

# Safety and Health Policy and Procedures Manual

## Respiratory Protection Program Section 0080

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## **I. GENERAL**

### **A. Purpose**

This document provides information and guidance necessary to insure that the Respiratory Protection Program of UNCG is consistent with Occupational Safety and Health Administration (OSHA) standards. This document outlines the minimal acceptable requirements for a respiratory protection program, delineates responsibilities, provides selection criteria in determining respiratory protection needs, and lists currently approved respiratory protective devices used at UNCG. This document implements the provisions of Title 29, Code of Federal Regulations (CFR), Section 1910.134, Respiratory Protection.

### **B. Scope**

This document is applicable to all UNCG personnel who are performing duties requiring the use of respiratory protection to prevent unnecessary exposure to airborne concentrations of toxic materials equal to or greater than the permissible limits established in existing Federal, and Corporate occupational safety and health standards or criteria. This document is also applicable to all UNCG employees who are performing duties requiring the use of respiratory protection to prevent exposure to Tuberculosis.

### **C. Responsibilities**

#### **1. Office of Safety Shall:**

- a) Through the Office of Safety, the Director of Safety (or designee) is the Program Administrator.
- b) Review the operations for which respiratory protective equipment may be required.
- c) Make periodic surveys of operations and equipment at the University to assure adequate protection of employees is being provided.
- d) Specify the appropriate Equipment. The job situation, exposures involved, exposure levels, and respiratory protection factors will be taken into consideration when specifying a respirator. An Inventory of all jobs for which respirators are required shall be maintained in the Office of Safety.
- e) Provide training on the storage, use and care of respiratory protective equipment.
- f) Maintain a list of employees medically approved for use of respiratory protective equipment.
- g) Generate a written Respiratory Protection Program and update as needed.
- h) Conduct annual inspections and evaluations to determine the continued effectiveness of the Respiratory Protection Program.
- i) Conduct fit testing

2. Department Heads Shall:
  - a) Contact the Office of Safety when they suspect a respirator may be required for a job.
  - b) Insure that employees are provided with respirators at no cost to the employee. After the requirement has been confirmed by the Office of Safety.
  - c) Conduct regular inspections and evaluations to determine the continued effectiveness of the Respiratory Protection Program.
  - d) Attend training on the proper storage, use and maintenance of respiratory protective equipment.
  - e) Insure that employees are scheduled and receive medical exams, when required. (See Medical Evaluations)
  - f) Insure that the employee completes the appropriate medical questionnaire for respirator use and provides this to the PLHCP. (Appendix C)
  - g) Insure that the Supplemental information for PLHCP form is completed and provided to the PLHCP. (Appendix D)
  - h) Supply necessary parts and equipment to clean and maintain the respirator.
  - i) Insure that employees clean and maintain the respiratory protective equipment properly.
  - j) Insure that emergency use respiratory protective equipment is inspected monthly according to the manufacturer's recommendations.
  - k) Insure that employees using respirators voluntarily are provided with the information in appendix G.
  - l) Insure that employees using respirators are provided an initial fit test before use and an annual fit test thereafter. (\*\* for employees using respirators for asbestos a six month fit test is required)
3. Employees Shall:
  - a) Attend training on the storage, use and care of respiratory protective equipment.
  - b) Be clean shaven in areas where facial hair may prevent a proper face seal.
  - c) Store, use and maintain respirators in accordance with instructions given in training.
  - d) Report to the supervisor any operations or jobs which they suspect respiratory protection may be needed.
4. PLHCP Shall:
  - a) Provide the Office of Safety with written results verifying medically fit to use a negative respirator and/or restrictions of use. Form included in Appendix J.

## **II. Program Elements**

### **A. Selection and Use of Respiratory Protective Devices**

1. Respirators are considered an acceptable method of protecting the health of the UNCG personnel only under the following circumstances:
  - a) When it has been determined to the satisfaction of the Office of Safety that there are no feasible engineering or work practice controls that can be used to adequately control the hazard, or
  - b) During intermittent, nonroutine operations (i.e., not exceeding 1 hour/day for 1 day/week), or
  - c) During the interim periods when engineering controls are being designed and/or installed, or
  - d) During emergencies, or
2. Voluntary Usage: It is not the policy of UNCG to provide respiratory protection if not needed; however, if an employee expresses an absolute need, an appropriate respirator will be provided and all provisions of this policy will apply. The department head is to insure that the information provided in Appendix G is provided to the said employee.
3. All respirators to be used must be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall only be used in accordance with the terms of that certification.
4. The correct respirator shall be specified for each job. The Office of Safety, on the basis of environmental evaluations and/or requirements set forth in 29CFR 1910, Subpart Z, for specific substances, shall determine the type of respiratory protective device best suited for the task. The individual issuing the respirators shall be adequately instructed to insure that the correct respirator is used. Each respirator permanently assigned to an individual shall be durably marked to indicate to whom it was assigned. The mark shall not affect the respirator performance in any way. The date of issuance shall be recorded. Respirator selection and use shall take into account health and safety factors, such as nature of hazard, intended use and limitations of respiratory protective devices, movement and work-rate limitations, emergency escape time and distance requirements, and training requirements. The human factor must also be considered since the effectiveness of the respiratory protection program can largely be determined by the degree of worker acceptance. Employee acceptance of respirators is influenced by comfort; ability to breathe without objectionable resistance; adequate visibility under all conditions; provisions for wearing prescription lenses, if necessary; ability to communicate; ability to perform all tasks without undue interference; confidence in the face piece fit; and

convincing evidence that a respirator is necessary and that appropriate action is being taken, where possible, to eliminate the need for respiratory protective equipment.

The importance of proper respiratory selection is emphasized by the fact that improperly fitted or improperly selected respiratory protective devices or cartridges may provide reduced respiratory protection. In addition, inadequate protection may be provided against eye hazards such as projectiles, ultraviolet, infrared, or intense visible light; or eye irritants. Precautions must be taken also to insure acceptable air quality so that air supplied to hose-mask, air line, or self-contained respirators is not contaminated with carbon monoxide, oil or other contaminants.

## **B. Classification and Description of Respirators**

Industrial respiratory protective devices have been designed, tested, and approved for protection against specific industrial exposures. These devices are conveniently grouped into two general classifications according to mode of operation.

### **1. Air Purifying Respirators**

- a) Gas masks and chemical cartridges (gases and vapors).
- b) Particulates (dusts, fog, fume, mist, smoke, and sprays).
- c) Combination (gas, vapor, and particulate).

- (i) Cartridges should be changed according to the manufacturer's directions or on the basis of breakthrough data, if available. Respirators using cartridges or canisters must be equipped with an end-of-service-life indicator (ESLI) certified by NISOH. If there is no ESLI available a change schedule will be formulated based on the manufacturers recommendations, objective information or data that will ensure the cartridges or canisters are changed before the end of their service life. The UNCG cartridge or canister change schedule is contained in appendix H.

### **2. Atmosphere Supplying Respirators**

- a) Self-contained.
- b) Hose-mask.
- c) Air line.
- d) Combination self-contained and hose mask or air line.

- (i) Some respirators have a means for indicating the remaining service life. Some type of warning is available for all self-contained breathing apparatus. This may be a pressure gauge, timer, audible or physical alarm. The user should understand the operation and limitations of each type of

warning device.

### **C. Limitations and Use of Respiratory Protective Devices**

1. The degree of respiratory hazard, as it refers to the selection and classification of respirators, depends upon the atmospheric oxygen concentration; contaminant's physical state, toxicity and concentration; the presence of other contaminants or stress factors in the working environment; and employee exposure time and susceptibility. Respiratory hazards may be classified as gas and vapor contaminants (immediately or not immediately dangerous to life or health), particulate contaminants (immediately or not immediately dangerous to life or health), and oxygen deficiencies. Each classification requires a different degree of respiratory protection.
2. Respirator selection and use in atmospheres immediately dangerous to life or health (includes additional personnel requirements). It is the policy of UNCG that employees will not enter atmosphere immediately if it is probable that atmospheres are immediately dangerous to life or health. However, in the event of an emergency, properly trained personnel may be required to assist
  - a) In areas where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one individual person shall be present with suitable rescue equipment in the form of self-contained breathing apparatus and protective clothing. Communications (visual, voice or signal line) shall be maintained between both or all individuals present. Planning shall be such that one individual will be unaffected in any likely incident and have the proper rescue equipment to be able to assist the other(s) in case of emergency.
  - b) When self contained breathing apparatus are used in atmospheres immediately dangerous to life and health, standby personnel shall be present with suitable rescue equipment.

Air line respirators are not approved for use in immediately dangerous to life and health (IDLH) atmospheres unless an auxiliary self-contained air supply or an air storage receiver with an alarm is also provided because no respiratory protection is provided if the air supply fails. The alarm for the storage receiver should be audible or visual alarm, or combination, that is discernible from other alarms. The alarm(s) should be positioned so that the respirator wearer and/or the standby personnel can recognize the alarm when activated. The alarm should have a mechanism that is tested prior to work in an IDLH atmosphere. If conditions preclude use of the recommended types of respirators, air line respirators may be considered for use, provided an adequate flow of respirable air is maintained and the conditions listed below are met.

- a) Persons using air line respirators in atmospheres immediately dangerous to life or health shall be equipped with safety harnesses and safety lines for lifting or removing persons from hazardous atmospheres or other equivalent provisions for the rescue of persons from hazardous atmospheres shall be used.
- b) Standby personnel with suitable self-contained breathing apparatus shall be located at the nearest fresh air base for emergency rescue.
- c) The air supply hose from a compressor or cylinder air supply will be protected from damage, including cutting, kinking, crushing or burning. In some cases, an armored hose will be used. Hose couplings will be protected against disconnection. Trailing air line hoses shall be arranged to minimize tripping and to permit ready escape.

3. Other considerations for respirator selection:

a) Exposure time:

- (i) Worker time usually determines the length of time for which respiratory protection is needed, including the time necessary to enter and exit a contaminated area. A self-contained breathing apparatus or chemical-cartridge respirator provides respiratory protection for relatively short periods. The hose mask with blower, air line respirator, and other supplied-air respirators provide protection for as long as the face piece is supplied with adequate respirable air. Particulate- filter respirators can provide protection for long periods, without need for filter replacement, only if the atmospheric particulate concentration is low. Therefore, for protracted periods of use, the hose mask with blower and air line respirators offer definite advantages. They also cause less discomfort than air purifying respirators.

b) Activity of the wearer: The work to be covered, work rate, and mobility required of the wearer in carrying out his work should be considered in respirator selection.

- (i) Air purifying respirators present minimal interference with the wearer's movements. Supplied air respirators with trailing hoses severely restrict the area the wearer can cover and present a potential hazard where the trailing hose can come in contact with machinery. Self-contained breathing apparatus present a size and weight penalty which may restrict climbing and movement in tight places.
- (ii) The wearer's work rate determines the respiratory minute volume, maximum inspiratory flow rate, and inhalation and exhalation of breathing resistance. The respiratory minute volume is of great significance in self-contained and air line Respirators operated from cylinders since it determines their

operating life. Useful life under moderate conditions may be one-third that under rest conditions.

- (ii) Peak airflow rate is important in the use of constant-flow air line equipment. The air-supply rate should be greater than the peak inspiratory flow rate to maintain the respiratory enclosure under positive pressure.
- (iv) High breathing resistance of air purifying respirators under conditions of heavy work can result in distressed breathing.
- c) Unusual hazards: Unique factors, which may add additional dimensions to the hazard potential and must be considered when selecting respirators include, for example, skin absorption of the contaminant, skin irritation, eye irritation, and radiation of skin or whole body.
- d) Vision: All face pieces will restrict, to some degree, the wearer's vision. This may increase accident potential. Other problems include wearing of prescription glasses and fogging of the respirator lens.
- e) Communications: Effective speech communication may be required in jobs for which the respirator is being selected. Conventional respirators distort the human voice. The respirator valve usually provides the pathway for some speech transmission over short distances in relatively quiet areas. However, talking can induce face piece or component leakage and should be limited while wearing the respirator. Mechanical and/or electrical speech transmission devices which eliminate these problems are available.
- f) Low Temperatures:
  - (i) Major problems in the use of full face pieces at low temperatures are poor visibility and freezing of the exhalation valves. All full face pieces are designed so that the incoming fresh air sweeps over the inside of the lens to reduce fogging. Otherwise, it would be impossible to wear a full face piece in ordinary room temperatures without severe fogging. Antifog compounds can be used to coat the inside of the lens to prevent fogging at room temperatures and down to temperatures approaching 0 degrees Fahrenheit. However, below 0 degrees Fahrenheit, antifog compounds will not prevent severe fogging.
  - (ii) Full face pieces are available with nose cups that direct moist exhaled air through the exhalation valve. A properly fitting nose cup should provide satisfactory or adequate visibility at temperatures down to 30 degrees Fahrenheit.
  - (iii) At very low temperatures, the exhalation valve may collect moisture and freeze open, or freeze closed, preventing normal exhalation. The Bureau of Mines has published two pamphlets on this subject: Performance of Open Circuit Self-Contained Breathing Apparatus at Minus 28 Degrees

Fahrenheit and Low-Temperature Performance of Compressed-Oxygen Closed-Circuit Breathing Apparatus. Dry respirable air will be used with self-contained breathing apparatus or air line respirators at low temperatures. The dew point of the breathing gas shall be appropriate to the ambient temperature.

- (iv) High pressure connections on self-contained breathing apparatus may leak because of metal contraction at low temperatures. The connections should not be over tightened since they may break when the temperature returns to normal.
  - (v) Ideally, air supplied to respirators should be warmed to at least 40 degrees Fahrenheit.
- g) High Temperatures: A man/woman working in areas of high ambient or radiant temperature is under stress. Any additional stress resulting from use of respirators should, therefore, be minimized. This can be done by selecting and using respirators having minimum weight and breathing resistance. Supplied-air respirators, hoods and suits having an adequate supply of cool breathing air are recommended. Further information on the use of respirators in high temperatures may be found in A Fire Officer's Guide to Breathing Apparatus for the Fire Service, published by the National Fire Protection Association (NFPA).

#### **D. Training**

UNCG will insure that personnel required to use or to supervise other personnel using respiratory protective devices are provided training annually or as needed as outlined in paragraph (1) below.

1. Training: Unless the reasons for the use of respiratory protective devices and instructions on proper selection, use and maintenance are thoroughly understood, and ongoing training provided, the devices may not be used or may not work properly. Both supervisors and workers shall be instructed by competent persons knowledgeable in the area of respiratory protection. Training shall provide individuals an opportunity to handle the respirator, have it fitted properly, test its face piece-to-face seal, wear it in normal air for a long familiarity period, and finally wear it in a test atmosphere. Minimum training shall include:
  - a) Instruction in the nature of the hazard, whether acute, chronic, or both, and a frank appraisal of what may happen if the respirator is not used.
  - b) Explanation of why more positive engineering or process-oriented controls are not immediately feasible to reduce or eliminate the need for respirators.
  - c) A discussion of why this is the proper type of respirator for the purpose.
  - d) A discussion of the respirator's capabilities and limitations.

- e) Annual instruction and training in actual use of the respirator. (preferably annually for emergency use respirators). Training should also include recognition of ESLI on cartridges and canisters.
- f) Classroom and field training to recognize and cope with emergency situations.
- g) Detailed instructions on cleaning and maintenance of the respirators.
- h) Any special training required for unique uses.

## **E. Face-fit and leak testing**

Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. This service shall be provided by the Office of Safety. It is the department head's responsibility to ensure that the employee receive an initial fit test as well as an annual fit test. Employee's wearing respirators for asbestos protection must be fit tested at least every six months.

1. Respirators are generally uncomfortable to wear. If a good face piece-to-face seal can be obtained only by very tight strap tension, the respirator shall not be worn for prolonged periods and its use shall be avoided. Even though maximum breathing resistance is specified by NIOSH, there are differences among approved respirators and one type may be more suitable to the worker than another. Facial structure varies considerably from one individual to another, and since a given respirator is usually made in only one size, a successful fit cannot always be achieved for all persons. Different sizes of the same model or different models of approved respirators may have to be obtained to provide employees adequate respiratory protection.
2. Before initial use, each respirator shall be properly fitted, leakage tests performed, and the face piece-to-face seal tested in a realistic test situation. Records of fit tests shall be maintained. These records shall, as a minimum, contain date of fit test, name of employee, make, model and size of the respirator tested and the results of the test. This test is not required when replacement respirators from the same manufacturer and the same size are obtained.
3. Proper fitting of respiratory protective devices for individuals wearing corrective spectacles or goggles is a problem. A proper seal cannot be established if the temple bars or straps extend through the sealing edge of the face piece. As a temporary measure, spectacles with short temple bars or without temple bars may be taped to the wearer's head. If a spectacle, goggle, face shield, or welding helmet must be worn with a face piece, it shall be worn so as not to adversely affect the seal of the face piece-to-face. Systems of kits for mounting corrective lenses inside full face pieces can be purchased with the face piece. When an employee must wear corrective lenses as part of the face piece, the face piece and

- lenses shall be fitted by qualified individuals to provide good vision, comfort and a gas-tight seal.
4. Each time the wearer puts on the respirator, positive and negative pressure tests shall be conducted to insure a satisfactory face fit. Respirators shall not be worn nor will employees be permitted to perform tasks that require respiratory protection when conditions such as growth of beard, sideburns, a skullcap that projects under the face piece, temple pieces on corrective spectacles or goggles, or the absence of one or both dentures prevent a good face piece-to-face seal. When a specific model or type of respirator is first issued, proper face piece-to-face seal shall be demonstrated by having the user wear the respirator in a realistic test atmosphere.
    - a) Positive pressure test: Close the exhalation valve and exhale gently into the face piece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of air at the seal. For most respirators, this method of leak testing requires the wearer to first remove the exhalant valve cover and the carefully replace it after the test.
    - b) Negative pressure test: Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s), inhaling gently so that the face piece collapses slightly, and hold the breath for 10 seconds. If the face piece remains in its slightly collapsed condition, and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.
  5. Quantitative fit testing of respirators is required by OSHA for selected contaminants (refer to 29 CFR 1910). These systems generate atmospheres of some test substance and continuously monitor the internal (inside mask) and external conditions so that accurate protection factors can be determined. Quantitative fit testing is the preferred method for all negative pressure respirator device fit testing.
  6. Appendix E contains the qualitative and quantitative fit testing protocol and appendix F contains the fit testing record. The fit testing record shall be completed and signed by both the person performing the fit test protocol and by the employee being tested.

## **F. Record Keeping**

1. Department records of respirator training, face-fit and leak-testing shall be kept for at least the duration of employment or as specified by specific contaminant exposure (refer to 29 CFR 1910). These records shall include the following minimal information:
  - a) Name, social security number, and shall be initialed by the

- employee.
- b) Job title.
  - c) Department, work location, supervisor's name.
  - d) Date of training or testing.
  - e) Date of medical evaluation.
  - f) Type of respirator used.
  - g) Success or failure of person to obtain satisfactory fit if a quantitative fitting test was performed.
  - h) Respirator protection factor based upon test results if a quantitative fitting test was performed.
  - i) Name of person performing the training or testing.
  - j) The presence of facial hair, long hair or side burns, etc.
  - k) Wearer's need for glasses or other protection.
  - l) Other pertinent information.

Records should be identified to allow for cross-referencing with worker contamination exposure data.

Appendix B contains the Respiratory Protective Devices Training Certification form which will be completed and signed by both the instructor and trainee after completion of the training program. Appendix F contains the testing record. The fit testing record shall be completed and signed by both the person performing the fit test protocol and by the employee being tested.

2. The Office of Safety shall also keep on ongoing list of respirators in use at UNCG.

### **G. Maintenance, Care and Inspection of Respiratory Protective Devices**

When respirators are issued to individuals, the individual is responsible for primary maintenance and care of his/her respirator. Where respirators are used collectively or kept ready for emergencies, the supervisor is responsible for establishing respirator maintenance and cleaning program. This program shall be adjusted for the number of types of respirators in use, working conditions and hazards involved, and shall include the basic services: inspection for defects (including a leak check), cleaning and disinfecting, repair and storage. Equipment shall be properly maintained to retain its original effectiveness.

1. All respirators shall be inspected routinely before and after each use.
2. A respirator that is not routinely used but kept ready for emergency use shall be inspected after each use and at least monthly by the department supervisor to assure that it is in satisfactory working condition.
3. Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be fully charged according to the manufacturer's instructions. It shall be determined that the regulator and warning devices function properly. A tag attached to the assembly shall be initialed by the

inspector.

4. Respirator inspection shall include a check of the tightness of connections and the condition of the face piece, headbands, valves, connecting tube, and canisters. Rubber or elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber or elastomer parts with a massaging action will keep them pliable and flexible, and prevent them from hardening or stiffening during storage.
5. The user shall keep a record of inspection dates, findings, and corrective actions for respirators maintained for emergency use.
6. Respirators issued to specific individuals shall be cleaned and disinfected as frequently as necessary to insure that skin-penetrating and dermatitis-causing contaminants are removed from respirator surfaces. Respirators maintained for emergency use or used by more than one person shall be cleaned and disinfected after each use.

The following procedure is recommended for cleaning and disinfecting respirators:

1. Remove any filters, cartridges, or canisters.
2. Wash face piece and breathing tube in a cleaner-disinfectant solution. A brush may be used to facilitate dirt removal.
3. Rinse completely in clean, warm water.
4. Air dry in a clean area.
5. Clean other respirator parts as recommended by the manufacturer.
6. Inspect valves, head straps, and other parts; replace defective parts with new ones.
7. Insert new filters, cartridges or canisters periodically as specified by the manufacturer; make sure the seal is tight.
8. Place in plastic bag or other closed container for storage.

Cleaner-disinfectant solution may be commercially prepared solutions; which are followed by a clean, warm-water rinse and air dried; or respirators may be washed in a liquid detergent solution. After washing, additional disinfection may, if desired, be provided by dipping the mask in one of the following disinfectant solutions, followed by rinsing and air drying:

1. Hypochlorite solution (50 ppm chlorine) for 2 minutes.
2. Aqueous iodine solution (50 ppm iodine) for 2 minutes.

Hypochlorite and iodine solutions or iodine compounds can damage respirator parts by aging rubber and corroding metal parts if immersion times are extended. Solvents (except as prescribed in (d) below), temperatures above 185 Fahrenheit, and vigorous mechanical agitation should be avoided.

Respirators contaminated with organic phosphate pesticides should be decontaminated by an alkaline soap wash and 50 percent isopropyl or ethyl alcohol rinse followed by normal cleaning procedures.

Replacement or repair shall be done only by experienced persons using parts designed for the respirators. No attempt shall be made to replace components or to make adjustments or repairs beyond the manufacturer's recommendations. Reduction or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair.

Respirator storage shall be as follows:

1. After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals and other contaminants. Respirators placed at stations and work areas for emergency use should be stored in compartments built for that purpose, clearly marked to indicate the content, and must be quickly accessible at all times. Routinely used respirators, such as dust respirators, may be placed in ziplock bags. Respirators should not be stored in such places as lockers or tool boxes unless they are in containers or cartons.
2. Respirators shall be packed or stored so the face piece and exhalation valve will not be damaged by being subjected to crushing or cramming.
3. Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in use and care instructions usually mounted inside the carrying case lid.

Respirator Inspections

1. Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by supervisors to assure that respirators are properly selected, used, cleaned and maintained.
2. Respirators used routinely will be inspected during cleaning. Experienced personnel shall replace worn or deteriorated parts with parts designed for the respirator. No attempt shall be made to replace components or to make adjustments or repairs beyond the manufacturer's recommendations. Reducing admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or

repair. Respirators shall be inspected at least once a month and after each use, and a written record kept of inspection dates and findings.

## **H. Medical Evaluations**

*Employees wearing respirators for asbestos protection are required to have annual medical evaluations. (Refer to the Asbestos Operations and Maintenance Policy for requirements of the evaluation)* Workers shall not be assigned to tasks requiring the use of respirators unless it has been determined by medical evaluation that they are physically and psychologically able to perform their work while wearing the prescribed respiratory protection. Medical evaluations shall be completed initially prior to fit test or respirator usage and additionally if any of the following conditions are met:

- An employee reports medical signs or symptoms that are related to ability to use a respirator.
- A PLHCP, Supervisor, or the respiratory program administrator informs the employer that an employee needs to be reevaluated.
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation: or
- A change occurs in workplace conditions (e.g, physical work effort, protective clothing, temperature) that may result in a substantial increase in physiological burden placed on an employee.

The elements of this medical evaluation shall be the responsibility of a physician or other licensed health care professional (PLHCP) and may consist of pulmonary function screening, which may include the determination of the forced expiratory volume in 1 second (FEV1) and the forced vital capacity (FVC). It may also include other procedures, such as tests of the cardiovascular and respiratory systems, which the medical examiner considers useful in evaluating the ability to use the respirators. Appendix C contains the Medical Questionnaire & Evaluation and for Respirator Use form which must be completed. This form must be reviewed and signed by the PLHCP. The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee.

The following information must be provided to the PLHCP before a recommendation is made concerning an employee's ability to use a respirator. (Appendix D)

1. The type and weight of the respirator to be used by the employee;
2. The duration and frequency of the respirator use (including use for rescue and response);
3. The expected physical effort;
4. Additional protective clothing and equipment to be worn; and
5. Temperature and humidity extremes that may be encountered.

Follow-up medical evaluations shall be provided if :

1. An employee gives a positive response to any question among questions 1 through 8 in Section 2, Part A of the Medical Questionnaire.
2. An employee demonstrates the need for a follow-up medical exam as determined by the PLHCP.

The follow-up medical evaluation shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

### **I. Air Quality**

Compressed air, compressed oxygen, liquid air and liquid oxygen used for respiration shall be of high purity.

1. Cylinders shall be tested and maintained as prescribed in the Shipping Container Specifications of the Department of Transportation (49 CFR 178).
2. Oxygen shall meet the requirements of the United States Pharmacopeia for medical or breathing oxygen: Oxygen at least 99 percent, carbon dioxide less than 300 ppm, carbon monoxide less than 10 ppm, and nitric oxide and nitrogen dioxide less than 5 ppm. Compressed oxygen shall not be used in supplied air respirators or in open circuit self-contained breathing apparatuses that have previously used compressed air. Oxygen must never be used with air line respirators.
3. Breathing air for respirators may be supplied from cylinders or air shall meet at least the requirements of the specification for grade D breathing air as defined in American National Standards Institute (ANSI) Standard Z86.1; Compressed Gas Association (CGA) Specification G-7.1, viz.: oxygen 19.5-23.5 percent, hydrocarbons (condensed) less than 5 mg/m<sup>3</sup>, carbon monoxide less than 10 ppm, and carbon dioxide less than 1000 ppm.
4. The compressor for supplying breathing air shall be equipped with necessary safety and standby devices as stated below. Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system. Suitable in-line air purifying sorbent beds and filters shall be installed and maintained to further assure breathing air quality. An air storage receiver of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in event of a compressor failure, and alarms to indicate compressor failure and/or overheating shall be installed into the systems. When feasible, oil-free compressors should be procured when obtaining additional or replacing existing compressors used for supplying breathing air. If an oil-lubricated compressor is used, it

shall have a high-temperature or carbon monoxide alarm, or both.

5. If only a high-temperature alarm is used, the air from the compressor should be tested for carbon monoxide at least monthly, or more frequently as indicated, to insure that it meets air quality specifications. Accurate records of these test results should be maintained by the appropriate supervisory personnel.
6. Air line couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of air line respirators with nonrespirable gases or oxygen.
7. Breathing gas containers shall be marked in accordance with American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, Z48.1-1954; Federal Specification BB-A-1034a, June 21, 1968; Air, Compressed for Breathing Purposes; or Interim Federal Specification GG-B-00675b, April 27, 1965, Breathing Apparatus, Self-Contained.

## **J. Program Evaluation**

The Office of Safety shall conduct annual evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented, and to consult employees to ensure that they are using respirators properly. The evaluation shall assess the following factors:

1. Respirator fit.
2. Appropriate respirator selection for the hazards present.
3. Proper respirator use under the workplace conditions the employee encounters.
4. Proper respirator maintenance.
5. Other factors if deemed necessary

Following the completion of any review, the program will be revised/updated in order to correct any identified deficiencies before further respirator use is authorized.

## **Appendix A**

### **Definitions**

## Definitions

For the purpose of this policy, the following definitions apply:

1. **NIOSH-certified:** Tested and listed as satisfactory by the National Institute for Occupational Safety and Health (NIOSH).
2. **Contaminant:** A harmful, irritating, or nuisance material in concentrations exceeding those normally found in ambient air.
3. **Disinfection:** The destruction of pathogenic organisms, especially by means of chemical substances.
4. **Dusts:** Solid particles, mechanically produced, with a size ranging from submicroscopic to macroscopic.
5. **Emergency:** An unplanned event when a hazardous atmosphere of unknown chemical or particulate concentration suddenly occurs, requiring immediate use of a respirator for escape from or entry into the hazardous atmosphere to carry out maintenance or some other task.  
Note: This may or may not include cleanup, maintenance, or repair in unknown contaminant concentrations or oxygen deficiency.
6. **Evacuation or escape:** An unplanned event when a hazardous atmosphere of unknown chemical or particulate concentration suddenly occurs, requiring immediate use of a respirator for exiting the area only.
7. **Fumes:** Solid particles generated by condensation from the gaseous state, generally after volatilization from molten metals, with a size usually less than 1 micrometer in diameter.
8. **Gases:** Substances which are gaseous at ordinary temperatures and pressures.
9. **Immediately dangerous to life or health:** A condition posing an immediate threat to life or health, or an immediate threat of severe exposure to contaminants likely to have adverse delayed effects on health. This condition includes atmospheres where oxygen content by volume is less than 16 percent.
10. **Mists:** Suspended liquid droplets generated by condensation or by breaking up of liquid with a size ranging from submicroscopic to macroscopic.

11. **Oxygen deficient atmosphere:** An atmosphere containing 19.5 percent or less oxygen by volume.
12. **Particulate matter:** A suspension of fine solid or liquid particles or fibers in air, such as dust, fog, fume, mist, smoke or sprays.
13. **Pneumoconiosis-producing dust:** Dust which, when inhaled, deposited, and retained in the lungs, may produce signs, symptoms, and findings of pulmonary disease.
14. **Radon daughters:** Particulate decay products of radon.
15. **Respirator:** An approved safety device designed to provide the wearer with respiratory protection against inhalation of airborne contaminants and for some devices, protection against oxygen-deficient atmospheres.
16. **Respiratory minute volume:** The amount of air inspired per minute.
17. **Shall:** Indicates a requirement that is essential to meet the currently accepted standards of protection or Federal rules and regulations.
18. **Should:** Indicates an advisory recommendation that is to be applied when practical.
19. **Vapor:** The gaseous state of a substance that is solid or liquid at ordinary temperature and pressure.

**Appendix B**  
**Training Records**



**Appendix D**

**Supplemental Information for the PLHCP**

***Information to be completed by the supervisor and provided to the PLHCP at time of employee's medical evaluation***

Employee Name: \_\_\_\_\_

Type of Respirator to be used: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Weight of respirator to be used: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Duration of respirator use: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Frequency of respirator use: \_\_\_\_\_  
\_\_\_\_\_

Expected physical effort (heavy/ moderate/light): \_\_\_\_\_  
\_\_\_\_\_

Additional Protective clothing and equipment to be worn: \_\_\_\_\_  
\_\_\_\_\_

Estimated extreme temperatures to be encountered during respirator use:  
\_\_\_\_\_

Estimated humidity extremes to be encountered during respirator use:  
\_\_\_\_\_

**Appendix E**  
**Fit Test Protocols**

## **Quantitative Fit Test Procedures**

### 1. General:

- (a) The method applies to the negative-pressure nonpowered air-purifying respirators only.
- (b) The employer shall assign one individual who shall assume the full responsibility for implementing the respirator quantitative fit test program.

### 2. Definition:

- (a) Quantitative Fit Test means the measurement of the effectiveness of a respirator seal in excluding the ambient atmosphere. The test is performed by dividing the measured concentration of challenge agent in a test chamber by the measured concentration of the challenge agent inside the respirator facepiece when the normal air purifying element has been replaced by essential perfect purifying element.
- (b) Challenge Agent means the air contaminant introduced into a test chamber so that its concentration inside and outside the respirator may be compared.
- (c) Test Subject means the person wearing the respirator for quantitative fit testing.
- (d) Normal Standing Position means standing erect and straight with arms down along the sides and looking straight ahead.
- (e) Fit Factor means the ratio of challenge agent concentration outside with respect to the inside of a respirator inlet covering(facepiece or enclosure).

### 3.Apparatus:

- (a) Instrumentation. Corn oil, sodium chloride or other appropriate aerosol generation, dilution, and measurement systems shall be used for quantitative fit test.
- (b) Test chamber. The test chamber shall be large enough to permit all test subjects to freely perform all required exercises without disturbing the challenge agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the challenge agent is effectively isolated from the ambient air yet uniform in concentration throughout the chamber.
- (c) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high-efficiency particulate filter supplied by the same manufacturer.

- (d) The sampling instrument shall be selected so that a strip chart record may be made of the test showing the rise and fall of challenge agent concentration with each inspiration and expiration at fit factors of at least 2,000.
- (e) The combination of substitute air-purifying elements (if any), challenge agent, and challenge agent concentration in the test chamber shall be such that the test subject is not exposed in excess of PEL to the challenge agent at any time during the testing process.
- (f) The sampling port on the test specimen respirator shall be placed and constructed so that there is no detectable leak around the port, a free air flow is allowed into the sampling line at all times and so there is no interference with the fit or performance of the respirator.
- (g) The test chamber and test set-up shall permit the person administering the test to observe one test subject inside the chamber during the test.
- (h) The equipment generating the challenge atmosphere shall maintain the concentration of challenge agent constant within a 10 percent variation for the duration of the test.
- (i) The time lag (interval between an event and its being recorded on the strip chart) of the instrumentation may not exceed 2 seconds.
- (j) The tubing for the test chamber atmosphere and for the respirator sampling port shall be the same diameter, length and material. It shall be kept as short as possible. The smallest diameter tubing recommended by the manufacturer shall be used.
- (k) The exhaust flow from the test chamber shall pass through a high-efficiency filter before release to the room.
- (l) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

#### 4. Procedure Requirements:

- (a) The fitting of half-mask respirators should be started with those having multiple sizes and a variety of interchangeable cartridges and canisters such as the MA comfort II-M, North M. Survivor M, A-O M, or Scott-M. Use either of the tests outlined below to assure that the face piece is properly adjusted.
  - (1) Positive pressure test: With the exhaust port(s) blocked, the negative pressure of slight inhalation should remain constant for several seconds.
  - (2) Negative pressure test: With the intake port(s) blocked, the negative pressure slight inhalation should remain constant for several seconds.

- (b) After a facepiece is adjusted, the test subject shall wear the facepiece for at least 5 minutes before conducting a qualitative test by using either of the methods described below and using the exercise regime described in 5 a, b, c, d, and e.
  - (1) Isoamyl acetate test: When using organic vapor cartridges, the test subject who can smell the odor should be unable to detect the odor of isoamyl acetate squirted into the air near the most vulnerable portions of the facepiece seal. In a location which is separated from the test area, the test subject shall be instructed to close her/his eyes during the test period. A combination cartridge or canister with organic vapor and high-efficiency filters shall be given an opportunity to smell the odor of isoamyl acetate before the test is conducted.
  - (2) Irritant fume test: When using high-efficiency filters, the test subject should be unable to detect the odor of irritant fume (stannic chloride or titanium tetrachloride ventilation smoke tubes) squirted into the air near the most vulnerable portions of the facepiece seal. The test subject shall be instructed to close her/his eyes during the test period.
- (c) The test subject may enter the quantitative testing chamber only if she or he has obtained a satisfactory fit as stated in 4b of this Appendix.
- (d) Before the subject enters the test chamber, a reasonably stable challenge agent concentration inside the respirator shall be measured in the test chamber.
- (e) Immediately after the subject enters the test chamber, the challenge agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half-mask and 1 percent for a full face piece.
- (f) A stable challenge agent concentration shall be obtained prior to the actual start of testing.
  - (1) Respirator retraining straps may not be overtightened for testing. The straps shall be adjusted by the wearer to give a reasonably comfortable fit typical of normal use.

5. Exercise Regime: Prior to entering the test chamber, the test subject shall be given complete instructions as to her/his part in the test procedures. The test subject shall perform the following exercises, in the order given, for each independent test.

- (a) Normal Breathing (B). In the normal standing position, without talking, the subject shall breathe normally for at least one minute.
- (b) Deep Breathing(B). In the normal standing position the subject shall do deep breathing for at least one minute pausing so as not to hyperventilate.
- (c) Turning head side to side(SO). Standing in place the subject shall slowly turn

his/her head from side between the extreme positions to each side. The head shall be held at each extreme position for at least 5 seconds. Perform for at least three complete cycles.

- (d) Moving head up and down (UP). Standing in place, the subject shall slowly move his/her head up and down between the extreme position straight down. The head shall be held at each extreme position for at least 5 seconds. Perform for at least three complete cycles.
- (e) Reading (R). The test subject (keeping eyes closed) shall repeat after the test conductor the rainbow passage at the end of this section. The subject shall talk slowly and aloud so as to be heard clearly by the test conductor or monitor. (f) Grimace(G). The test subject shall grimace, smile, frown, and generally contort the face using facial muscles. Continue for at least 15 seconds.
- (f) Bend over and touch toes(B). The test subject shall bend at the waist and touch toes and return to upright position. Repeat for at least 30 seconds.
- (g) Jogging in place(J). The test subject shall perform jog in place for at least 30 seconds.
- (h) Normal Breathing(NB). Same as exercises a.

### **Rainbow Passage**

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

- 6. Termination: /the test shall be terminated whenever any single peak penetration exceeds 5 percent for half-masks and 1 percent for full facepieces. The test subject may be refitted and retested. If two of the three required tests are terminated, the fit shall be deemed inadequate.
- 7. Calculation of Fit Factors:
  - (a) The fit factor determined by the quantitative fit test equals the average concentration inside the respirator.
  - (b) The average test chamber concentration is the arithmetic average of the test chamber concentration at the beginning and of the end of the test.
  - (c) The average peak concentration of the challenge agent inside the respirator shall

be the arithmetic average of the peak concentrations found for each breath during the exercise.

- (d) The average peak concentration for an exercise may be determined graphically if there is not a great variation in the peak concentrations during a single exercise.
8. Interpretation of Test Results: The fit factor measured by the quantitative fit testing shall be lowest of the three protection factors resulting from three independent tests.
9. Other Requirements:
- (a) The test subject shall not be permitted to wear a half-mask or full facepiece mask if the minimum fit factor 100 or 1,000, respectively, cannot be obtained. If hair growth or apparel interfere with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the test subject must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.
  - (b) The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface.
  - (c) If a test exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respirator diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing immediately.
  - (d) The test subject shall be given the opportunity to wear the assigned respirator for one week. If the respirator does not provide a satisfactory fit during actual use, the test subject may request another QNFT which shall be performed immediately.
  - (e) A respirator fit factor card shall be issued to the test subject with the following information:
    - (1) Name.
    - (2) Date of fit test.
    - (3) Protection factors obtained through each manufacturer, model, and approval number of respirator tested.
    - (4) Name and signature of the person that conducted the test.
  - (f) Filters used for qualitative or quantitative fit testing shall be replaced weekly, whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the film media. Organic vapor cartridges/canisters shall be replaced daily or sooner if there is any indication of breakthrough by the test agent.

#### 10. Repetition of Test:

In addition, because the sealing of the respirator may be affected, quantitative fit testing shall be repeated immediately when the test subject has a :

- (a) Weight change 20 pounds or more,
- (b) Significant facial scarring in the area of the facepiece seal,
- (c) Significant dental changes; i.e., multiple extractions without prothesis, or acquiring dentures.
- (d) Reconstructive or cosmetic surgery, or
- (e) Any condition that may interfere with facepiece sealing.

#### 11. Recordkeeping:

A summary of all test results be maintained in the Office of Safety for 3 years. The summary shall include:

- (a) Name of test subject.
- (b) Date testing.
- (c) Name of the test conductor.
- (d) Fit factors obtained from every respirator tested (indicate manufacturer, model, size and approval number

**Appendix F**  
**Fit Test Records**

**THE UNIVERSITY OF NORTH CAROLINA at GREENSBORO  
QUALITATIVE FIT TEST RECORD**

\_\_\_ Qualitative Test    \_\_\_ Quantitative Test                      Date: \_\_\_\_\_

Name of Employee: \_\_\_\_\_ ID# \_\_\_\_\_: Department: \_\_\_\_\_  
Physician's Written Approval for Respiratory Use: \_\_\_\_\_

History of Asthma, Bronchitis? \_\_\_\_\_ Contact Lense Wearer? \_\_\_\_\_

**Respirator Selection (Indicate Make, Model, and Size):**

First Choice: \_\_\_\_\_  
Second Choice: \_\_\_\_\_  
Third Choice: \_\_\_\_\_  
Final Selection: \_\_\_\_\_

**Fit Test Protocol:**

**Results of Fit Testing:**

Pass \_\_\_\_\_ Fail \_\_\_\_\_

**Unusual Conditions Affecting Fit Test:**

**Comments:**

**Signatures**

Person Performing Fit Test \_\_\_\_\_  
Employee \_\_\_\_\_

**Copies to:** Office of Safety, Department

**Appendix G**  
**Information for Employees Using Respirators When Not Required Under the Standard**

### **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 exposures 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 respirators 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 into atmospheres containing contaminants for 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.

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**Appendix H**  
**Cartridge and Canister Change Schedule**

## Cartridge/Canister Change Procedures

It is the dual responsibility of the department head, employee and the Office of Safety to determine appropriate change schedules for cartridges/canisters used in air purifying respirators. The cartridge-change schedule requirement applies only to respirators used for protection against gases or vapors, not particulates.

If available, the respirator wearer shall use the End-of-Service-Life Indicator (ESLI) to determine when to change out air-purifying elements.

If no ELSLI is available for a particular the following methods can be used to determine and appropriate change schedule:

1. Manufacturers Information:

Contact the manufacturer of the respirator or cartridge to determine the appropriate change schedule.

2. Use mathematical model:

The mathematical models can be used by following complex formulas. The mathematical models are broken down into two categories; predictive models and descriptive models. Each model has its own mathematical formula.

- **Predictive Model:** A copy of the predictive model developed by G.O. Wood can be found on the Internet at [www.osha-slc.gov/SLTC/respiratoryprotection/woodmodel.html](http://www.osha-slc.gov/SLTC/respiratoryprotection/woodmodel.html). This model looks at chemical and physical properties of different compounds to determine cartridge life. However, this model is the least accurate method because it does not look at actual experimental data.

- **Descriptive Model:** A copy of the descriptive model can be found at [www.osha-slc.gov/SLTC/respiratoryprotection/yoonmodel.html](http://www.osha-slc.gov/SLTC/respiratoryprotection/yoonmodel.html). The descriptive model looks at existing experimental data to set up a basic model. Once this model has been set up, it can be used to calculate values for points where experimental data is not available.

3. Rule of Thumb:

If the concentration of the chemical is less than 200 ppm and the chemical's boiling point is greater than 70°C, you can expect a service life of 8 hours at a normal work rate.

Service life is inversely proportional to work rate.

Reducing concentrations by a factor of 10 will increase the service life by a factor of 5.

Humidity above 85% will reduce service life by 50%.

*\*\*Note: This should NOT be the sole method of determining service life. It can only be used as a guide.\*\**

The following chemical specific standards are already addressed by OSHA:

Acrylonitrile 1910.1045(h)(2)(ii)	End-of-service life or end of shift (whichever occurs first)
Benzene 1910.1028(g)(2)(ii)	Every 1, 2 or 4 hours dependent upon concentration according to Table and at beginning of each shift
Butadiene 1910.1051(h)(2)(ii)	Every 1, 2 or 4 hours dependent upon concentration according to Table and at beginning of each shift
Formaldehyde 1910.1048(g)(2)(ii)	For cartridges, every three hours or end of shift (whichever is sooner); for canisters, every 2 or 4 hours according to the schedule
Vinyl chloride 1910.1017(g)(3)(ii)	End-of-service life or end of shift in which they are first used (whichever occurs first)
Methylene chloride 1910.1052(g)(2)(ii)	Canisters may only be used for emergency escape and must be replaced after use

If there are any questions with developing a cartridge change schedule the Office of Safety should be notified and appropriate measures will be taken to develop an appropriate change schedule.

## **Appendix I**

### **Program Evaluation Checklist**

# RESPIRATORY PROGRAM EVALUATION CHECKLIST

Periodically, the Office of Safety will evaluate UNCG's **Respiratory Protection Program** to determine the continued effectiveness of the program in the workplace.

## Program Administration

- \_\_\_\_\_ (1) Is the Written Respiratory Protection Program up to date?
- \_\_\_\_\_ (2) Is there a trained & experienced Respirator Program coordinator?
- \_\_\_\_\_ (3) Can feasible engineering controls or work practices eliminate the need for respirators?
- \_\_\_\_\_ (4) Are there written procedures/statements covering the various aspects of the respirator program, including:
  - \_\_\_\_\_ program administration;
  - \_\_\_\_\_ hazard evaluation;
  - \_\_\_\_\_ respirator selection;
  - \_\_\_\_\_ purchase of MSHA/NIOSH certified equipment;
  - \_\_\_\_\_ medical evaluation of respirator users;
  - \_\_\_\_\_ issuance of equipment;
  - \_\_\_\_\_ fit-testing;
  - \_\_\_\_\_ training;
  - \_\_\_\_\_ maintenance, storage, inspection, and repair;
  - \_\_\_\_\_ respirator use under special conditions.

## Program Operations

### Respirator Selection

- \_\_\_\_\_ (1) Are work area conditions and worker exposures surveyed?
- \_\_\_\_\_ (2) Are appropriate respirators selected based on the hazards and workplace conditions to which the worker is exposed?
- \_\_\_\_\_ (3) Are only NIOSH-certified respirators purchased and used; do they provide adequate protection for the specific hazard and concentration of the contaminant?
- \_\_\_\_\_ (4) Has a medical evaluation of all users been made to determine his/her medical fitness to wear the selected respirator?
- \_\_\_\_\_ (5) Are there records covering issuance of respirators?

### Fitting

- \_\_\_\_\_ (1) Are users given the opportunity to try on several respirators?
- \_\_\_\_\_ (2) Is the fit tested annually?
- \_\_\_\_\_ (3) Is the facepiece-to-face seal tested in a test atmosphere?
- \_\_\_\_\_ (4) Are workers prohibited from wearing respirators when they have facial hair or other characteristics that may cause face- seal leakage?

### **Respirator use in the work area**

- \_\_\_\_\_ (1) Are employees able to use their respirators without interfering with effective workplace performance?
- \_\_\_\_\_ (2) Are respirators being worn correctly?
- \_\_\_\_\_ (3) Are workers keeping respirators on while in the hazardous atmosphere?

### **Maintenance and storage of respirators**

- \_\_\_\_\_ (1) Are respirators cleaned and disinfected after each use?
- \_\_\_\_\_ (2) Are proper methods of cleaning and disinfecting used?
- \_\_\_\_\_ (3) Are respirators stored to protect them from dust, sunlight, heat, excessive cold or moisture, or damaging chemicals?
- \_\_\_\_\_ (4) Are respirators stored to prevent them from deforming?

### **Inspection and Repair**

- \_\_\_\_\_ (1) Are respirators inspected before and after each use?

**Appendix J**

**Medical Determination Form**

**University of North Carolina at Greensboro**

**Medical Determination Form**

Employee Name: \_\_\_\_\_

Date: \_\_\_\_\_

It has been determined that \_\_\_\_\_ is medically able to use respiratory protective devices.

List any limitations that apply to the use of respiratory protective devices, or needs for a follow-up medical evaluation:

Physicians Signature: \_\_\_\_\_

Employees Signature: \_\_\_\_\_

