



American University

WASHINGTON, DC

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RISK MANAGEMENT &

ENVIRONMENTAL HEALTH & SAFETY SERVICES

# RESPIRATORY PROTECTION

**Document Type: Occupational Health & Safety Program**

**Date of Last Revision: October 31, 2024**

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[www.american.edu/finance/rmehs/](http://www.american.edu/finance/rmehs/)

## 1.0 Purpose

American University is committed to providing a safe and healthy work environment for its entire staff. Therefore, the following Respiratory Protection Program has been developed to minimize occupational exposure to particulates (dusts, fogs, fumes, smokes, and mists), chemical gases and vapors, and biological exposures. Exposure to these contaminants is preferentially mitigated by engineering and/or administrative controls. These methods are addressed in the Chemical Hygiene Plan as well as other work specific programs.

The respiratory protection program specifically addresses respiratory exposure control by means of personal protective equipment. Because respirators are classified as personal protective equipment, this program applies when the atmospheric hazards present cannot be satisfactorily mitigated using engineering controls, administrative controls, and/or substitution.

The Respiratory Protection Program is a key document used to assist AU in implementing and ensuring compliance with 29 CFR 1910.134, OSHA's respiratory protection standard. According to this standard, employers are required to establish a respiratory protection program whenever:

- Employees may be exposed to harmful concentrations of hazardous gases or vapors
- Employees may be exposed to harmful concentrations of airborne particulates including dusts, mists, fumes, and biological contaminants
- Employees may be exposed to oxygen deficient atmospheres
- This program applies to all American University departments and employees engaged in activities requiring respiratory protection. This program is operative at all AU facilities, laboratories, studios, and off-campus sites.

## 2.0 Roles and Responsibilities

Respiratory protection equipment is assigned and managed by the department or facility manager in conjunction with the respiratory protection plan program administrator. Respiratory protective equipment is considered mandatory when determined as such via a hazard assessment, by recommendation from a licensed healthcare professional, or by district mandate. When respiratory protective equipment is mandated, the department management and employees will comply with the requirements of this program.

Employees may elect to use respiratory protective equipment when it is not mandated. Non-mandatory/voluntary employee respirator use is addressed in the "Voluntary use" section of this program.

### 2.1 Environmental Health & Safety (EH&S) Roles

- Institute and administer this program
- Identify and designate a Respiratory Protection Program Administrator
- Identify or approve Licensed Healthcare Providers for respirator related medical surveillance.
- Identify or approve qualified individuals for respirator fit testing

## 2.2 Respiratory Protection Program Administrator Role

- Maintain, review, and update this program annually and whenever necessary to include new or modified tasks or procedures
- Conduct hazard assessments
- Conduct and/or coordinate employee exposure monitoring
- Review all exposure monitoring
- Aid in the selection of respiratory protection equipment
- Review all fit test results
- Develop and conduct initial and annual respiratory protection training per the requirements of 29 CFR 1910.134
- Manage employee respirator-related medical surveillance
- Maintain respiratory protection program records

## 2.3 Supervisory Faculty and Staff Roles

- Verify proper use of respiratory protection equipment
- Verify that respirators are used and maintained according to the requirements in this document
- Coordinate with the respiratory protection program administrator to
  - Monitor work areas and tasks for identification of respiratory hazards
  - Schedule employee medical surveillance, fit testing, and training
  - Provide final determination of respiratory protection devices

## 2.4 Respirator User Roles

- Use the assigned respirator in the manner intended and in accordance with manufacturer's instructions and training received
- Comply with instructions for respirator assignment, fit testing, cleaning, repair, and storage
- Inspect the respirator before each use
- Inform the program administrator of:
  - Concerns with respirator fit and/or condition
  - Questions/concerns with assigned respiratory protection
  - All respiratory hazards that the employee feels warrants assessment or inspection
  - Any symptoms of illness that may be related to respirator use or exposure to hazardous atmospheres
- Participate in annual medical surveillance
- Consult with the program administrator for voluntary use of N95 filtering face respirators (FFRs)

## 2.5 Medical Evaluation System Roles

- Perform initial and periodic medical evaluations to determine ability to use a respirator
- Provide a written evaluation of the employee's ability to use a respirator to the RPP Administrator

## 3.0 Exposure Assessment

Initially and/or whenever changes to existing processes, respiratory contaminants, or equipment are identified, the RPP administrator will arrange for a workplace exposure assessment. Based on data collected, the need for respiratory protection will be determined.

## 4.0 Risk Assessment

The Respiratory Protection Program is available to all employees, regardless of program enrollment status. The program is available upon request by the program administrator.

### 4.1 Respirator hazards

Respirators impart a specific set of hazards that assigned users will be made aware of during training. Examples of these hazards include:

- Potential communication disruption
- Increased stress on the cardio-pulmonary system when FFRs are used

### 4.2 Notification and Posting

All project sites and laboratories requiring respiratory protection will have appropriate signage at the entrances identifying the hazard(s) and all mandatory and/or recommended personal protective equipment.

All employees must be informed of the hazards in their workplace upon assignment. Employees participating in the RPP will also be informed of the nature of the specific hazards in their work environment(s) in conjunction with the hazards involved with respirator use.

## 5.0 Training

All employees enrolled in the Respiratory Protection Program will participate in initial and annual respiratory training. Initial and annual training will be assigned by the program administrator.

### 5.1 Training for Required or Assigned Respirator Use

Employees who are required or assigned a respirator for use in the workplace will undergo training, which will include:

- Review of this program and 29 CFR 1910.134
- Review of air purifying respirators
- Review of respirator filtration and sorbent media (particulate filters and chemical cartridges)
- Review of respirator protection factors

- Review of the specific respiratory hazards that the trainees are likely to be exposed,
- Review of medical surveillance requirements
- Proper use, cleaning/disinfection, maintenance, repair, and storage of assigned respirator(s)
- Instruction on performing seal checks
- Review of fit testing procedures and requirements
- Completion of a written test designed to assess and record the employee's understanding of the respiratory protection plan and its associated documents

## 6.0 Respirator Selection

### 6.1 General Considerations

The program administrator will conduct or review safety assessments for all task-specific respiratory hazards. The administrator will then select the appropriate filtration type for the hazardous contaminant. The program administrator will base respirator selection on the following:

- Identity and physical state of the potential contaminants – gas, vapor, dust, mist, fume, particulates, or combination
- The concentration of hazardous contaminants in the environment
- The chemical, toxicological, and or infectious properties of the contaminants
- Occupational exposure limits and recommendations, as indicated by OSHA, NIOSH, ACGIH, and AIHA
- Presence of oil mists
- Potential of IDLH of oxygen-deficient atmospheres
- Environmental factors likely to increase stress on employees
- The recommended and/or assigned protection factors of each type of respirator.

Employees will have a minimum of two brands of the same tight-fitting respirator to select from as well as small, medium, and large size options.

### 6.1 Approved Respirators, Filters, Cartridges, and Canisters

Only respirators certified by NIOSH are permitted for selection and assignment. All filtration and sorption media must display a NIOSH-approved, color-coded label. NIOSH labels may not be removed or defaced while in use.

### 6.2 Respirators for Use in IDLH Atmospheres

American university employees do not perform work in IDLH environments. Therefore, no supplied atmosphere respirators are issued under the current respiratory protection program. Should work tasks change to include potential IDLH environments, the program will be adjusted accordingly.

## 7.0 Medical Evaluation and Surveillance

Prior to fit testing an individual for a respirator, a medical evaluation will be provided. This evaluation will determine the individual's ability to wear and use a respirator specific to the hazards and work processes involved with the individual's job responsibilities.

### 7.1 Medical Evaluation

All employees that are assigned an Air Purifying Respirator (APR) will be given a medical evaluation through the 3M Online Respirator Medical Evaluation System. 3M provides a convenient method for employers to obtain medical evaluations of respirator wearers as required by the OSHA Respiratory Protection Standard, 29 CFR 1910.134. 3M provides board-certified occupational medicine physicians to make clearances and/or make recommendations for further medical testing if needed.

Should an individual be found not medically fit, they shall not be allowed to wear a respirator or enter hazardous areas. Should medical status change, written recommendations must be provided by the healthcare provider stating that the employee is medically able to use a respirator.

All personal medical information and documentation generated between the employee and the 3M Online Respirator Medical Evaluation System will remain between the provider and the patient. Employees may request access to their medical records from the system free of charge.

### 7.2 Medical Surveillance

Additional medical evaluations and/or surveillance will be provided through the 3M Online Respirator Medical Evaluation System when:

- An employee reports symptoms associated with the chemical(s) or particulates in use.
- Following a work-related incident that results in overexposure or suspected overexposure.
- An employee reports signs/symptoms that may affect his/her ability to properly use a respirator.
- A change in workplace conditions occurs (e.g., increased physical work efforts needed, additional protective clothing requirements, or higher temperature work environment).

## 8.0 Authorization for Use

Any respirator used by employees or students, required or voluntary, must be pre-approved by the Respiratory Protection Program Administrator. This does not include filtering facepieces (dust masks) or surgical masks.

## 8.1 Respirator Use

Employees currently participating in the respiratory protection program (i.e. a current fit test is on file) may use their respirator at their discretion. American University requires that all respirator use occur within the oversight of the program administrator. If an employee believes that respirator use is necessary for safe work practice, the plan administrator must be notified, and a workplace hazard assessment will be performed.

## 8.2 Voluntary Respirator Use

Employees that are not currently participating in the respirator protection program may voluntarily use their own tight-fitting respirators under the following conditions:

- The program administrator must be notified of the user's intent to use a tight-fitting respirator
- The FFR must be certified by NIOSH and must be submitted to the program administrator for inspection and approval for compatibility with the expected exposure(s)
- The employee must inform the program administrator of the specific work tasks/projects or which voluntary respirator use is planned
- The employee must use the respirator in accordance with the respiratory protection program's requirements
- The program administrator must maintain a record of voluntary respirator use specific to the hazards and employees

Employees that voluntarily make use of respirators must be supplied with information for employees using respirators when not required under the standard.

## 9.0 Fit Testing Procedures

Tight-fitting facepiece respirators will be fit tested using qualitative methods administered by a qualified individual and performed according to the requirements set forth by 29 CFR 1910.134. Fit test records, including the name of the person who performed the fit test and method used must be forwarded to the program administrator for recordkeeping purposes.

Fit testing for all tight-fitting respirators is conducted on the following schedule:

- Initial fit test: Takes place at the time of employee's initial medical evaluation for respirator use
- Annual fit test: Employees are fit tested annually concurrent with the annual medical evaluation
- Intermittent fit test. Employees will be fit tested when a different manufacturer, size, or type of respirator is first used. Employees may request a fit test at any time by notifying the program administrator

## 10.0 Maintenance and Care of Respirators

## 10.1 Performing Seal Checks

Each time an employee dons an N95 respirator, they must perform a seal check to ensure a proper fit:

- For negative pressure check, the employee:
  - Put on the respirator.
  - Cover the respirator's inlets (filters or seals) with your hands.
  - Inhale and hold your breath for 10 seconds.
  - If the respirator fits well, the facepiece should collapse slightly and stay collapsed.
- If the Fit is Poor:
  - Check for any damage or factors preventing a good seal and try again.
  - If the respirator still fails the seal check, notify the program administrator. Do not enter areas requiring respirator use until the issue is resolved.

## 10.2 Care, Storage, and Extended Use of N95 Respirators

These procedures ensure safe and effective use of N95 respirators while minimizing contamination and maintaining compliance with respiratory protection standards.

- Inspections:
  - Respirators are inspected by the Respiratory Protection Program (RPP) Administrator at issuance and annually or before fit tests.
  - Employees should inspect respirators daily before each use.
- Safe Extended Use:
  - Extended use is allowed if the respirator maintains its fit and function.
  - Implement controls to reduce surface contamination:
    - Use a cleanable face shield with the N95 to minimize contamination.
    - Practice strict hand hygiene before and after touching the respirator.
    - Don and doff PPE carefully to avoid contamination.
- Storage Between Uses:
  - Store respirators in a breathable container (e.g., a paper bag) that is labeled with the user's name.
  - Ensure respirators do not touch each other, and regularly clean or replace storage containers.
- Handling Precautions:
  - Avoid touching the inside of the respirator. If this occurs, discard the respirator and perform hand hygiene.
  - Wear clean gloves when donning a used respirator, and discard gloves after use.
- Reuse Limit:
  - Consult the manufacturer's guidelines for maximum reuse limits. If no guidance is available, limit N95 reuse to five uses per device to maintain safety.
  - Discard any respirator that becomes damaged or difficult to breathe through.
- Single-User Requirement:



- To prevent cross-contamination, N95 respirators must only be used by one individual. Label the respirator or storage container with the user's name.

## 11.0 Emergency Procedures

### 11.1 Respirator Malfunction and Breakthrough

All respirator malfunctions must be reported to the Plan administrator. Particulate filtering cartridges that are overloaded should be discarded when the wearer notices increased resistance upon inhalation. Air leakage around the seals may indicate improper fit or damage to the seal surfaces. Under any of these conditions, the employee must:

- Proceed to the safe area adjacent the work area
- Doff the respirator and inspect it for irregularities along the seals
- Don the respirator and conduct seal check
- If the seals are damaged or if the employee cannot achieve a good seal check, see the Plan administrator for a new respirator or respirator repair

Employees assigned respirators may change these respirators without fit testing if the new respirator is of the same size, model, and manufacturer as defined on the individual's most recent fit test. Should the employee report symptoms of exposure, medical surveillance procedures will be initiated.

### 11.2 Emergency Response

American University employees are not trained as emergency responders and donning respiratory protection for this purpose is not permitted. Thus, employees are not permitted to enter areas where the atmosphere may be immediately dangerous to life and health (IDLH).

In the event of an emergency that produces a potentially hazardous atmosphere, employees are directed to immediately evacuate the work area and report the potential hazards to their supervisor.

## 12.0 Recordkeeping

### 12.1 Medical Records

All medical records are securely maintained by the 3M Online Respirator Medical Evaluation System. Access to these records is strictly controlled, and no American University employee or external agent may view or receive them without the employee's written consent.

Medical evaluations, consultations, and surveillance records are kept for a minimum of 30 years following the employee's departure from American University. Employees or their authorized representatives can access these records upon written request.

Privacy is ensured under HIPAA regulations (Public Law 104-191). Employees must be informed of their rights to access medical records under HIPAA at the time of medical evaluation.

## 12.2 Exposure Monitoring Records

Exposure records (e.g., from air monitoring or passive samplers) are maintained by the program administrator and are not confidential unless they contain biological data (e.g., blood or urine analysis) linked to an employee's name.

The program administrator will share exposure monitoring results with all employees involved in related work. Biological exposure records are only released to the individual employee.

## 12.3 Training Records

All **training records** related to the Respiratory Protection Program (RPP), including hazard communication training, are retained by the program administrator for **at least 5 years**.

## 12.4 Fit Testing Records

Fit testing records are maintained by the program administrator throughout the employee's tenure and for 30 years after employment ends.

Fit testing records have limited confidentiality and may be shared with relevant university personnel (e.g., Safety Director, Director of Operations, Human Resources) and supervisors overseeing respirator-required projects.

## 12.5 Respirator Selection Records

Respirator selection records, including each employee's respirator type and fit information, are retained for 5 years and added to project files. These records are accessible to American University employees upon request to the program administrator.

## 13.0 Program Review

The respiratory protection program will be reviewed annually and whenever changes to the respiratory protection protocol or work practices indicate a review is needed or upon the request of an employee. This review will be initiated and facilitated by the program administrator.

## 14.0 Definitions

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

**Assigned protection factor (APF)** means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

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

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

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

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

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

**End-of-service-life indicator (ESLI)** means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

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

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

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

**Fit factor** means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

**Fit test** means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

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

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

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

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

**Interior structural firefighting** means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155)

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

**Maximum use concentration (MUC)** means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC based on relevant available information and informed professional judgment.

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

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

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

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

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

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

**Qualitative fit test (QLFT)** means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

**Quantitative fit test (QNFT)** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respiratory inlet covering** means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

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

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

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

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

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

## 15.0 References

OSHA. 29 CFR 1910.134. The Respiratory Protection Standard. 2006

OSHA. 74 FR:3526-3534. Additional Quantitative Fit-Testing Protocols for the Respiratory Protection Standard. 1/21/2009

NIOSH. Respirator Selection Logic. 10/2004