

Northwestern  
Respiratory Protection  
Environmental Health and Safety

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## I. Purpose

This program establishes procedures to reduce inhalation exposure to hazardous materials through the safe use and maintenance of respirators. Respirators will only be used in the absence of effective engineering controls or during emergency situations.

## II. Scope

This program applies to the use of all respirators worn by designated Northwestern faculty, staff, and students (including voluntary users) who are approved to wear a respirator in non-research areas. Contact the Office for Research Safety for respiratory protection requirements in all research areas.

Northwestern will provide medical evaluations, respirators, and training at no cost to designated personnel. Northwestern prohibits the use of shared respirators, each employee must have their own respirator. This program does not apply to contractors; they should refer to their company's Respiratory Protection Program.

## III. Responsibilities

### A. Northwestern University (NU) Safety Professionals

In research areas, this refers to Research Safety; in non-research areas, this refers to Environmental Health and Safety.

- i. Conduct a [hazard assessment](#) to identify and evaluate respiratory hazard(s) and where exposure cannot be identified or reasonably estimated, consider the atmosphere to be immediately dangerous to life and health (IDLH).
- ii. Work with department designate and secure a facility to conduct medical evaluations.
- iii. Provide respirator training and fit testing services.
- iv. Provide respiratory protection recommendations, including the respirator type, cartridge type, and change-out schedule based on hazard assessment, medical evaluation, and fit test.
- v. Provide consultation and guidance when necessary.
- vi. Provide a copy of this program to occupational healthcare providers.
- vii. Conduct evaluations of the workplace, as necessary, to ensure this program is effectively implemented.
- viii. Review and revise this program to reflect changes in regulatory requirements, as necessary.

### B. Supervisors

- i. Ensure personnel who are required to wear respirators have received a medical evaluation, training, and annual fit test prior to respirator use.
- ii. Ensure respiratory protection based on NU Safety Professionals' recommendations is provided, replace as needed, and supply replacement filters or cartridges.
- iii. Ensure all filters and cartridges have the National Institute for Occupational Safety and Health (NIOSH) approval label, the label is not removed and remains legible, and the correct cartridge is used for each task.

- iv. Ensure users are properly maintaining and inspecting their respirators according to [Use and Care Guide](#), and remove respirators from service when any unsafe condition is identified.
- v. Enforce proper use of respiratory protection.
- vi. Contact an Environmental Health and Safety (e.g., Facilities) or Research Safety (e.g., laboratory personnel) to evaluate any safety concerns.

**C. Respirator User**

- i. Attend and pass the medical evaluation, training, and fit test (in that order) prior to use.
- ii. For all tight-fitting respirators, perform a user seal check (see **Section VIII** for more information) each time a respirator is donned.
- iii. Inspect respirator according to [Use and Care Guide](#) of this program.
- iv. Report all respirator maintenance issues to supervisors and remove the respirator from service.
- v. Wash your face and respirator facepieces, as necessary, to prevent eye or skin irritation associated with respirator use.
- vi. Store respirators to protect from damage or deformation, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals.
- vii. Clean and disinfect to maintain in a sanitary condition.
- viii. Remove all facial hair that comes between the sealing surface of the facepiece and the face.
- ix. Do not enter IDLH atmospheres without a formal review from an NU Safety Professional.

## IV. Voluntary Use

University personnel have the option to wear a filtering facepiece (e.g., N95) on a voluntary basis during activities or while working in areas in which an NU Safety Professional in Environmental Health and Safety or Research Safety has determined nuisance dust exposure is below Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limit (PEL). Personnel must obtain permission from a NU Safety Professional to wear a filtering facepiece.

- A. A hazard assessment must be conducted by a NU Safety Professional.
- B. Personnel must:
  - i. Read and follow all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
  - ii. Review and sign the [Voluntary Use of a Filtering Facepiece Form](#) and review the request with a NU Safety Professional.
  - iii. Inspect the respirator before each use and clean it after each use.
  - iv. Report any problems to their supervisor.
- C. Medical evaluation, fit testing, and training are not required for voluntary use.
- D. Voluntary use of air-purifying respirators (e.g., half-mask and full-mask respirators) with replaceable filters, cartridges, or canisters, self-contained breathing apparatuses (SCBAs), or emergency escape-use respirators is not permitted.

## V. Medical Clearance

- A. NorthShore OMEGA and Northwestern Medicine Corporate Health are the Preferred Licensed Healthcare Professionals (PLHCPs) who will review medical clearance questionnaires and perform any necessary medical evaluations (see **Table 1**).

**Table 1 – Preferred Licensed Healthcare Professionals Contact Information**

Evanston	Chicago
NorthShore University Health System OMEGA 2650 Ridge Avenue, Suite 4225 Evanston, IL 60201	Northwestern Medicine Corporate Health 676 North St. Clair St, Suite 900 Chicago, IL 60611
<a href="http://northshore.org/corporate-occupational-health/omega-services/">northshore.org/corporate-occupational-health/omega-services/</a>	<a href="http://corporatehealth.nm.org">corporatehealth.nm.org</a>
Phone: 847-657-1700	Phone: 312-926-8282

### B. Medical Clearance Questionnaires

- i. Available on the [EHS website](#), must be completed and sent to the PLHCP with the to be completed hazard assessment for review.
- ii. Will be administered confidentially and in a manner that ensures the user understands its content during the user’s normal working hours or at a time and place convenient to the user. The user should bring the [baseline questionnaire](#) and [health questionnaire](#) to their medical clearance appointment.
- iii. If desired, the user will have the opportunity to discuss the medical clearance questionnaire results with the PLHCP.
- iv. The following information must be provided to the PLHCP before a recommendation is made concerning a user’s ability to use a respirator:
  - a. The type of respirator to be used;
  - b. The duration and frequency of respirator use (including use for rescue and escape);
  - c. The expected physical work effort;
  - d. Additional protective clothing and equipment to be worn; and
  - e. Temperature and humidity extremes that may be encountered.

### C. Medical Evaluations

- i. Include a review of the medical clearance questionnaire, pulmonary function test, and any additionally deemed medical tests, consultations, and/or diagnostic procedures necessary to make a final medical clearance.
- ii. Are required for all users (except for voluntary respirator use) and may be required annually thereafter at the discretion of the PLHCP.
- iii. Will be administered confidentially during the user’s normal working hours or at a time and place convenient to the user.
- iv. If desired, the user will have the opportunity to discuss the medical evaluation results with the PLHCP.
- v. Medical evaluations are to occur according to the frequencies outlined in **Table 2**, or more frequently if there is a change in health history.

**Table 2 – Medical Evaluation Frequency**

Age	Light to Moderate Work	Strenuous Work with a SCBA
< 35 years	Every 3 years	Every 3 years
35-45 years	Every 2-3 years	Every 1-2 years
> 45 years	Every 2 years	Every year

- vi. Northwestern will provide additional medical evaluations if:
  - a. A user reports medical signs or symptoms that are related to the user's ability to use a respirator (e.g., significant weight lost/gain, pregnancy, respiratory conditions)
  - b. A PLHCP, supervisor, or NU Safety Professional determines the user needs to be reevaluated;
  - c. Information from this program, including observations made during fit testing and program evaluation, indicate a need for reevaluation; or
  - d. A change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on the user.
- D. Based on the findings between the medical clearance questionnaire and medical evaluation, the PLHCP will provide a written recommendation to NU Safety Professionals regarding the user's ability to use the respirator, including:
  - i. Any limitations on respirator use related to the medical condition of the user, or relating to the workplace conditions in which the respirator will be used, including whether or not the user is medically able to use the respirator;
  - ii. The need, if any, for follow-up medical evaluations; and
  - iii. A statement they have provided the user with a copy of their recommendation.

## VI. Training

- A. Each respirator user must complete [annual online training via myHR Learn](#), which is assigned by a NU Safety Professional
- B. Training must cover the following:
  - i. Why respirators are necessary and how improper fit, usage, or maintenance can compromise the protective effect of respirators.
  - ii. What the limitations and capabilities of respirators are.
  - iii. How to use respirators in emergency situations, including situations in which respirators malfunction.
  - iv. How to inspect, don and doff, use, and check the seals of respirators.
  - v. Maintenance and storage procedures for respirators.
  - vi. How to recognize medical signs and symptoms that may inhibit respirator effectiveness or require a medical evaluation prior to the next required one.
- C. Retraining must occur annually, and when the following situations occur:
  - i. Changes in the workplace or type of respirator used.
  - ii. Inadequacies in the employee's knowledge or use of the respirator.
  - iii. Any situation in which retraining seems necessary to ensure safe respirator use.

## VII. Fit Testing

- A. A fit test is a test of the seal between the respirator's facepiece and user's face to evaluate the fit of a respirator on an individual as shown in **Table 3**.

**Table 3 – Fit Testing Methods**

**Note:** Environmental Health and Safety uses a Quantifit and Research Safety uses a PortaCount for quantitative fit tests.

Fit Test Type	Method	Respirator Type
<b>Qualitative:</b> pass/fail fit test to assess the adequacy of the respirator fit that relies on the user's response to the test agent	Irritant Smoke, Saccharin, Bitrex	Filtering Facepiece (i.e., N95)
<b>Quantitative:</b> assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator	Quantifit or PortaCount	Half-face, Full-face, SCBA

- B. Fit tests can only be conducted when personnel are clean shaven.
- C. Respirator users must be fit tested with the same make, model, style, and size of respirator that will be worn during work activities.
- D. Fit tests must be performed while wearing any applicable safety equipment that may be worn during actual respirator use that could interfere with the respirator fit.
- E. Personnel must conduct negative- and positive-pressure seal checks (see **Section VIII**) prior to a fit test and each time the respirator is donned; a user seal check is not a substitute for a fit test.
- F. Failure of either seal check is cause to readjust the respirator or select an alternate respirator that fits the user better.
- G. Respirator users must be fit tested when any of the following occur:
  - i. Prior to initial use of respirator.
  - ii. Annually.
  - iii. When a different respirator (i.e., size, style, model, or make) is used.
  - iv. When the respirator user's physical appearance (e.g., facial scarring, dental changes, cosmetic surgery, or a significant change in facial features) changes.

## VIII. Respirator Care and Use

### A. User Seal Check

When using tight-fitting respirators, perform a user seal check to ensure an adequate seal is achieved each time the respirator is put on.

- i. Either positive- and negative-pressure checks or the respirator manufacturer's recommended user seal check method will be used.
- ii. For more detailed guidance on performing a positive or negative pressure check, please review the [Use and Care Guide](#).

### B. Respirator Cleaning and Storage

- i. Respirator users must store their respirators to protect from damage or deformation (especially of the face piece and exhalation valve), contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals.
- ii. Respirators will be cleaned per the following:
  - a. **Personal respirators:** Clean and disinfect as often as necessary to maintain in a sanitary condition.

- b. **SCBAs:** Clean and disinfect after each use.
- c. **Respirators for Emergency Use:** Clean and disinfect after each use.
- C. For more detailed guidance on proper cleaning and storage, please review the [Use and Care Guide](#).

## IX. Emergency Planning and Pandemic Preparedness

Supplies of NIOSH-approved filtering facepieces (i.e., N95) can become depleted during a pandemic or wide-spread respiratory pathogen or infectious disease outbreak. In the event of a situation like this, Northwestern faculty and staff should refer to a pandemic plan for direction regarding appropriate use of personal protective equipment.

When facing depleted inventories as a result of these types of events and there is an imminent need for healthcare staff and emergency responders, Northwestern faculty and staff should consider a combination of approaches to conserve supplies of N95 respirators, including:

- A. Minimize the number of individuals who need to use respiratory protection through the preferential use of engineering and administrative controls. Environmental Health and Safety and Research Safety can provide guidance on alternative control methods to reduce the need for respiratory protection.
- B. Use alternatives to N95 respirators (e.g., other classes of filtering facepiece respirators, half-mask and full-facepiece air purifying respirators, and powered air purifying respirators) where feasible.
- C. Implement CDC-approved practices allowing extended use and/or limited reuse of N95 respirators. When working with highly toxic compounds where N95 respirators are required, N95 respirators must always remain single-use.
- D. Prioritize the use of N95 respirators for those personnel at the highest risk of contracting or experiencing complications of infection.

## X. Recordkeeping

Medical clearances, training records, and fit testing records are all maintained by NU Safety Professionals.

- A. Respirator users' medical clearances must be maintained for length of employment, plus 30 years.
- B. Training records must be maintained via myHR Learn
- C. Fit testing records must be maintained until the next fit test is administered.
- D. The following records are all maintained by supervisors:
  - i. SCBAs must be inspected monthly. Records must be maintained until the next monthly inspection is completed.
  - ii. Emergency escape-only respirators must be inspected before being carried into the workplace for use. Records must be maintained until the next inspection is completed.



## XI. Regulatory Authority and Related Information

Northwestern will comply with Occupational Safety and Health Administration's (OSHA) standards and any other applicable codes and standards, including:

[OSHA 29 CFR Part 1910.134 – Respiratory Protection](#)

[Respiratory Selection Guide](#)

[Cartridge Selection Guide](#)

[Respirator Care and Use](#)

[SCBA Maintenance Log](#)

[Emergency Escape Maintenance Log](#)

[Voluntary Use of a Filtering Facepiece Form](#)

## XII. Contact

For questions in non-research areas, contact Environmental Health and Safety at [ehs@northwestern.edu](mailto:ehs@northwestern.edu).

For questions in research areas, contact Anne Hsiao, Laboratory Safety Specialist, Research Safety, at [anne.hsiao@northwestern.edu](mailto:anne.hsiao@northwestern.edu) or (847) 467-2660.