator Cartridge Change Schedule
- Appendix D – Appendix D to 1910.134
- Appendix E – Approved Respirator List and Typical Uses
- Appendix F – Appendix B-1 to 1910.134
- Appendix G – Appendix B-2 to 1910.134
- Appendix H – Medical Questionnaire

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**19.0 Document Revision History**

Revision	Section(s) Changed	Change(s) Made:	Date
00	All	Initial Draft	Unknown
01	All	Draft overhaul, extensive rewrite	7/19/17

**20.0 Document Author(s):** John Crocker, CSP and Avraham Boruchowitz, CSP, CHMM

## Appendix A - Respiratory Hazards Assessment Form

<b>Please provide a detailed description of the job task:</b>			
<b>Location where task occurs:</b>		<input type="checkbox"/> <b>Single Employee</b> <input type="checkbox"/> <b>Worksite</b> <input type="checkbox"/> <b>Class of Employees</b>	
<b>Employees Names and Work Titles:</b>			
<b>Supervisor name:</b>		<b>Phone No.</b>	<b>Department:</b>
<b>Date:</b>			
<b>Exposure to chemicals:</b>			
<input type="checkbox"/> Organic Vapors (benzene, toluene, MEK, acetone, xylene, paint thinners, etc) <input type="checkbox"/> Acid gas (hydrogen chloride, hydrogen sulphide, etc.) <input type="checkbox"/> Ammonia <input type="checkbox"/> Formaldehyde/Formalin		<input type="checkbox"/> Methylene Chloride <input type="checkbox"/> Mercury vapors <input type="checkbox"/> Pesticides <input type="checkbox"/> Other _____	
<b>Please approximate how many days/min/quantity used:</b> _____			
<b>Exposure to dust, mist, fumes or particulates:</b>			
<input type="checkbox"/> Cotton dust <input type="checkbox"/> Grain dust <input type="checkbox"/> Animal dust <input type="checkbox"/> Wood dust <input type="checkbox"/> Biological hazards (list): _____		<input type="checkbox"/> Welding fumes <input type="checkbox"/> Asphalt fumes <input type="checkbox"/> Other fumes _____ <input type="checkbox"/> Nanoparticles <sup>1</sup> (list): _____	
		<input type="checkbox"/> Pesticide application <input type="checkbox"/> Paint spraying <input type="checkbox"/> Other _____	
		<input type="checkbox"/> Lead <input type="checkbox"/> Asbestos	
<b>Please approximate how many days/min/quantity used:</b> _____			
<b>Work involving any of the above mentioned hazards is performed:</b>			
<input type="checkbox"/> Outside <input type="checkbox"/> In a fume hood/Biosafety Cabinet <input type="checkbox"/> In the lab (bench top)		<input type="checkbox"/> In the shop <input type="checkbox"/> In a spray paint room or booth <input type="checkbox"/> In a mechanical room	
		<input type="checkbox"/> In confined space <sup>1</sup> <input type="checkbox"/> In an oxygen deficient atmosphere <sup>1</sup> <input type="checkbox"/> Other: _____	
<b>Respiratory protection use:</b>		<b>Hazard concentration:</b>	
<input type="checkbox"/> Half face respirator <input type="checkbox"/> Full face respirator <input type="checkbox"/> Air line respirator <input type="checkbox"/> PAPR <input type="checkbox"/> Disposable facepiece (NRP series)		<input type="checkbox"/> Chemical Cartridge (white, black, yellow, green or olive label) <input type="checkbox"/> HEPA filter (purple label) <input type="checkbox"/> Combination <input type="checkbox"/> Dust/surgical mask <input type="checkbox"/> None	
		<input type="checkbox"/> Unknown <input type="checkbox"/> Known (please provide sampling data)	

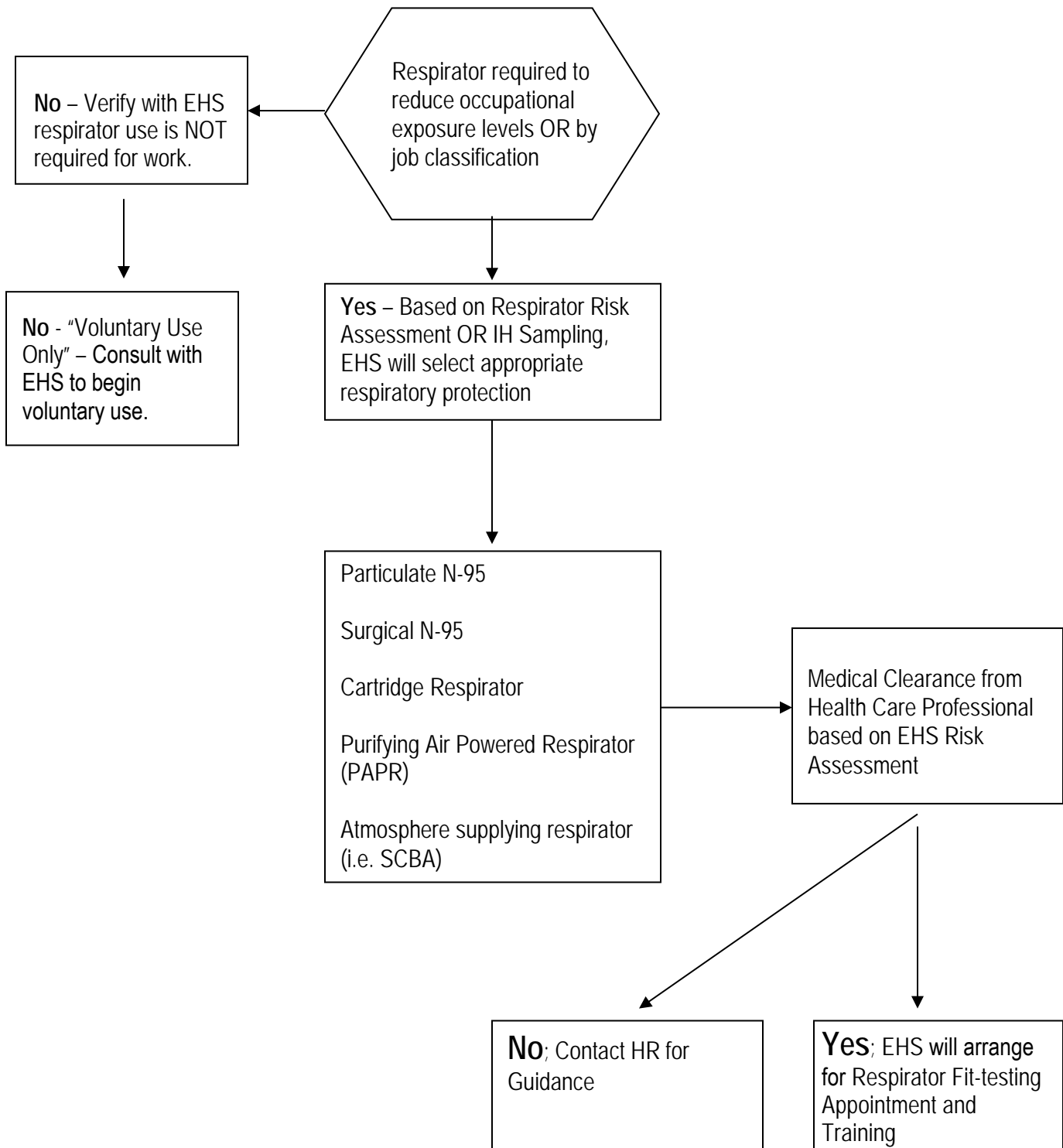
- <sup>1</sup>If you need to perform work in these environments please contact EHS at 831-7790 for an exposure assessment
- Please submit completed form to [ehs@radford.edu](mailto:ehs@radford.edu) for processing. Fax – 540-831-6476

### Environmental Health and Safety Respiratory Protection Program

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#### APPENDIX B

#### *Respirator Decision Flow Chart*



## Appendix C: Respirator Cartridge Change Schedule

**RESPIRATOR CARTRIDGE CHANGE SCHEDULE**

All air-purifying respirators used for protection against gases and vapors must have an end-of-service-life indicator (ESLI) or have a cartridge change schedule that is based on objective information or data to ensure that canisters or cartridges are changed before the end of their service life. The following change schedule is determined based on OSHA standards, manufacturer's recommendations, and the ACGIH "rule of thumb".

<b>CONTAMINANT</b>	<b>CHANGE SCHEDULE</b>
Acrylonitrile	End of shift
Ammonia	Maximum 8 hours use total (up to 125 ppm)
Benzene	Beginning of shift
Butadiene	every 1, 2, or 4 hours dependent on concentration (according to 29CFR1910.1051 Table 1) , and at beginning of each shift
Formaldehyde	3 hours or end of shift (whichever comes first)
HCl, SO <sub>2</sub> , Chlorine	Maximum one shift
Methylene Chloride	No approved cartridges or canisters - must use supplied air
Nitric Acid	No approved cartridges or canisters - must use supplied air
Organic Vapors	Maximum 8 hours use total (up to 200 ppm)
Vinyl chloride	End of shift
All Cartridges for Emergency Use	Discard after use
HEPA filters	Restricted breathing or visibly dirty, wet, or compromised
Filtering dust masks	Visibly dirty/contaminated

### **Respiratory Protection** (Voluntary Use – Filtering Facepiece ONLY)

#### **Appendix D to Sec. 1910.134 (Mandatory) 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 respirators 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.

## Approved Respirator List and Typical Uses

### Respirators Approved for University Work

<b>Type</b>	<b>Style</b>	<b>Intended Use(s)<sup>1</sup></b>	<b>Respirator Description</b>
Air Purifying	½ Face, Disposable (2-strap, NIOSH approved)	Nuisance particulates where concentration is anticipated to be below any applicable action limits	Disposable nuisance dust/particulate mask, NIOSH approved (N,R,P) 95
	½ Face, Disposable (2-strap, NIOSH approved)	Animal dander, chemical particulates, or unidentified suspicious material where particulate respiratory protective is desired	NIOSH approved (N,R,P) 95, 99, and 100, filtering facepieces
	½ Face, Disposable (2-strap, NIOSH approved)	Potential exposure to tuberculosis or other infectious aerosols in clinical/healthcare settings	NIOSH approved (N,R,P) 95, 99, and 100, filtering facepieces
	½ Mask, Reusable	Asbestos, other toxic dusts/aerosols/mists/fumes, organic vapors, acid gases/mists, etc.	NIOSH/MSHA approved, form-fitting polymer facepiece mask with appropriate filters and/or cartridges
	Full-Face Reusable	Asbestos, other toxic dusts/aerosols/mists/fumes, organic vapors, formaldehyde, acid gases/mists, etc., lachrymators	NIOSH/MSHA approved, form-fitting polymer facepiece mask with appropriate filters and/or cartridges or large capacity single canister
	Powered air purifying respirator (PAPR)	Asbestos, other toxic dusts/aerosols/mists/fumes, organic vapors, acid gases/mists, etc.	NIOSH/MSHA approved, positive pressure, with battery, minimum 6cfm, with appropriate filters and/or cartridges
	Powered air purifying respirator (PAPR)	Potential exposure to tuberculosis or other infectious aerosols in clinical/healthcare settings	NIOSH/MSHA approved, positive pressure, with battery, minimum 6cfm, with HEPA filters
Air Supplying	Self-contained breathing apparatus (SCBA)	Emergency conditions with unknowns, high concentrations of toxic materials, potential oxygen-deficient environments, back-up rescue/assistance teams. Normal operations when respiratory protection is required/desired and no approved air purifying cartridge/filter available.	Positive pressure-demand self-contained breathing apparatus with minimum 30 min. air supply cylinder, low air alarm.

<sup>1</sup> Respirators may not be used in an environment that is anticipated to exceed its maximum use concentration

**Appendix B-1 to § 1910.134: User Seal Check Procedures (Mandatory)**

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 in this appendix, 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. Facepiece Positive and/or Negative Pressure Checks*

*A. Positive pressure check.* Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. 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.* 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), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. 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. If the facepiece 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*

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.



**Appendix B-2 to § 1910.134: Respirator Cleaning Procedures (Mandatory)**

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in Appendix B- 2. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix B-2, i.e., 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.

*I. Procedures for Cleaning Respirators*

A. 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.

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. 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 facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all components work properly.

**(Mandatory) OSHA Respirator Medical Evaluation Questionnaire  
For Personal Protective Equipment Use**

To the <b>EMPLOYER</b> : Answers to questions in Section 1, and to question 9 in section 2 of Part A do not require a medical examination.			
To the <b>EMPLOYEE</b> :	Can you read?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place convenient to you.</i>			

To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

**Part A. Section 1. (Mandatory)** The following information must be provided by every employee who has been selected to use any type of respirator (please print).

Today's date / /	Your Name	Company <b>Avraham Boruchowitz Radford University</b>	SSN	Date of Birth / /
Sex <input type="checkbox"/> Male <input type="checkbox"/> Female	Your age (to nearest # of years)	Height ft. in	Weight lbs.	Your job title:
Address:				
A phone number where you can be reached by the health care professional who reviews this questionnaire (with Area Code):				( )
The best time to phone you at this number:		AM	PM	
Has your employer told you how to contact the health care professional who will review this questionnaire?				<input type="checkbox"/> Yes <input type="checkbox"/> No

<b>Check the type of respirator you will use :</b> (you can check more than one category)	
a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).	
b. _____ Other type (for example, half- or full-face piece type, powered-air purifying, supplied-air, Self-contained breathing apparatus).	
Have you worn a respirator <input type="checkbox"/> Yes <input type="checkbox"/> No	If "yes," what type(s)

**Part A. Section 2. (Mandatory)** Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator.

<b>1. Do you <i>currently</i> smoke tobacco, or have you smoked tobacco in the last month?</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>2. Have you <i>ever had</i> any of the following conditions?</b>		
Seizures (fits)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Diabetes (sugar disease)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Allergic reactions that interfere with your breathing	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Claustrophobia (fear of closed-in places)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Trouble smelling odors	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>3. Have you <i>ever had</i> any of the following pulmonary or lung problems?</b>		
Asbestosis	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Asthma	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Chronic bronchitis	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Emphysema	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Pneumonia	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Tuberculosis	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Silicosis:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Pneumothorax (collapsed lung)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Lung cancer	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Broken ribs	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any chest injuries or surgeries	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any other lung problem that you've been told about	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>4. Do you <i>currently</i> have any of the following symptoms of pulmonary or lung illness?</b>		
Shortness of breath	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Shortness of breath when walking fast on level ground or walking up a slight hill or incline	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Shortness of breath when walking with other people at an ordinary pace on level ground	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have to stop for breath when walking at your own pace on level ground	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Shortness of breath when washing or dressing yourself	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Shortness of breath that interferes with your job	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Coughing that produces phlegm (thick sputum/mucous)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Coughing that wakes you early in the morning:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Coughing that occurs mostly when you are lying down	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Coughing up blood in the last month	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Wheezing	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Wheezing that interferes with your job?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Chest pain when you breathe deeply	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Other symptoms you think may be related to lung problems	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>5. Have you <i>ever had</i> any of the following cardiovascular or heart problems?</b>		
Heart attack	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Stroke	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Angina	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Heart failure	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Swelling in your legs or feet (not caused by walking)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Heart arrhythmia (heart beating irregularly)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
High blood pressure	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any other heart problem that you've been told about	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>6. Have you <i>ever had</i> any of the following cardiovascular or heart symptoms?</b>		
Frequent pain or tightness in your chest	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Pain or tightness in your chest during physical activity	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Pain or tightness in your chest that interferes with your job	<input type="checkbox"/> Yes	<input type="checkbox"/> No
In the past two years, have you noticed your heart skipping or missing a beat	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Heartburn or indigestion that is not related to eating:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any other symptoms that you think may be related to heart or circulation problems	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>7. Do you <i>currently</i> take medication for any of the following problems?</b>		
Breathing or lung problems	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Heart trouble	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Blood pressure	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Seizures (fits)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>8. If you've used a respirator, have you <i>ever had</i> any of the following problems?</b> (If you've never used a respirator, check the following space and go to question 9).		
Eye irritation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Skin allergies or rashes	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Anxiety	<input type="checkbox"/> Yes	<input type="checkbox"/> No

General weakness or fatigue	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any other problem that interferes with your use of a respirator	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire?</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

*Questions below must be answered by every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.*

<b>10. Have you ever lost vision in either eye (temporarily or permanently)</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>11. Do you currently have any of the following vision problems:</b>		
Wear contact lenses	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Wear glasses	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Color blind	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any other eye or vision problem	<input type="checkbox"/> Yes	<input type="checkbox"/> No

<b>12. Have you ever had an injury to your ears, including a broken ear drum</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>13. Do you currently have any of the following hearing problems?</b>		
Difficulty hearing	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Wear a hearing aid:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any other hearing or ear problem	<input type="checkbox"/> Yes	<input type="checkbox"/> No

<b>14. Have you ever had a back injury</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>15. Do you currently have any of the following musculoskeletal problems:</b>		
Weakness in any of your arms, hands, legs, or feet	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Back pain	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Difficulty fully moving your arms and legs	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Pain or stiffness when you lean forward or backward at the waist.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Difficulty fully moving your head up or down	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Difficulty fully moving your head side to side	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Difficulty bending at your knees	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Difficulty squatting to the ground	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Climbing a flight of stairs or a ladder carrying more than 25 lbs.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any other muscle or skeletal problem that interferes with using a respirator	<input type="checkbox"/> Yes	<input type="checkbox"/> No

***Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.***

In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions	<input type="checkbox"/> Yes	<input type="checkbox"/> No
At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "yes," name the chemicals if you know them:		

<b>Have you ever worked with any of the materials, or under any conditions, below:</b>		
Asbestos	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Silica (as in sandblasting)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Tungsten/cobalt (e.g., grinding or welding this material)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Beryllium:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Aluminum	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Coal (for example, mining)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Iron	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Tin	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Dusty environments	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any other hazardous exposures	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If "yes," describe these exposures</i>		
List your previous occupations		
List your current and previous hobbies		
Have you been in the military services?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If yes, were you exposed to biological or chemical agents (either in training/ combat)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have you ever worked on a HAZMAT team		
Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the counter medications)		
If "yes," name the medications if you know them		
Will you be using any of the following items with your respirator(s)?		
HEPA Filters	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Canisters (for example, gas masks)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Cartridges:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
How often are you expected to use the respirator(s)? ( <i>check Yes/No for all answers that apply.</i> )		
Escape only (no rescue)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Emergency rescue only	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Less than 5 hours per week	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Less than 2 hours per day	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2 to 4 hours per day	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Over 4 hours per day	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>During the period you are using the respirator(s), is your work effort:</b>		
<b>a. Light</b> (less than 200 kcal per hour)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "yes," how long does this period last during the average shift: _____ hrs. _____ mins. Examples of a light work effort are <i>sitting</i> while writing, typing, drafting, or performing light assembly work; or <i>standing</i> while operating a drill press (1-3 lbs.) or controlling machines.		
<b>b. Moderate</b> (200 to 350 kcal per hour)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "yes," how long does this period last during the average shift: _____ hrs. _____ mins. Examples of moderate work effort are <i>sitting</i> while nailing or filing; driving a truck or bus in urban traffic; <i>standing</i> while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; <i>walking</i> on a level surface about 2 mph or down a 5-degree grade about 3 mph; or <i>pushing</i> a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.		

<b>c. Heavy</b> (above 350 kcal per hour)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "yes," how long does this period last during the average shift: _____ hrs. _____ mins. Examples of heavy work are <i>lifting</i> a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; <i>walking</i> up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).		
Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If "yes," describe this protective clothing and/or equipment		
Will you be working under humid conditions	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Will you be working under hot conditions: (temperature exceeding 77 degrees F)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Describe the work you'll be doing while you're using your respirator(s):		

Describe any special or hazardous conditions you might be in when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

<b>Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):</b>
<b>a. Name of the first toxic substance:</b> _____ Estimated maximum exposure level per shift: _____ Duration of exposure per shift: _____
<b>b. Name of the second toxic substance:</b> _____ Estimated maximum exposure level per shift: _____ Duration of exposure per shift: _____
<b>c. Name of the third toxic substance:</b> _____ Estimated maximum exposure level per shift: _____ Duration of exposure per shift: _____
List the name of any other toxic substances that you'll be exposed to while using your respirator:
Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others: (for example: rescue, security)