

SECTION	II.	General Safety and Health
Chapter	2.	Respiratory Protection
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# RESPIRATORY PROTECTION

## INTRODUCTION

### PURPOSE

The purpose of the Respiratory Protection Program is to protect employees against harmful dusts, fogs, fumes, mists, gases, smokes, sprays, bioaerosols, and vapors, through the use of engineering controls, administrative controls, or personal protective equipment (PPE). If effective engineering or administrative controls are not feasible, respirators shall be provided by Duke University/Medical Center/Health System when such equipment is necessary to protect the health of the employee. The responsible Safety Office (i.e., Occupational and Environmental Safety Office (OESO), Durham Regional Hospital Safety Officer, or Duke Raleigh Hospital Safety Officer) shall determine the operations or conditions necessitating the use of respirators.

### DEFINITIONS

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

*Atmosphere-supplying Respirator*- 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* - a container with a filter, sorbant, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

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

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

*Fit Test* - a protocol to quantitatively or qualitatively evaluate the fit of a tight-fitting respirator on an individual.

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

*Loose Fitting Facepiece* - a respiratory inlet covering that is designed to form a partial seal with the face.

*NIOSH approval* - the approval of a respirator for worker protection by the National Institute for Occupational Safety and Health (NIOSH).

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

*Respiratory Inlet Covering* - that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both.

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

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

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

## **RESPONSIBILITIES**

Departments with employees who are required to use respiratory protection shall:

- Develop (with the help of the responsible Safety Office) and implement a written site-specific policy defining the use of respirators for each application.
- Facilitate employee medical clearance, training, competency validation, and fit-testing.
- Notify the responsible Safety Office of any personnel changes in jobs requiring respiratory protection.

- Purchase appropriate respirators, cartridges, and approved replacement parts for employees included in the respiratory protection program.
- Implement a program for cleaning and inspecting respirators each time they are used.
- Ensure that emergency use respirators are inspected once per month, and maintain documentation of these inspections.
- Develop and implement a change schedule for cartridges for air-purifying respirators.
- Report any problems to the responsible Safety Office.
- Consult the responsible Safety Office regarding proposed voluntary use of respirators by employees. Responsibilities for departments with voluntary respirator users are found in Supplement T.

Employees who are required to use respiratory protection shall:

- Comply with department- or site-specific policies on respirator use.
- Participate in medical clearance procedures, training sessions, tests for competency validation and fit-tests.
- Inspect their respirators before each use, and clean them after each use.
- Report any problems to their supervisors.
- Notify Employee Occupational Health and Wellness (EOHW) of any changes in medical condition or work practice that could impact their medical clearance for respirator use.
- Notify EOHW or responsible Safety Office (whichever group conducts their fit test) of any changes in physical condition (such as facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight) that may affect respirator fit, or when they find the fit of the respirator unacceptable.

Employees who choose to use respiratory protection shall follow the policies in Supplement T, “Voluntary Use of Respiratory Protection”.

OESO shall:

- Maintain documentation of training, competency validation, medical clearance and fit testing, and make this documentation available to departments and supervisors with employees on the respiratory protection program. Alternatively, the other responsible Safety Offices can maintain this documentation for Durham Regional Hospital and Duke Raleigh Hospital.

- Provide consultation to the other responsible Safety Offices as needed.

The responsible Safety Office shall:

- Recommend appropriate respirators and cartridges to the user's department for procurement purposes. Only NIOSH-approved respirators will be used.
- Assist each department in developing a written site-specific policy on required respirator use, including the types of respirators to be used and cartridge change schedules/criteria for air-purifying respirators.
- Coordinate annual respirator fit testing for every employee assigned a task requiring the use of a tight-fitting respirator.
- Coordinate annual respirator training, including competency validation, for all employees who must wear respirators.
- Coordinate periodic monitoring to assess concentrations of airborne contaminants.
- Conduct periodic reviews of departmental policies and practices related to respirator storage and use.
- Conduct periodic reviews of Duke's Respiratory Protection Program.
- Provide to the employee health provider respirator-specific information (such as respirator weight) needed for the health evaluation of employees wearing respiratory protection.
- Approve all voluntary respirator use and keep records of employees and departments who use them.

Employee Occupational Health and Wellness shall:

- Conduct the health screening of respirator wearers and provide documentation of medical clearance to the OESO. (Medical clearance expiration dates are thereby made available to employees and departments via the OESO online safety training website.) If there are medical clearance restrictions, Employee Occupational Health and Wellness will provide this information directly to the employee and his or her supervisor (as well as to OESO).
- Provide health consultations as requested.
- Conduct annual respirator fit testing (and related recordkeeping) for every employee assigned a task requiring the use of an N-95 respirator for

protection against *M. tuberculosis*. (Fit test records will be provided to OESO electronically for dissemination to affected employees and departments.)

## **PROCEDURES**

### **GENERAL**

If the responsible Safety Office or individual employee suspects that a specific job task might require the use of a respiratory protective device, a comprehensive workplace review will be conducted. This assessment may include air monitoring to assess employee exposures to airborne contaminants. If an unsafe exposure situation exists, the feasibility of engineering or administrative controls will be considered. If these preferred methods of controlling exposure are not feasible, the respiratory protection program will be implemented as described below.

Respirators used for protection against *Mycobacterium tuberculosis* are specifically addressed in the TB Exposure Control Plan (Safety Manual Section VI, Chapter 2, Appendix F). Voluntary use of respirators is addressed in Supplement T.

### **HEALTH EVALUATION**

The use of a respirator may impose an additional stress on the worker. Each employee, prior to being assigned to tasks requiring the use of a respirator, shall receive a health evaluation performed by Employee Occupational Health and Wellness (EOHW) to determine that he or she is physically able to perform assigned tasks while wearing a respirator. This evaluation will be repeated at intervals specified by EOHW (or sooner if there is a change in the employee's medical condition or level of effort during tasks requiring respirator use).

### **RESPIRATOR SELECTION**

Respirators will be selected by the responsible Safety Office on the basis of hazards and the concentration of the contaminant to which an employee is exposed.

### **FIT TESTING**

All individuals required to use a tight-fitting respirator must undergo fit-testing to ensure an effective mask-to-face seal. Individuals must be fit-tested before initial use of their respirators and at least annually thereafter. The OESO or EOHW representative performing the fit test will provide the employee with information on the specific manufacturer, model, and size of respirator, along with the type of cartridges needed, if applicable. The OESO and EOHW shall maintain necessary records of all fit-tests for tight-fitting respirators.

## **PREVENTIVE CONDITIONS**

Tight-fitting respirators shall not be worn when conditions prevent a good face seal. Such conditions include, but are not limited to, facial hair, any piece of clothing, personal protective equipment, or glasses that interfere with the seal of the facepiece to the face of the user. Only loose-fitting respirators are acceptable under these conditions.

## **ISSUANCE**

When respirator use is required, all respirators, cartridges, and approved replacement parts will be purchased by the department of the respirator wearer. Respirators will be issued to an employee for his or her exclusive use when feasible.

## **RESPIRATOR USE**

Respirators will be used in accordance with specific procedures described in the manual provided by the manufacturer. Prior to each use in a contaminated atmosphere, the user of a tight-fitting respirator will perform a positive and negative pressure fit check and adjust the mask until a good fit is achieved. Users of loose-fitting respirators will assure adequate air flow to the respirator facepiece before entering a contaminated atmosphere.

## **MAINTENANCE**

Each respirator user will have the responsibility for maintaining his/her own respirator. Parts should be replaced when needed. Respirators intended for non-routine, general use will be maintained by a designated competent person within the owning department.

## ***INSPECTION***

Respirators used routinely will be inspected before each use by the respirator wearer and during cleaning. Emergency use respirators must be inspected before and after each use and at least monthly. An OESO representative will occasionally review departmental records of the monthly inspection of emergency use shared respirators. Documentation of the inspection will be provided to the OESO at the time of the inspection. (The manual supplied by the manufacturer with each respirator will provide specific inspection procedures.)

## ***CLEANING, DISINFECTION AND STORAGE***

Respirators will be cleaned and disinfected after each use according to procedures for specific respirators. OSHA has published Respirator Cleaning Procedures (29 CFR 1910.134 Appendix B-2) available at <http://tinyurl.com/57fovk>. After cleaning and drying, respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve. It is not acceptable to hang a respirator by its straps.

### ***REPAIR***

Respirators needing repair will be repaired by the designated competent person using manufacturer-approved replacement parts only. Repairs must be made in a manner that maintains the respirator's NIOSH approval.

### **EMERGENCY USE**

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

### **WORKSITE SPECIFIC POLICIES**

All work areas where respirators are used must have site- or task-specific respirator policies. These policies must outline when respirators will be used, the types of respirators for each application, provisions for employees with beards or other preventive conditions, cartridge change schedules for air purifying respirators, storage locations for respirators, and inspection/maintenance schedules for respirators that are not used routinely. They must also specify the responsibilities of respirator users, their supervisors, and others who may be involved in respirator or cartridge ordering, recordkeeping, and notification of the responsible Safety Office about new employees who will be required to wear respirators.

## **TRAINING**

Employees required to use respirators will receive initial and annual training, which will be coordinated by the responsible Safety Office. Training will include the respiratory hazards to which employees are potentially exposed during routine and emergency situations. Employees shall receive specific instructions related to the respirator they use and, when possible, the training will include practice in donning the respirator. The

training will consist of instruction in selection, inspection, use, and maintenance of respirators. Employees must be able to demonstrate knowledge of why the respirator is necessary, how to care for and use the respirator properly, how to recognize when the respirator is not functioning properly, and general requirements of this respiratory protection policy.

## **REFERENCES**

Code of Federal Regulations, Title 29, Part 1910.134 (OSHA), *Respiratory Protection*