
 WAKE FOREST UNIVERSITY	RESPIRATORY PROTECTION	Revision Date: March 12, 2020 
		Approved by: _____ 5 th Vice President Strategy and Operations
		Developed by: Environmental Health & Safety
Effective Date: November 1, 2001		

1. PURPOSE

Effective engineering controls and respiratory protection will be utilized to prevent employee exposure to air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, biohazard aerosols, and vapors. When engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this program.

A respirator shall be provided to employees when engineering solutions or administrative controls are not feasible to implement. Wake Forest University shall provide respiratory protection where applicable and suitable for the purpose intended.

The use of respirators at Wake Forest University is subject to prior review and approval by the Environmental Health and Safety (EHS) Department. The OSHA Respiratory Protection Standard regulates all use of respiratory protection. Any employee, who has received approval from EHS to use an air-purifying respirator or self-contained breathing apparatuses (SCBA), must be enrolled in the Respiratory Protection Program. The program mandates an initial health history review and annual physical examination, fit test and training.

2. REFERENCES

29 CFR 1910.134 Respiratory Protection

3. 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.

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

Fit test means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

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.

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 on the basis of 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 oxygen content below 19.5% by volume.

4. RESPONSIBILITY

a. Environmental Health and Safety

Designate program administrator who is qualified by appropriate training or experience to administer or oversee the program and conduct the required program evaluations.

Maintains the written respiratory protection program.

Evaluates respiratory hazard(s) in the workplace, identifies relevant workplace and user factors, and bases respirator selection on these factors.

Calculates maximum use concentration (MUC) for respirator use.

Regularly evaluates the effectiveness of the program.

Maintains records of training, fit testing, and respirator inspections. Results of physical examinations are kept by the medical surveillance provider.

b. Supervisors / Departments

Recognizes potential hazards and immediately contact Environmental Health and Safety for evaluation.

Purchase respirators and associated equipment and enforce the use of respiratory protection as required.

Notify Environmental Health & Safety of new individuals requiring respiratory protection.

Ensure respirator users are trained and enrolled in the Respiratory Protection Program.

If employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, supervisor must replace or repair the respirator before allowing employee to return to the work area.

c. Employees

Know conditions where respiratory protection is required.

Use proper respiratory protection as authorized by Department of Environmental Health and Safety.

Respirators with tight-fitting facepieces must not be worn by employees who have facial hair or any condition that interferes with the face-to-facepiece seal or valve function.

Corrective glasses or goggles or other PPE must be worn in a manner that does not interfere with the face-to-facepiece seal.

Inspect the assigned respirator prior to use and clean if necessary. Employees issued respirators must complete the inspection using form provided by EHS Department.

Employees wearing tight-fitting respirators must perform a user seal check **each time they put on the respirator** using the manufacturer's procedures.

Employees must leave the respirator use area:

- to wash their faces and respirator facepieces as necessary
- If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece.
- to replace the respirator or filter, cartridge, or canister

If employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, supervisor must replace or repair the respirator before allowing employee to return to the work area.

Complete monthly inspection (including any defects or missing parts noted) using form provided by EHS Department.

Properly store respirator in order to keep it from dust, sunlight, excessive heat or cold, moisture and chemicals.

Discard old or damaged respirators and spent cartridges.

5. PROCEDURE





a. Procedures for selecting respirators for use in the workplace

Select an appropriate NIOSH-certified respirator based on the respiratory hazard(s) to which the worker is exposed and workplace and user factors that affect respirator performance and reliability. Wake Forest University shall provide adequate protection to prevent exposure to user.

All personnel are prohibited from entering any atmosphere that is immediately dangerous to life and health (IDLH), including oxygen deficient atmospheres.

b. Respirator Selection

Atmospheric Hazard	Respirator Type	Users
Dust, Silica	N-95 filtering facepiece	Construction Team Woodcutting operations
Biohazard Aerosols	N-95, N99,N100 filtering facepiece	Student Health, University Police, Environmental Health and Safety
Asbestos	Half-face or Full-face air-purifying particulate-filter respirator	Tommy Crews Ron Whitlock
Hazardous Waste consolidation	Full-face air-purifying particulate-filter respirator	Nick Golden Steve Fisenne

Atmospheric hazard	Respirator Type	Cartridge	Color	
Dust, Silica	N95 Respirator Particulate	N95 Particulate Filter w/ exhalation valve	White	
Biohazard Aerosols	N95, N99, N100 Respirator Particulate	N95 Particulate Filter w/ exhalation valve	White	
Asbestos	North full face and half face	P100 Particulate Filter (99.97% minimum filter efficiency) for all particulates	Magenta	
Hazardous Waste	North full face	Organic Vapor and Acid Gas (Chlorine, Hydrogen Chloride, Sulfur Dioxide, Hydrogen Fluoride, Chlorine Dioxide) Cartridge with a P100 Particulate Filter (99.97% minimum filter efficiency) for all particulates.	Yellow and Magenta	

c. Medical evaluations of employees required to use respirators

A physician or other licensed health care professional (PLHCP) will perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire.

Medical surveillance must be performed before employees are issued a respirator and receive training. Employees will be provided the health history questionnaire and medical authorization form.

d. Fit testing and pressure testing

Employees issued air-purifying negative pressure respirators must be properly fitted and tested for an adequate seal. Qualitative fit testing using irritant smoke is performed by EHS. Instructions on performing positive and negative pressure checks are provided to respirator users.

Respirator users must show proficiency donning, using and doffing the respirator.

e. Storage and Inspections

Respirator users are responsible to store their approved respirator in a zip-lock storage bag, plastic tote or similar protective device when not in use.

Respirator users are required to inspect their approved respirator prior to each. Employees issued respirators must complete the inspection using form provided by EHS Department.

f. Respirator Cleaning

Respirators must be cleaned as often as necessary to maintain a sanitary condition for exclusive use respirators and after each use for emergency use respirators **and those used in fit testing and training.**

Refer to the manufacturers guidelines for proper cleaning procedure or use the following procedure:

1. Clean the facepiece using warm water to remove loose dirt or debris.
2. Rinse the facepiece in fresh warm water.
3. Make a disinfecting solution using the following amounts:

Take 2 tablespoons of bleach per 1 gallon of 120-140 degree water and put in a 5-gallon bucket. Put approximately 3 gallons of warm water and 6 tablespoons of bleach into the 5 gallon bucket.

4. Take the facepiece and immerse in the disinfecting solution for 3-4 minutes and Rinse the facepiece thoroughly in fresh warm water.
5. Let the face mask air dry completely after cleaning.

g. Issued Respirator Use

Respirator users can only wear the approved respirator for which they have been fit tested. If more than one type of respirator is needed the user must be fit-tested for each.

6. TRAINING

Individuals who require respiratory protection must receive annual training and fit-testing before using a respirator. Training, provided by EHS, includes:

1. Why the respirator is necessary and how improper fit, use, or maintenance can compromise the protective effect of the respirator
2. Limitations and capabilities of the respirator
3. Use in emergency situations
4. How to inspect, put on and remove, use and check the seals
5. Procedures for maintenance and storage
6. Recognition of medical signs and symptoms that may limit or prevent effective use
7. General requirements of this standard

7. REVISIONS

REVISION	REVISION DATE
N95, N99, N100 Respiratory Protection is being provided to WFU staff who have very high and high exposure risk to COVID-19. Staff have completed questionnaires and are being fit-tested to the allocated N95 respirator. Removal of PARP respirator use. Removal of Pesticide Applicator Users (no longer applicable).	03/12/2020
Revision includes the N95 Particulate and PARP uses for Biohazard Aerosols. These respirators would only be used during an Ebola or other infectious disease outbreak where the CDC and Health Departments require medical staff to be protected.	10/24/2014
Revision for approval by Associate Vice President Strategy and Operations.	10/9/2014