

Respiratory Protection Program

(EHS Program Manual 7.1)



1.0 Introduction

Weill Cornell Medicine (WCM) recognizes the existence of chemical, particulate, or biological air contaminants, and the possible presence of oxygen-deficient atmospheres, where respiratory protection is required. The Occupational Health and Safety Administration (OSHA) under its Respiratory Protection Standard (**29 CFR 1910.134**) mandates establishing policy and procedures for employees who must or choose to wear respiratory protection. This document serves as the formal written program for WCM, and Environmental Health and Safety (EHS) personnel will review it periodically to address its efficacy and maintain provisions as deemed necessary.

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3.0 Objective

This program aims to ensure that all faculty, staff, students, patients, and visitors at WCM are adequately protected against workplace hazards through assessment, medical clearance, respirator assignment, and fit testing. Assessments are made based on the types and concentrations of hazards present. Exposure monitoring may be performed to determine hazard severity. The determination on whether respiratory protection is necessary and what type is to be used will be made based on these assessments.

This program complies with the Occupational Safety and Health Administration’s (OSHA) Respiratory Protection Standard, 1910.134.

4.0 Applicability

The Respiratory Protection Program applies to all members of the WCM community who need to use respiratory protection while conducting work tasks.

The following departments have been identified as having work tasks where individuals **need or may potentially need** to use respiratory protection while performing their work duties:

- Engineering and Maintenance personnel
- All BSL-3 and certain BSL-2 lab users
- Research Animal Resource Center staff
- Personnel in other laboratories identified as working with specified hazards where respiratory protection is needed
- Clinical personnel and students in areas where high-risk procedures are done or who will likely come into direct contact with high-risk patients is performed
- EHS Spill Response Team personnel

The above list is not exhaustive. Employees in other departments may require respiratory protection, depending on their specific duties.

5.0 Responsibilities

5.1 ENVIRONMENTAL HEALTH AND SAFETY (EHS)

Environmental Health and Safety must:

- Act as the Program Administrator for the Respiratory Protection Program.
- Ensure the Medical College’s compliance with the Respirator Program.
- Develop, evaluate, and maintain the Respiratory Protection Program.
- Identify known work activities and exposures requiring respiratory protection.
- Conduct hazard and exposure assessments, addressing types of hazards and hazard levels.
- Provide a variety of types of respiratory protection for selection and fit testing.
- Recommend to users and supervisors the types of respiratory protection that need to be purchased.
- Obtain medical evaluation clearances conducted by Workforce Health and Safety (WHS) from employees.
- Provide annual fit testing, training, and resource documents for all respirator users.
- Maintain training and fit testing records.
- Evaluate this Program as necessary.

5.2 PRINCIPAL INVESTIGATORS, PHYSICIANS’ ORGANIZATION, AND DEPARTMENT ADMINISTRATORS

Principal Investigators, Physicians’ Organization, and Department Administrators must:

- Ensure their departments and personnel comply with the requirements of this Program.
- Provide respirators as recommended by the Respiratory Program Administrator.

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- Alert EHS of new chemical usage or new procedures where hazard assessments are necessary to determine exposure.

5.3 FACILITIES MANAGEMENT / MAINTENANCE

The Department of Engineering and Maintenance must:

- Ensure the department and its employees comply with the requirements of this Program.
- Provide respirators as recommended by the Respiratory Program Administrator.
- Alert EHS of new chemical usage or new procedures where hazard assessments are necessary to determine exposure.
- Inform outside contractors of which areas respiratory protection is required, and ensure they comply with their program.

5.4 WORKFORCE HEALTH AND SAFETY (WHS)

The Department of Workforce Health and Safety must:

- Conduct initial medical evaluations.
- Request medical tests, consultations, or diagnostic tests.
- Administer the OSHA Medical Questionnaire.
- Develop written procedures for managing medical evaluations.
- Provide employees, upon request, with written documentation of the results of medical evaluations.

5.5 STUDENT HEALTH SERVICES

WCM Student Health Services must:

- Conduct initial medical evaluations.
- Request medical test, consultations, or diagnostic tests.
- Administer the OSHA Medical Questionnaire.
- Develop written procedures for managing medical evaluations.

5.6 RESPIRATOR USERS

All WCM personnel whose duties require respiratory equipment must:

- Wear appropriate respiratory protection when performing work that involves respirable hazards.
- Use respirators in accordance with instructions and training received.
- Store and maintain respiratory equipment as required by manufacturers' instructions and training received.
- Clean respiratory equipment according to training received for reusable respirators.
- Limit facial hair growth to lengths/patterns that will not interfere with proper respiratory device fit and seal (see [Appendix D](#)).
- Evacuate contaminated areas during any respirator malfunction or change in conditions that render the respirator ineffective for the hazards present.
- Perform a proper check as demonstrated during training whenever donning the respirator.
- Change out filters and cartridges as per training received.
- Inform supervisors of any significant weight gain or loss, dental surgery, or other changes in facial structure that would require additional fit testing.

6.0 Respirator Types and Filters / Cartridges

A variety of respiratory protection options are available based on the hazards present. Examples of respirators and equipment that apply to this program include the items detailed below.

6.1 RESPIRATORS

- N-95 respirators
- P-95 respirators
- Half-face negative pressure respirators
- Full-face negative pressure respirators

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- Powered Air Purifying Respirator (PAPR) (positive pressure respirator)
- Self-Contained Breathing Apparatus (SCBA) (positive pressure respirator)
- Other types of NIOSH-approved respirators identified as part of this program

Note: KN-95 respirators are not NIOSH-approved and may *not* be used in areas where respirators are required. These masks have been found to provide inadequate protection and are not sufficient substitutes for N-95 respirators.

6.2 FILTERS, CARTRIDGES AND OTHER ACCESSORIES

- N-95, P-95, N-99 particulate filters
- P-100 (HEPA) 99.97% particulate filters
- Organic vapor, acid gas, ammonia/amines cartridges
- Formaldehyde, mercury cartridges
- Spectacle kits for full face-piece
- Other types of NIOSH-approved filters, cartridges, and accessories identified as part of this program

6.3 SURGICAL MASKS

As a surgical mask will not protect a user against inhaled hazards, **a surgical mask is *not* considered a respirator**. Therefore, it cannot be used in place of a respirator in areas where respiratory protection is required. A NIOSH-approved respirator appropriate for the hazards present must be used in these areas.

7.0 Duties That May Require Respiratory Protection

EHS evaluates various duties to determine if they require respiratory protection. Some, but not all, of the tasks performed at WCM that need respiratory protection are as described in the sections to follow.

7.1 LABORATORY WORK

- Research under all Biosafety Level (BSL) 3 or certain BSL 2, where respiratory protection has been determined necessary through an evaluation.
- Technical procedures, such as pressuring liquids, sonicating, and grinding or sawing primate tissue that present a high rate of aerosolizing materials.
- Procedures where infectious materials that are generally handled inside biological safety cabinets cannot be performed inside the cabinet (e.g., microscopy).
- Handling regulated medical or chemical waste.
- Work with certain hazardous chemicals with or without a chemical hood.

7.2 CLINICAL WORK

- Entering the room of a patient on respiratory isolation or providing ER consultations.
- Administering aerosolized ribavirin to patients with respiratory syncytial virus (RSV).
- Performing or assisting at a procedure on a patient with known or suspected tuberculosis or other communicable respiratory infections, including COVID-19. Clinical areas with reasonably anticipated exposure to patients with contagious respiratory infections should have a sufficient number of personnel who are trained and fitted for respirator use to be able to administer the necessary care.

Note: Employees in non-WCM owned/operated spaces must comply with the host institution's Respiratory Protection Policy.

7.3 FACILITIES

- Chemical fume hood repair.
- Filter changes on HVAC systems.
- Painting and working with paint products.
- Welding.
- Grinding, sanding, and cutting.
- Maintaining and treating water systems.

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- Any work conducted in the BSL3 area or other hazardous areas while they are “live”.

7.4 OUTSIDE CONTRACTING

- Asbestos abatement activities.
- Lead abatement activities.
- Mold abatement activities.
- Any work where the contractor determines respiratory protection is required.

7.5 OTHER

- Chemical waste collection and consolidation.
- Emergency response.
- Any condition that creates an “Immediately Dangerous to Life or Health” (IDLH) situation.

Note: Air-purifying respirators [APR] are **not** effective in IDLH situations. Anybody working in IDLH conditions *must* utilize atmosphere-supplying respirators, such as self-contained breathing apparatus (SCBA).

7.6 PUBLIC HEALTH EMERGENCIES

During a public health emergency, such as a pandemic or situation where airborne hazards are widespread in public areas, respiratory protection may be required in areas or during tasks where they were not required previously. When a public health emergency is in effect, or during other outstanding circumstances, the duties and specific regulations in this plan may be superseded by federal, state, or local governmental regulations. An effort will be made to keep institutional guidelines as up-to-date as possible to reflect current situations. Current institutional guidelines may be found at [WCM Central](#), for WCM spaces, and [Infonet](#), for New York Presbyterian (NYP) spaces.

8.0 Program Administration

8.1 DETERMINING RESPIRATOR USAGE

EHS has several methods for determining if a work duty requires the use of a respirator. These include:

- Hazard Assessment through personal exposure monitoring when the chemical hazard is known, but the exposure levels need to be determined.
- Identification of job functions requiring respiratory protection based on the types of hazards present. In addition to duties previously listed, other job functions may be identified as needing respiratory protection.
- Performing an environmental or safety assessment based on physical or other hazards present, or unknown hazards, that could constitute the need for using respiratory protection.

8.2 HEALTH HAZARD EVALUATION

WHS will perform a health evaluation before the assignment of respirator usage.

- A questionnaire ([Appendix B](#)) will be given to the employee to be completed. An evaluation regarding the employee’s ability to utilize a respirator will be made based on the information supplied in the questionnaire.
- WHS will review the questionnaire and follow up with a physical exam. On the passing of the exam, the employee will receive a signed copy of the respiratory clearance form.

8.3 FIT TESTING

Once the medical clearance is issued, Environmental Health and Safety will review the medical clearance form and perform the following:

- Fit test the employee for the respiratory protection needed, based on the criteria in [Section 8.1](#) (Determining Respirator Usage)
- Offer a selection of sizes and brands for the respirator classification needed. All respirators, filters, and cartridges must be NIOSH approved.

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- Fit test the employee based on the OSHA fit test protocols for that particular type of respirator and filtering media ([Appendix C](#)). Qualitative fit testing may be performed for any respirator with an assigned protection factor (APF) of 10 or less, but any respirator with an APF greater than 10 requires quantitative fit testing in order for it to be used accounting for the higher APF.
- Train the employee on the functionality, limitations, and proper donning, doffing, care, cleaning, and fit checking of the respirator.
- Complete the fit test record ([Appendix A](#)) and have the employee sign it. Employees who are using respirators on a voluntary basis and do not meet the criteria in section 8.1 need to complete the form and check the box in the section at the bottom of the form. They must receive medical clearance, be fit tested, and receive the standard training for respiratory protection.
- Require those employees with excessive facial hair to trim it to acceptable levels (examples of which can be found in [Appendix D](#)) and return to be retested.
- Work with supervisors to provide a spectacle kit to insert in the respirator for any employee who requires corrective eyewear and who must be able to wear full-face respiratory protection. The employee will have their prescription made up for the spec insert at no cost to them.
- In case of failure to pass the fit test or inability for the employee to be fit tested, including if the employee has facial hair for religious reasons, notify the employee, Workforce Health and Safety, and the employee's supervisor of failure to pass a fit test, and ensure a loose-fitting Powered Air Purifying Respirator (PAPR) is available for the employee while performing any duties requiring a respirator.

8.4 RE-EVALUATION AND ANNUAL FIT TESTING

- Annual fit testing and training are required for all personnel assigned respiratory protection.
- Any changes in the job activities or hazards they are working with must be reported for a new evaluation to occur.
- Any changes in the person's health or facial structure requires that the person be re-fit tested prior to the scheduled annual test.

9.0 User Responsibilities

9.1 FIT CHECK PROTOCOLS

When putting on respiratory protection, the first thing the wearer must do is perform a positive and negative pressure fit (seal) check procedure. This procedure helps ensure that the respirator has been put on correctly and that there are no leaks where contaminants can enter.

9.1.1 Disposable Respirators

Gently cup both hands and place them along the edges of the respirator. Inhale and exhale a few times. Feel if any air is entering or escaping along the edges of the respirator, particularly around the nose and chin areas.

9.1.2 Positive Pressure Checks

Close off the exhalation valve with the palm of your hand and exhale gently into the facepiece. The face mask is considered satisfactory if a slight positive pressure can be built up inside the face-piece, without any evidence of outward leakage of air at the seal. For some respirators, this method of leak testing requires the wearer to remove the exhalation valve cover before closing off the exhalation valve, and then to carefully replace it after the test.

9.1.3 Negative Pressure Checks

Close off the inlet opening of the canister or cartridge(s) by covering with the palms of the hands or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold breath for ten seconds. Note that the design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. In these cases, the test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the face-piece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

9.1.4 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 procedure, provided that the employer demonstrates that the manufacturer's procedure is equally effective.

Consult the [OSHA website](#) for more information.

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9.2 RESPIRATOR INSPECTION

Non-disposable, air purifying, and supplied-air respirators need to be checked prior to donning to ensure proper working order. The respirators and their assemblies must be cleaned and stored properly after each use to ensure that the wearer receives the maximum protection. Follow the inspection steps below to inspect respiratory equipment properly.

1. Examine the rubber or silicone face-piece for the following:
 - Excessive dirt or debris
 - Cracks, holes, or tears
 - Inflexibility or distortion in rubber
 - Scratched or cracked lenses (for full-face)
2. Examine straps or harness for:
 - Tears or breaks
 - Loss of elasticity
 - Broken buckles or clips
3. Examine inhalation/exhalation valves for:
 - Foreign matter
 - Missing gaskets
 - Cracks and tears
 - Improper installation of valves in body
4. Examine air-purifying elements for:
 - Correct cartridge, canister, or filter for hazard
 - Appropriate brand of filter/cartridge with the brand of respirator
 - Adequately threaded on the mask
 - Expired, laden, or depleted filters, cartridges, etc.

9.3 RESPIRATOR MAINTENANCE AND CARE

The following steps must be taken to clean the respiratory equipment properly:

1. Remove filters/cartridges or canisters. Disassemble face-pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
2. For simple cleaning, use one of the available wipe pads specifically designed for respirator cleaning. This will disinfect the respirator and clean it after use while helping preserve its integrity.
3. For a more thorough cleaning, wash components in warm (43° C [110°F] maximum) water with a mild detergent, or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
4. Rinse components thoroughly in clean, warm (43° C [110°F] maximum), preferably running water. Drain.
5. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - A hypochlorite solution (50 ppm chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43° C [110°F];
 - An aqueous solution of iodine (50 ppm) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide /100cc of 45% alcohol) to one liter of water at 43° C [110°F]; or
 - Another commercially available cleanser of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
6. Rinse components thoroughly in clean, warm (43° C [110°F] maximum), preferably running water into a drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on pieces that come into direct contact with

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the face may cause dermatitis. In addition, some disinfectant may cause deterioration of rubber or corrosion of metal parts if not completely removed.

7. Components should be hand-dried with a clean lint-free cloth or air-dried.
8. Reassemble face-piece, replacing filters, cartridges, and canisters when necessary.
9. Fit check the respirator to ensure that all components work properly.

OSHA Procedures for Cleaning Non-Disposable Respirators are available on the [OSHA website](#).

10.0 Training

EHS provides initial and annual respiratory training and fit testing to WCM employees. The training shall be appropriate to the level of protection needed to perform tasks without risk of personal exposure. All training shall be conducted in a manner that is understandable by all employees, regardless of educational level or language ability.

WCM employees in the Respiratory Protection Program shall be trained to demonstrate knowledge of:

- The importance of the respirator and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
- The limitations and capabilities of the respirator;
- How to put on, inspect, use, remove, and check for seals of the respirator;
- How to clean, maintain and store the respirator;
- 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; and
- Understanding of the general requirements of OSHA's Respiratory Protection Standard.

Respiratory protection retraining is required annually and must be conducted when the following situations arise:

- Changes in the types of hazards used in the workplace.
- Changes in the model, size, or type of respirator the employee uses.
- Inadequacies in the employee's knowledge are demonstrated, or use of the respirator indicates that the employee has not retained the needed understanding or skill.
- Any other situation arises in which retraining appears to be necessary.

11.0 Record Retention, Availability, and Revisions

Training records, completed fit testing forms, and medical clearance forms are kept in the Office of Environmental Health and Safety and digitally on the EHS shared drive.

The fit testing form, which serves as the respirator training record as well, includes the individual's name, department, ID number (CWID), and signature; as well as brand, size, and type of respirator. These forms also include the trainer/fit tester's name and the date(s) of training/fit testing.

Training and fit testing records shall be retained in compliance with 29 CFR 1910.134(m). Medical Records shall be retained as required by 29 CFR 1910.1020.

12.0 Voluntary Respirator Usage

Respirators are an effective method of protection against designated hazards when appropriately selected and worn. Use of respirators 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, the wrong respirator is used, or the respirator is not kept clean; the respirator itself can become a hazard, even if the amount of hazardous substance does not exceed the limits set by OSHA or ACGIH standards. If an employee's department provides respirators for voluntary use, or if the employee provides their own respirator, the employee needs to take certain precautions to be sure that the respirator itself does not present a hazard.

Employees engaging in voluntary respirator usage are subject to all the requirements of the Respiratory Protection Program. As such, they are required to be trained, medically cleared, and fit tested annually. They are also required to wear respirators properly, with all necessary considerations of respirator use, such as not having excessive facial hair that would block the seal of the respirator, using respirators in a safe manner, and complying with all annual requirements of this program.

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Employees who choose to don respirators voluntarily should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator packaging. It will indicate what the respirator is designed for, and how much it will protect the user.
3. Avoid wearing respirators in atmospheres containing contaminants or conditions that the respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect users against gases, vapors, or very small solid particles of fume or smoke.
4. Keep track of their respirator so that they do not mistakenly use someone else's respirator.

For more information, please consult the [OSHA website](#).

13.0 Definitions

- **Aerosol:** Particles, solid or liquid, suspended in air.
- **Air-Purifying respirator (APR):** A respirator that passes ambient air through an air-purifying element that removes the contaminant(s), either by means of breathing action or by a blower.
- **Assigned protection factor (APF):** The expected workplace level of respiratory protection that a properly functioning respirator or a class of respirators would provide to properly fitted and trained users. Half-face APR's have an APF of 10; full-face APR's have an APF of 50.
- **Atmosphere-supplying respirator:** A class of respirators that supply a respirable atmosphere, independent of the workplace atmosphere.
- **Canister/cartridge:** A container with a filter, sorbent, 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 face-piece only when a negative pressure is created inside the face-piece by inhalation.
- **Disposable respirator:** A respirator that is designed to be discarded after a single use.
- **Dust:** An aerosol consisting of mechanically-produced solid particles derived from the breaking up of larger particles. Dusts generally have a larger particle size when compared to fumes.
- **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 respirators user of the approach of the end of adequate respiratory protection, e.g., that the sorbent is approaching saturation or is no longer effective.
- **Filtering face-piece (respirator mask):** A negative pressure particulate respirator with a filter as an integral part of the face-piece, or with the entire face-piece composed of the filtering medium.
- **Fit Test:** The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test and Quantitative fit test)
- **Fume:** Solid aerosols formed by condensation of a gas or vapor.
- **Gas:** A fluid that has neither independent shape nor volume and tends to expand indefinitely.
- **Hazardous atmosphere:** An atmosphere that contains a contaminant(s) in excess of the exposure limit, or that is oxygen deficient.
- **Hazard ratio:** A number obtained by dividing the concentration of a contaminant by its exposure limit.
- **Immediately Dangerous to Life and 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 face-piece:** A respiratory inlet covering that is designed to form a partial seal with the face.

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- **Mist:** An aerosol composed of liquid.
- **Negative pressure respirator (tight-fitting respirator):** A respirator in which the air pressure inside the respiratory inlet covering is negative during inhalation with respect to the ambient air pressure and forms a complete seal with the face.
- **Oxygen deficient atmosphere:** An atmosphere with an oxygen content below 19.5% by volume.
- **Positive pressure respirator (loose-fitting respirator):** A respirator in which the pressure inside the respiratory inlet covering is normally positive with respect to ambient air pressure.
- **Powered air-purifying respirator:** An air-purifying respirator that uses a blower to force the ambient atmosphere through air-purifying elements to the inlet covering.
- **Pressure demand respirator:** A positive pressure, atmosphere-supplying respirator that admits respirable gas to the face-piece when the positive pressure is reduced inside the face-piece by inhalation.
- **Qualitative fit test:** A pass/fail fit test that relies on the subject's sensory response to detect the challenge agent.
- **Quantitative fit test:** An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage of potential contaminants into the respirator.
- **Respirator:** A personal device designed to protect the wearer from the inhalation of hazardous atmospheres.
- **Respiratory inlet covering:** The part of a respirator that connects the wearer's respiratory tract to an air-purifying device, a respirable gas source, or both. It may be a face-piece, helmet, hood, suit, or mouthpiece/nose clamp.
- **Self-Contained Breathing Apparatus (SCBA):** An atmosphere-supplying respirator in which the respirable gas source is designed to be carried by the wearer.
- **Service life:** The length of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.
- **Tight-fitting face-piece:** 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 correctly positioned on the face.
- **Vapor:** The gaseous phase of matter that normally exists in a liquid or solid state at room temperature.

14.0 References

14.1 APPLICABLE REGULATIONS AND STANDARDS

- Occupational Safety and Health Administration (OSHA). Respiratory Protection Standard, **29 CFR 1910.134**
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12716
- OSHA Respiratory Protection Standard, **29 CFR 1910.134 App A – Fit Testing Procedures**
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9780
- Centers for Disease Control. Guidelines for Preventing Transmission of Mycobacterium tuberculosis in Health Care Facilities, 1994.
- American National Standards Institute. American National Standard for Respiratory Protection. **ANSI Z88.2, 1992**
- American National Standards Institute. American National Standard for Respiratory Protection. Respirator Use, Physical Qualifications for Personnel (ANSI Z 88- 1984), 1984.

14.2 ADDITIONAL REFERENCES

- *Fundamentals of Industrial Hygiene*. Fifth Edition, National Safety Council.
- *Accident Prevention Manual for Business and Industry*. Tenth Edition, National Safety Council.

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Appendix A – WCM Fit Test Record

Respirator Training and Fit Test

The following form verifies your completion of Respirator Use training and the corresponding Respiratory Fit Test. This respiratory fit test is in adherence to the Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard, 29 CFR 1910.134 and American National Standards Institute Standard for Respiratory Protection, ANSI Z88.2.

Fit Test Administrator/Trainer:		
Name:	WCMC Email/CWID:	Department:
RESPIRATOR INFORMATION		
Please select one from the below:		
HALF FACE <input type="checkbox"/> Halyard FluidShield (N95) <input type="checkbox"/> Regular <input type="checkbox"/> Small <input type="checkbox"/> 3M 6210* Aura (N95) <input type="checkbox"/> 3M 1880 (N95) <input type="checkbox"/> 3M 1860S (N95) <input type="checkbox"/> Other: _____	FULL FACE <input type="checkbox"/> 3M 6700 <input type="checkbox"/> 3M 6800 <input type="checkbox"/> 3M 6900 <input type="checkbox"/> MSA Ultra Elite (Full Face), Size: <input type="checkbox"/> Large <input type="checkbox"/> Medium <input type="checkbox"/> Small <input type="checkbox"/> Other: _____	
Fit Test Method:	Fit Test Filter / Cartridge:	
<input type="checkbox"/> Saccharin <input type="checkbox"/> Bitrex <input type="checkbox"/> Portacount	<input type="checkbox"/> N/P95 <input type="checkbox"/> N/P99 <input type="checkbox"/> N/P100 <input type="checkbox"/> Other: _____	
FIT TEST RESULTS		
<input type="checkbox"/> PASSED <input type="checkbox"/> FAILED		
I certify that I have been trained in the use and care of respirators and fit tested with the respirator listed above. I also understand that the fit test is voided if the respirator is worn in conditions which prevent a good face seal (e.g., growth of a beard, significant weight fluctuation, or major dental work). If the Voluntary Respirator Use Agreement is checked "Yes" below, I understand and agree to all corresponding statements above it.		
Signature:	Date:	
Instructor and Fit Tester:	Date:	
EHS USE ONLY- VOLUNTARY RESPIRATOR USE AGREEMENT		
By EHS checking the "Yes" box below, the respirator user is agreeing to the following:		
I understand that the respirator which I am using in the performance of my duties at Weill Cornell Medical College is strictly intended to be used as protection against nuisance levels and that I am NOT using it in order to provide protection in a situation where there are hazardous concentrations or permissible exposure levels (PELs) of vapors, particles, smokes, fumes or mists set by the Occupation Health and Safety Administration (OSHA).		
I further understand that all employees who risk exposure to hazardous concentrations of vapors, particles, smokes, fumes or mists in the performance of their duties at WCMC are required to obtain mandatory respiratory safety training, medical evaluations, fit-testing, and the appropriate respiratory protection equipment.		
<input type="checkbox"/> Yes, the respirator user agrees to the Voluntary Respirator Use Agreement.		



Environmental Health and Safety
 TEL 646-962-7233 WEB weill.cornell.edu/ehs EMAIL ehs@med.cornell.edu
 Weill Cornell Medicine | 402 East 67th Street, Room LA-0020 | New York, NY 10065

Updated 03/21


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Appendix B – OSHA Respirator Medical Evaluation Questionnaire

NEWYORK-PRESBYTERIAN HOSPITAL
New York Weill Cornell Center



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OSHA RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE
OCCUPATIONAL HEALTH SERVICE

IF NO PLATE, PRINT NAME, SEX AND MEDICAL RECORD NO.

OSHA RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE

YOUR EMPLOYER MUST ALLOW YOU TO ANSWER THIS QUESTIONNAIRE DURING NORMAL WORKING HOURS, OR AT A TIME AND PLACE THAT IS CONVENIENT TO YOU. TO MAINTAIN YOUR CONFIDENTIALITY, YOUR EMPLOYER OR SUPERVISOR MUST NOT LOOK AT OR REVIEW YOUR ANSWERS. RETURN THIS QUESTIONNAIRE TO OCCUPATIONAL HEALTH SERVICE (OHS).

THE FOLLOWING INFORMATION MUST BE PROVIDED BY EVERY EMPLOYEE WHO HAS BEEN SELECTED TO USE ANY TYPE OF RESPIRATOR. PLEASE PRINT, OR PLEASE CIRCLE ONE OF THE ANSWERS TO THE FOLLOWING QUESTIONS:

<p>1. Today's date: _____ 2. Name: _____</p> <p>3. Age (to nearest year): _____ 4. Sex Male Female</p> <p>5. Height: _____ ft _____ in 6. Weight: _____ lbs</p> <p>7. Job title: _____</p> <p>8. Department: _____</p> <p>9. A daytime phone no. where you can be reached by the health care professional who reviews this questionnaire (including Area Code): _____</p> <p>10. The best time to phone you at this number: _____</p> <p>11. Check the type of respirator you will use (you can circle more than one category):</p> <ul style="list-style-type: none"> a. N, R, or P disposable respirator (isolation/TB/filter mask, non-cartridge type only). b. Other type (e.g. half- or full-face piece type, powered-air purifying, supplied-air, self-contained breathing apparatus). c. Unknown <p>12. Have you worn a respirator? yes no</p> <p style="font-size: x-small;">If "yes" what type(s) (circle all that apply):</p> <ul style="list-style-type: none"> a. particulate respirator (isolation/TB mask/filter mask) b. full face mask c. self-contained breathing apparatus d. other (explain) _____ <p>13. Do you currently smoke tobacco, or have you smoked tobacco in the last month? yes no</p> <p>14. Have you ever had any of the following conditions?</p> <ul style="list-style-type: none"> a. Seizures (fits) yes no b. Diabetes (sugar disease) yes no c. Allergic reactions that interfere with your breathing yes no d. Claustrophobia (fear of closed-in places) yes no e. Trouble smelling odors yes no 	<p>15. Have you ever had any of the following pulmonary or lung problems?</p> <table border="0" style="width: 100%; font-size: x-small;"> <tr><td>a. Asbestosis</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>b. Asthma</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>c. Chronic bronchitis</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>d. Emphysema</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>e. Pneumonia</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>f. Tuberculosis</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>g. Silicosis</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>h. Pneumothorax (collapsed lung)</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>i. Lung cancer</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>j. Broken ribs</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>k. Any chest injuries or surgeries</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>l. Any other lung problem that you've been told about</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> </table> <p>16. Do you currently have any of the following symptoms of pulmonary or lung illness?</p> <table border="0" style="width: 100%; font-size: x-small;"> <tr><td>a. Shortness of breath</td><td style="text-align: center;">- yes</td><td style="text-align: center;">no</td></tr> <tr><td>b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>c. Shortness of breath when walking with other people at an ordinary pace on level ground</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>d. Have to stop for breath when walking at your own pace on level ground</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>e. Shortness of breath when washing or dressing yourself</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>f. Shortness of breath that interferes with your job</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>g. Coughing that produces phlegm (thick sputum)</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>h. Coughing that wakes you early in the morning</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>i. Coughing that occurs mostly when you are lying down</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> <tr><td>j. Coughing up blood in the last month</td><td style="text-align: center;">yes</td><td style="text-align: center;">no</td></tr> </table>	a. Asbestosis	yes	no	b. Asthma	yes	no	c. Chronic bronchitis	yes	no	d. Emphysema	yes	no	e. Pneumonia	yes	no	f. Tuberculosis	yes	no	g. Silicosis	yes	no	h. Pneumothorax (collapsed lung)	yes	no	i. Lung cancer	yes	no	j. Broken ribs	yes	no	k. Any chest injuries or surgeries	yes	no	l. Any other lung problem that you've been told about	yes	no	a. Shortness of breath	- yes	no	b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline	yes	no	c. Shortness of breath when walking with other people at an ordinary pace on level ground	yes	no	d. Have to stop for breath when walking at your own pace on level ground	yes	no	e. Shortness of breath when washing or dressing yourself	yes	no	f. Shortness of breath that interferes with your job	yes	no	g. Coughing that produces phlegm (thick sputum)	yes	no	h. Coughing that wakes you early in the morning	yes	no	i. Coughing that occurs mostly when you are lying down	yes	no	j. Coughing up blood in the last month	yes	no
a. Asbestosis	yes	no																																																																	
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NEWYORK-PRESBYTERIAN HOSPITAL
New York Weill Cornell Center

**OSHA RESPIRATOR MEDICAL
EVALUATION QUESTIONNAIRE**
OCCUPATIONAL HEALTH SERVICE

IF NO PLATE, PRINT NAME, SEX AND MEDICAL RECORD NO.

- k. Wheezing yes no
 - l. Wheezing that interferes with your job yes no
 - m. Chest pain when you breathe deeply yes no
 - n. Any other symptoms that you think may be related to lung problems yes no
17. Have you ever had any of the following cardiovascular or heart problems?
- a. Heart attack yes no
 - b. Stroke yes no
 - c. Angina yes no
 - d. Heart failure yes no
 - e. Swelling in your legs or feet (not caused by walking) yes no
 - f. Heart arrhythmia (heart beating irregularly) yes no
 - g. High blood pressure yes no
 - h. Any other heart problem that you've been told about yes no
18. Have you ever had any of the following cardiovascular or heart symptoms?
- a. Frequent pain or tightness in your chest yes no
 - b. Pain or tightness in your chest during physical activity yes no
 - c. Pain or tightness in your chest that interferes with your job yes no
 - d. In the past 2 years, have you noticed your heart skipping or missing a beat yes no
 - e. Heartburn or indigestion that is not related to eating yes no
 - f. Any other symptoms that you think may be related to heart or circulation problems yes no
19. Do you currently take medication for any of the following problems?
- a. Breathing or lung problems yes no
 - b. Heart trouble yes no
 - c. Blood pressure yes no
 - d. Seizures (fits) yes no
20. If you've used a respirator, have you ever had any of the following problems?
(If you've never used a respirator, check the following space and go to question 21 ____.)
- a. Eye irritation yes no
 - b. Anxiety yes no
 - c. Skin allergies or rashes yes no
 - d. General weakness or fatigue yes no
 - e. Any other problem that interferes with your use of a respirator? yes no

- 21. Would you like to talk to the health care professional in OHS who will review this questionnaire about your answers to this questionnaire? yes no

STOP HERE UNLESS INSTRUCTED TO CONTINUE

- 22. Have you ever lost vision in either eye (temporarily or permanently)? yes no
- 23. Do you currently have any of the following vision problems?
 - a. Wear contact lenses yes no
 - b. Wear glasses yes no
 - c. Color blind yes no
 - d. Any other eye or vision problem yes no
- 24. Have you ever had an injury to your ears, including a broken ear drum yes no
- 25. Do you currently have any of the following hearing problems?
 - a. Difficulty hearing yes no
 - b. Wear a hearing aid yes no
 - c. Any other hearing or ear problem yes no
- 26. Have you ever had a back injury yes no
- 27. Do you currently have any of the following musculoskeletal problems?
 - a. Weakness in any of your arms, hands, legs, or feet yes no
 - b. Back pain yes no
 - c. Difficulty fully moving your arms and legs yes no
 - d. Pain or stiffness when you lean forward or backward at the waist yes no
 - e. Difficulty fully moving your head up or down yes no
 - f. Difficulty fully moving your head side to side yes no
 - g. Difficulty bending at your knees yes no
 - h. Difficulty squatting to the ground yes no
 - i. Difficulty climbing a flight of stairs or ladder carrying more than 25 lbs yes no
 - j. Any other muscle or skeletal problem that interferes with using a respirator yes no

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Appendix C – OSHA Fit Test Protocols

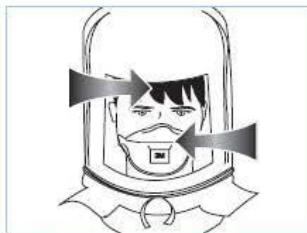
More information available in the [OSHA website](#).



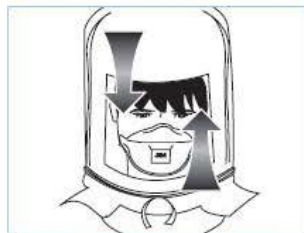
1. Breathe normally



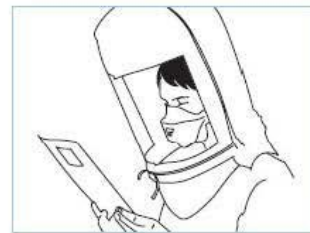
2. Breathe deeply



3. Head side to side



4. Head up and down



5. Talking



6. Bent over at waist



7. Breathe normally

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Appendix D – Facial Hair Styles and Respiratory Protection

Facial Hairstyles and Filtering Facepiece Respirators

CLEAN SHAVEN ✓	STUBBLE ✗	LONG STUBBLE ✗	FULL BEARD ✗	FRENCH FORK ✗	DUCKTAIL ✗	VERDI ✗	GARIBALDI ✗	BANDHOLZ ✗
SOUL PATCH ✓	GOATEE (Careful! Chin hair may easily cross the seal) ✗	CHIN CURTAIN ✗	EXTENDED GOATEE ✗	CIRCLE BEARD ✗	ANCHOR (Careful! Chin hair may easily cross the seal)	BALBO (Careful! Chin hair may easily cross the seal)	VAN DYKE ✗	IMPERIAL ✗
SIDE WHISKERS ✓	MUTTON CHOPS ✗	HULIHEE ✗	HORSESHOE (Careful not to cross the seal) ✓	ZAPPA ✓	WALRUS ✓	PAINTER'S BRUSH ✓	CHEVRON ✓	HANDLEBAR ✓
PENCIL ✓		TOOTHBRUSH ✓	LAMP SHADE ✓	ZORRO ✓	VILLAIN (Careful not to cross the seal)	FU MANCHU ✗	ENGLISH ✗	DALI ✗

*If your respirator has an exhalation valve, some of these styles may interfere with the valve working properly if the facial hair comes in contact with it.
 †This graphic may not include all types of facial hairstyles. For any style, hair should not cross under the respirator sealing surface.
 Source: OSHA Respiratory Protection Standard
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=12716
 Further Reading: NIOSH Respirator Trusted-Source Webpage
https://www.cdc.gov/niosh/npppt/topics/respirators/disp_part/respsource3fittest.html

Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

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