UNIVERSITY OF
NORTHERN COLORADO

Environmental Health and Safety

Respiratory Protection Program

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UNIVERSITY OF
NORTHERN COLORADO

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UNIVERSITY OF
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Environmental Health and Safety

Respiratory Protection Program

I. General

This program applies to all UNC faculty, staff and students who require the use of a respirator to perform assigned duties. In addition, anyone on campus who would voluntarily wear a respirator when one is not required in their duties is subject to the, cleaning, maintenance, and storage elements of this program, and will be provided with necessary training.

II. Program Requirement and Identification

This Respiratory Protection Program (RPP) is designed to protect faculty, staff and students by establishing accepted practices for respirator use, providing guidelines for medical evaluations, respirator selection, proper storage and care of respirators. Where respirators are deemed necessary to protect the life and health of faculty, staff and students, they shall work under an established and written RPP with specific worksite safety procedures.

For those entering the program, the University shall provide a medical evaluation, respiratory protection (issued upon clearance by a medical physician), and training at no cost to the faculty, staff or student who, while engaged in assigned duties to mitigate health impacts, must wear an approved respirator that are both applicable and suitable for the purpose intended and devices shall only be used by the individual it has been assigned to.

Faculty, staff or students who chose to wear respiratory protection when not required are required to read through this program and sign the Use of Respirator Consent and Information Form located in Appendix A of this program.

The basic purpose of any respirator is to protect the user from specific inhalation hazards. Respirators provide protection by removing contaminants from the air before inhalation or by supplying an independent source of breathable air.

The following factors shall be taken into account by Supervisors and the EHS Department when determining the proper courses of action in respiratory selection choices.

- Characteristics of the Hazardous Operation or Processes
- Nature of Contaminant (Chemical Properties)
- Concentration of Contaminant
- Respirator Enclosure Design
- Location of Hazardous Area
- Physical Conditions in Work Environment
- Vision and Communications

III. Responsibilities

In order for these guidelines to be effective, all University employees and students must clearly understand and take an active role in meeting these responsibilities and guidelines. Due to the potential hazards associated with various types of work activities, the specific responsibilities outlined below shall be followed.

A. Supervisors

Supervisors have the primary responsibility for implementation of the Respiratory Protection Program in their work area. They shall:

- Assist EHS in evaluating hazards in work areas.
- Identifying employees and students and their jobs or tasks which may require respiratory protection, providing this information to EHS, and seeking their assistance in evaluation of respiratory hazards.
- Purchasing appropriate respirators and making them available for authorized use by respirator users.
- Ensuring that respirator users under their supervision (including new hires) receive appropriate training, fit testing and annual medical evaluation.
- Identifying changes in jobs or tasks which may require re-evaluation of the respirator use and notifying

B. Respirator Users

The respirator user is responsible for following the requirements of the written program. They shall:

- Using the respirator in accordance with the manufacturer’s instructions and training received.
- Storing, cleaning, maintaining, and guarding against damage to the respirator.
- Reporting any malfunction of the respirator to his/her supervisor.
- Inspecting the respirator before each use.
- Promptly reporting to his/her supervisor any symptoms of illness that may be related to respirator usage or exposure to hazardous atmospheres.
- Informing the supervisor of operation changes or health status changes that could affect the safe use of the equipment.

C. Environmental Health & Safety

The EHS Department is responsible for the Respiratory Protection Program and shall:

- Oversee the RPP for campus.
- Review and update the written RPP.
- Evaluate respiratory hazards in the work areas.
- Providing guidance to the supervisor for the selection and purchase of approved respirators.
- Provide training (including refresher sessions) on the proper use, maintenance, and storage of respirators to all respirator users, including emergency Self Contained Breathing Apparatus (SCBA) users.
- Provide a fit testing program for respirator users.
- Maintaining records on respiratory protective equipment assignments, fit testing and training.
- Evaluating the overall effectiveness of the respirator program.

D. Occupational Health Provider or Licensed Health Care Professional (PLHCP)

The Occupational Health Provider is responsible for:

- Performing initial & periodic medical evaluations and any necessary follow-up examinations of employees and students to determine their ability to wear a respirator.
- Providing a written evaluation of the employee's ability to use a respirator to Environmental Health & Safety.
- Conducting periodic medical evaluation of respirator users as necessary.

IV. Medical Surveillance

Using a respirator may place a physiological burden on faculty, staff and students that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of each individual. Prior to respirator use faculty, staff and students assigned to specific tasks requiring the use of any respiratory protective device must be cleared by a medical professional prior to work being performed (initial clearance or baseline) and annually thereafter. A determination of the physical capability to perform the required work while wearing respiratory devices is also necessary.

The patient shall receive at the minimum for entering the RPP:

- The Health Questionnaire (see Appendix A)
- A Spirometry Test (Pulmonary Functions Test).
- A General Physical/ Consult with attending Physician.

Other tests may be required per federal regulations regarding the use, handling or work with specific materials. Refer to the UNC Medical Surveillance Program for further details.

Further medical evaluation may be prescribed if the physician believes the respirator user could have a greater potential for health impacts while utilizing respiratory protection in the work place.

Footnote: Shall any type of medical complications bar a faculty, staff or student from wearing respiratory devices, they shall be cleared through the University chosen Occupational Health Physician prior to returning to such work activities.

V. Fit Testing

The fit testing procedure is a means of verification and written documentation that the chosen respiratory protection devices for that individual is an adequate fit to the face of the user and is able to maintain the minimum level of protection in accordance with regulatory requirements. Two types of fit testing are the standard and accepted way to measure quality of fit.

- Quantitative (QNFT) - Using specialized equipment this method establishes an actual numerical value of fit.

- Qualitative (QLFT) - This is subjective to the wearing of the device where the user detects the chemical being utilized for establishment of a corrective fit.

UNC utilizes the QLFT fit test method with irritant smoke for all half-face and full-faced air purifying respirators. Those individuals with in the RPP shall receive an initial and annual fit test thereafter, conducted by EHS. Respiratory equipment requiring the QNFT testing methods shall be from a third party and shall be set up through the administrator of the RPP.

General guidelines for fit testing are as follows (APR style respirators only):

- RPP participants shall bring all of their masks the day assigned for fit testing.
- EHS shall provide cartridges to the participants for use during testing procedures.
- A general awareness refresher training shall be given during this period covering the basic operations, cleaning and proper methods of use.
- The use of irritant smoke that engulfs the individual will be used along with the “rainbow passage” which allows the jaw to move in order to check for proper seal and if sealed improperly will cause the testier to cough, informing the tester of a negative fit test.
- For tight fitting respirators the testing requires the individual to be clean shaven (if applicable), where facial hair has the potential to prevent an adequate seal with the sealing surface of the specified respirator.

VI. Respirator Selection and Use

Once the hazards are identified and evaluated, the proper respiratory protective devices may be selected per the job site hazards and shall be approved for the particular contaminants for which are present.

A. Types of Respirators

There are many varieties of respiratory equipment that may be utilized to protect against inhalation hazards presented during operations requiring the use of respiratory equipment. They range from simple particulate respirators to full face self-contained breathing apparatus's (SCBA). They can protect people in very inert atmospheres where dust is a disturbance all the way to oxygen deficient or enriched atmospheres where breathing without one would be an Immediate Danger to Life and Health (IDLH) environment. Choosing the correct respirator to effectively mitigate any health or safety concerns is an important process in the decision. There are essentially two types of respirators all of which are to be certified by the National Institute for Occupational Safety and Health (NIOSH) for use on campus.

- Air Purifying
- Atmosphere Producing; ie. SCBA

With multiple variations and configurations to allow for many hybrid uses. The two most important are loose fitting and tight fitting with the later more commonly referred to as elastomeric.

B. Selection

Information gathered during the assessment phase of this program will help to select the appropriate respirator for applications on campus and shall:

1. General

The item shall be selected from among the NIOSH approved and certified respirators and allow for a variety of sizes to ensure the correct fit to the user.

a. Non-IDLH

- Ensure that Assigned Protection Factors (APF) specified in VI.B.1 of this section be taken into consideration when the selection of respiratory equipment and their cartridges are used when determining type of respiratory protection.

b. IDLH

- All employees whose scope of work deems them essential for the use of respiratory protection in IDLH environments shall be provided with a fully faced, pressure demand, SCBA with a minimum service life of 30 minutes.

- All oxygen deficient atmospheres with levels at or below 19.5% and those enriched with oxygen above 23.5% or when in the presence of a flammable or combustible vapor is within LEL/UEL levels shall be deemed an IDLH atmosphere.
- Any respiratory device used only for the escape of an IDLH atmosphere shall be NIOSH certified.

2. Assigned Protection Factor

Federal regulations have assigned protection factors for different levels of respiratory protection. The following table indicates the various types of respirators available, and the maximum assigned protection factor assigned to each. The intended use and APF will allow for better selection methods.

Respirator Type	Protection Factor
Filtering Facepiece Respirators	5
Air-Purifying Half-Mask Respirators	10
Loose Fitting Powered Air-Purifying Respirator	25
Air-Purifying Full-Face Respirators	50
Tight Fitting Powered Air-Purified Respirator (Full-Face)	1000
Air Line Respirator (Supplied Air)	1000
Self-Contained Breathing Apparatus (SCBA)	10,000

3. Maximum Use Concentration (MUC)

Maximum use concentration 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 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 federal permissible exposure limit (PEL). When no PEL is available for a hazardous substance, the supervisor, with assistance from EHS, shall determine the best course of action.

C. Cartridges

There a multitude of disposable cartridges, canisters and filters for APR's with a variety of configurations for various hazards and applications. The RPP requires that all said devices shall be labeled, color coded with the NIOSH approved label that the label is not removed and shall remain intact for the duration of work being performed. They shall also have a maximum service life determined by the scope of work being performed. Consult your Supervisor or EHS for specific cartridge needs or determination for specific work related activities.

D. Operations

Before proceeding with any work requiring the use of respiratory protection, it is imperative to ensure equipment is properly working and damage free. This may include such items as, positive and negative pressure tests with an APR or demand response and positive pressure check with an SCBA.

VII. Maintenance and Care

The following information is intended as a guide for appropriate cleaning, storage, inspection and maintenance practices dealing with respiratory protection. Proper methods are conducted to ensure the longevity of service life and to ensure the devices will adequately protect employees during use.

A. Inspections

It is the wearer's responsibility to visually inspect their respiratory equipment before every use with each cleaning. They shall be inspected for:

- Function.
- Tightness of connections.
- Conditions of various parts including but not limited to; facepeice, head straps, valves, connecting tubes, cartridges, canisters or filters.
- If applicable, check the elastomeric portions for pliability.

B. Repairs

Any respiratory device failing inspection shall be taken out of service and repaired prior to its return. Repairs shall be made according to the manufacturer's recommendations. Consult the EHS Department for specifics.

C. Cleaning

Respiratory devices shall be cleaned regularly and disinfected.

- For re-useable respiratory devices, they shall be disassembled and washed in warm, mildly soupy water on a frequent schedule. Following the cleaning, the device shall be rinsed thoroughly and air dried and returned to a dust free enclosed storage.
- Alcohol or detergent pads may be used for a light cleaning.
- Dust masks/ Particulate respirators and single use respiratory devices shall be disposed of after becoming visibly soiled.
- Emergency use respiratory devices shall be cleaned after each use.

D. Storage

All respiratory devices and ancillary equipment, such as cartridges or filters shall be stored in dust tight containers. The storage must not cause physical distortion to elastomeric portions and avoid storing in direct sunlight or extremes of temperature. Emergency respiratory equipment on campus shall be stored in a nature that they are accessible during emergencies in clearly marked compartments.

VIII. Voluntary Use of Respirators

Under some circumstances, employees choose to use respiratory protection equipment on a voluntary basis as an extra precaution, or for protection against nuisance odors, even when there is no recognized hazard or overexposure. Respirator use in these circumstances would be considered “voluntary” and many elements of OSHA’s respiratory protection standard would not apply.

Voluntary use of respirators is only allowed if the respirator use will not interfere with an employee’s ability to work safely such as restricting necessary vision or communication; or create health hazard such as skin irritation dermatitis, illness due to sharing contaminated respirator’s, health effects caused by use of unsafe air supply.

EHS will maintain records of voluntary respirator use.

A. Requirements for voluntary use of filtering face pieces (e.g. N95, dust masks)
   - Completion of the UNC **Voluntary Use of Respirator Consent and Information Form (Appendix A)** and submitted to EHS.

IX. Training and Record Keeping

Training will be provided to all employees prior to the use of any such device during any work application when entering into the RPP and annually thereafter during fit testing procedures.

Training will require individuals to demonstrate knowledge in the following areas:

- Why respiratory devices are necessary to wear and how improper fit, usage, or maintenance can compromise the protective effect of such devices.
- What the limitations and capabilities the devices are.
- How to use the device effectively in emergency situations, including situations in which the respirator malfunctions.
- What the procedures are for the maintenance and storage of the devices are.
- How to recognize medical signs and symptoms that may limit or prevent effective use of such devices.

All RPP training will be documented and records shall be maintained by EHS for a minimum of three years.

The Voluntary Use of Respirator Consent and Information Form (Appendix A) shall be retained by the individuals Supervisor for a minimum of three (3) years.

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Form for Voluntary Respirator Use: Appendix A

Some UNC employees, students, or affiliates may choose to use filtering facepiece respirators, also referred to as N95 disposable dust masks, on a voluntary basis during activities that involve exposures to low-level, non-hazardous nuisance dust or other similar particulate. According to Occupational Safety and Health Administration (OSHA) regulations, UNC must provide you with the following information if you wear a filtering facepiece respirator voluntarily. The following information is copied from the OSHA Respiratory Protection Standard and pertains to the voluntary use of respirators. After reading the information below, please complete the section at the end of this form.

Appendix D in Sec. 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use 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 or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposure to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You 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 or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator in atmospheres containing contaminants which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

The N95 respirator you have elected to use is approved for use against nuisance non-hazardous particulate (e.g., fiberglass, sheet rock dust, sawdust, dirt, pollen, animal dander). It will not provide protection from any chemical vapors such as those associated with spray paints or solvents. It is not intended for use during work that may involve exposure to airborne asbestos fibers, silica dust, or lead dust. If you have questions concerning any of this information, please contact the EHS Office at (970) 351-1963.

Please complete the section below:

Name (print):_____ Department:_____

Supervisor:_____ Bear Number:_____

Reason for using dust mask (describe nature of work, specific location, and type of dust):

_____

I have read and understood the information provided above:

_____ _____

Signature Date

Return completed form to EHS Department, Campus Box 57

Appendix B

Respirator Training
Fit Test and Issue

Employee Name (Please Print)	Bear Number
Department	Supervisor
	Job Title / Function

Training

Initial those items in which you have been trained.

Instructor Use Only	Initial	
		Respirator - Care, Cleaning, and Maintenance
		Respirator Cartridge Types
		Respirator Cartridge Replacement Procedures

Planned Use

- ☐ Asbestos O & M
- ☐ Nuissance Dust
- ☐ Lead Paint / Sanding (etc.)
- ☐ Other_____

Medical Approval

Completed Medical Approval: ☐ Yes ☐ No (If No, Do Not Proceed with Test)

Conditions Affecting Fit Test

- ☐ Clean Shaven
- ☐ 1-2 Day Beard Growth
- ☐ 2+ Days Beard Growth
- ☐ Moustache
- ☐ Facial Deformaties
- ☐ Dentures Absent
- ☐ Glasses
- ☐ Other_____

Fit Test

- ☐ North
- ☐ Full Face
- ☐ Half Face
- ☐ Other_____
- ☐ Small
- ☐ Medium
- ☐ Large
- ☐ Irritant Smoke
- ☐ Isoamylacetate
- ☐ Qualitative
- ☐ Quantitative

Fit Test Results

☐ Successful Fit ☐ Failure to Fit Caused by_____

Respirator Issued

~~Use one form per respirator!~~

- ☐ North
- ☐ Other_____
- ☐ Full Face
- ☐ Half Face
- ☐ Full Face with Eyeglasses
- ☐ Small
- ☐ Medium
- ☐ Large

Comments:

Request Approval	Test Operator Approval
Employee Signature	Employee Signature
Date	Date
Approval Signature	Test Operator Signature
Title	Title
Date	Date

The above respirator fit test was performed on and by the person(s) listed. The results indicate the performance of the listed respiratory protective device, as fitted on the employee named on this record under controlled conditions. Fit Testing as performed measures the ability of the respiratory protection device to provide protection to the individual tested. The test conductor express or imply no guarantee that this or an identical respiratory protective device will provide adequate protection under conditions other than those present when this test was performed. Improper use, maintenance, or application of this or any other respiratory protective device will reduce or eliminate protection.