

DEPARTMENT OF THE ARMY  
HEADQUARTERS, 101<sup>st</sup> AIRBORNE DIVISION (AIR ASSAULT) AND FORT CAMPBELL  
Fort Campbell, Kentucky 42223-5617  
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Medical Services  
**RESPIRATORY PROTECTION PROGRAM**

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**Chapter 1**

**General**

**1-1. Purpose**

This regulation:

- a. Provides requirements to implement an effective Respiratory Protection Program according to the references listed in Appendix A.
- b. Prescribes policies for selecting, obtaining, controlling, using, and maintaining respiratory protective equipment in a manner that will ensure adequate and proper protection for employees (military and civilian) working in environments containing harmful concentrations of dusts, fogs, fumes, mists, gases, smoke, sprays, or vapors.
- c. Delineates responsibility for the Fort Campbell Respiratory Protection Program.

**1-2. Applicability**

This regulation applies to all Fort Campbell, Kentucky, employees (active duty military and Department of the Army civilians) and contract personnel using or having a need to use respiratory protection devices.

**1-3. References**

Required and related publications are listed in appendix A.

**This regulation supersedes CAM Regulation 40-2 dated 13 December 1999**

#### 1-4. Definitions

Abbreviations and special terms used in this regulation are explained in the glossary.

#### 1-5. Responsibilities

- a. The Garrison Commander will:
  - (1) Ensure a respiratory protection program is established in accordance with 29 CFR 1910.134 and this regulation.
  - (2) Provide funding, facilities, and qualified personnel to implement effectively the requirements of this program.
  - (3) Ensure an Installation Respirator Program Director/Manager is appointed to perform the duties outlined in paragraph 1-5e below.
  - (4) Ensure an Installation Respirator Specialist is appointed to perform the duties outlined in paragraph 1-5 f below.
- b. Directors, Division Chiefs, and Commanders will:
  - (1) Ensure respiratory protection is purchased and used by all personnel entering into or working in an atmosphere considered hazardous to employee health.
  - (2) Ensure requirements which provide for and enforce the use of personal protective equipment (PPE) are included in the performance standards of supervisory personnel responsible for personnel required to use respiratory protection.
  - (3) Appoint a Respiratory Protection Program Monitor and provide the name of the appointee to the Installation Respirator Program Director/Manager.
- c. Director of Safety will:
  - (1) Provide assistance, clarification and recommendations as requested by Commanders and Directors in reference to compliance with respiratory protection requirements.
  - (2) Notify, in the course of safety surveys, Industrial Hygiene and Respiratory Protection, Preventive Medicine Service, when and where personnel without respiratory protection are working in an atmosphere suspected of being hazardous to health.
- d. Chief, Industrial Hygiene (IH), Preventive Medicine Service (PMS), will:
  - (1) Determine personnel and operations that require respiratory protection.
  - (2) Prescribe and disseminate instructions as to the type of respiratory equipment to be used, maintained, and/or replaced, e.g., supplied air or air purifying.
  - (3) Provide Installation Respiratory Protection with information on hazardous chemical/substance concentration levels in the workplace.
  - (4) Provide assistance annually to the Installation Respirator Program Director/Manager concerning planning, reviewing, and evaluating the Respiratory Protection Program.
  - (5) Provide guidance to the Installation Respirator Specialist concerning serviceability of respiratory protection devices.
  - (6) Inform the Installation Respirator Director/Manager, in writing, of the employees or workplaces where respiratory protection is required.
  - (7) Inform the Installation Respirator Director/Manager, in writing, of the employees or workplaces that no longer require the use of respiratory protection.
- e. The Installation Respirator Program Director/Manager will:
  - (1) Plan, program, and annually evaluate the success and effectiveness of the Respiratory Protection Program with assistance from the Installation Safety Office and the Industrial Hygienist.
  - (2) Review all written respiratory protection programs (WRPPs) concerning respirator use prior to publication.
  - (3) Coordinate with Industrial Hygiene to determine which worksites require respiratory protection.
  - (4) Ensure the Installation Respiratory Protection Specialist maintains records of monthly inspections conducted on emergency use respirators and self-contained breathing apparatus (SCBAs).
  - (5) Initiate prompt corrective action on deficiencies identified in the Respiratory Protection Program and advise commanders/directors of those deficiencies.
  - (6) Provide respirator fit test training (para 2-5a below) to the Installation Respirator Specialist.
  - (7) Provide units a sample written respiratory protection program (WRPP) covering the requirements of the respiratory protection program in their workplace.
  - (8) Provide guidance to supervisors and employees on respirator change schedules.
- f. The Installation Respirator Specialist will:
  - (1) Determine serviceability of equipment within the parameters established by the respirator manufacturer.
  - (2) Provide initial and annual respirator fit testing and training to personnel using negative or positive pressure respirators in accordance with prescribed guidance.

- (3) Train employees in the proper use, limitations, care, and maintenance of respirators to include user checks of respirators before each use.
- (4) Inform employees before initial issue of respiratory protection of their responsibilities regarding respirator use.
- (5) Complete and maintain records pertaining to respirator fit testing and training.
- (6) Coordinate with supervisors to ensure issuance, use, maintenance, and care of respirators.
- (7) Issue a respirator card documenting the type, size, and model of respirator, TC number of cartridge, date of fit testing, and fit factor.
- (8) Use only National Institute for Occupational Safety and Health (NIOSH) approved respirators and equipment for fit testing.
- (9) Inspect SCBA and emergency use respirators monthly and maintain records.
- (10) Conduct monthly quality assurance testing of compressed air used for human respiration and provide commanders/directors with results.
- (11) Calculate respirator change schedules.
- g. The Chief, Occupational Health (OH) Section, Preventive Medicine Service, will:
  - (1) Determine if workers assigned to tasks requiring the use of respirators are physically and psychologically able to perform work while wearing prescribed respiratory protection. The medical evaluation examination of the users will be completed annually.
  - (2) Make results of determinations known to supervisors as to whether each respective employee is able to wear respiratory protection and perform work required, and coordinate with Civilian Personnel Office when necessary.
  - (3) Advise the Installation Respirator Program Director/Manager, in writing, of all personnel who are no longer required to use respiratory protection or who have been medically disqualified.
- h. The Chief, Fire Prevention and Protection Branch, Public Safety will:
  - (1) Perform refilling of SCBA and Emergency Escape Breathing Apparatus (EEBA) cylinders used for grade D breathing air.
  - (2) Be available on an "on call" basis for any situation where an SCBA would be required to enter a contaminated atmosphere.
  - (3) Conduct rescue training for personnel designated as the standby rescue person during confined space entry operations.
  - (4) Determine level of respiratory protection required during a hazardous material, substance, waste, or chemical spill response.
- i. The Civilian Personnel Advisory Center (CPAC) Director will:
  - (1) Assist directors/commanders in processing disciplinary actions against supervisory personnel who fail to enforce requirements of the respiratory protection standard.
  - (2) Assist supervisors in processing disciplinary actions against employees for failure to properly use respiratory protection when required.
  - (3) Assist directors/commanders in handling medical issues of employees who have been determined by the Preventive Medicine Service as unable to perform their assigned duties wearing respiratory protection devices.
- j. Supervisors/POC Respiratory Protection will:
  - (1) Ensure employees use proper respiratory protection where required or used voluntarily.
  - (2) Ensure employees adhere to the instructions relative to the proper use, care, and maintenance of respiratory protective devices.
  - (3) Enforce the provisions of this regulation.
  - (4) Process requisitions for respirators after personnel have been properly fit tested.
  - (5) Maintain an inventory or ensure access to respirators and associated accessories (filters, pre-filters) for each respirator as indicated by the Installation Respiratory Protection Section, Preventive Medicine Service.
  - (6) Ensure respirators are stored in a clean and sanitary location within the work center, to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respiratory protective equipment will not be stored in such places as toolboxes unless they are in carrying cases or cartons or other protective method.
  - (7) Ensure conditions do not exist which will prevent the respirator from providing a good face-to-facepiece seal or will interfere with valve function. Such conditions may be growth of beard, corrective lenses etc.
  - (8) Ensure personal protective equipment (PPE) is worn in a manner that does not affect the respirator's face-to-facepiece seal.
  - (9) Ensure a WRPP is written to include respiratory protection requirements, procedures, hazards, and responsibilities. Have the program reviewed by the Installation Respirator Program Manager.

- (10) Prepare a SOP for all hazardous operations to identify requirements for use of respiratory protection devices, as recommended by Industrial Hygiene.
  - (11) Ensure Material Safety Data Sheets are available for all hazardous chemicals in the workplace.
  - (12) Schedule personnel who are required to wear respiratory protection for initial, follow-up, and annual occupational health evaluation/examinations. Where voluntary respirators are used, schedule those individuals for medical evaluation and respirator training.
  - (13) Ensure employees take their issued respirator to their respirator fit testing and training appointment.
  - (14) Schedule employees for initial and annual respirator fit testing, after the employee successfully completes an occupational health evaluation/examination, with the Installation Respiratory Protection Section. Schedule fit testing whenever an employee's physical condition would dictate the need for refitting (i.e., loss or gain of 10 or more pounds, loss of teeth or wearing of dentures).
  - (15) Ensure personnel take all personnel protective equipment (PPE) that may interfere with the respirator's face-to-facepiece seal to the fit testing appointment (i.e., safety glasses, goggles, face shields, welding helmet, corrective eyewear, etc).
  - (16) Ensure lock-out tag-out procedures are used to prevent other personnel from shutting off the electrical power, when airline respirators are in use.
  - (17) Ensure employees maintain the respirator change form and change the chemical cartridges at the end of their useful service life.
- k. Employees will:
- (1) Be ultimately responsible for his/her own respirator.
  - (2) Ensure their respirator has no holes, cracks, or leaks before each use.
  - (3) Before each use, perform a positive and negative user check to help insure face-to-facepiece seal.
  - (4) Notify their immediate supervisor if it is suspected that respiratory protection is needed or that the respirator is defective.
  - (5) Adhere to instructions governing the proper cleaning of the respirator (para 2-7a through 2-7e below).
  - (6) Store the respirator in a clean, sanitary location when not in use (para 2-7f below).
  - (7) Have available in the workplace the MED FC Form 2367 (Fort Campbell Respiratory Fit Test Card) authorizing them to wear a respirator.
  - (8) Have their issued respirators inspected and fit checked by the Installation Respiratory Protection Specialist during their fit testing and training appointment.
  - (9) Notify supervisor of intent to use a voluntary respirator.
  - (10) Maintain the respirator change form to ensure chemical cartridges are changed at the end of their useful service life.

## **Chapter 2 Policy**

### **2-1. Policy**

- a. The Occupational Safety and Health Administration has promulgated standards regarding permissible exposure limits (PEL) for specific airborne contaminants which may cause occupational diseases when inhaled. The primary objective is to eliminate or reduce employee exposure to those contaminants below the PEL.
- b. All equipment will be selected from recommendations by Industrial Hygiene, Preventive Medicine Service.
- c. Approved respirators that are applicable and suitable for the purpose intended will be furnished at no cost to employees and soldiers.
- d. Respiratory protection will be used as a means of controlling employee exposure to airborne environmental hazards under the following circumstances:
  - (1) When engineering or work practice controls cannot be used to adequately control the hazard.
  - (2) During intermittent or nonroutine operations.
  - (3) During interim periods while engineering controls are being designed and installed to eliminate the hazard.
  - (4) During emergencies.
- e. Wherever economically feasible and where technology exists for eliminating or reducing the cause of an environmental respiratory hazard, engineering control methods will be implemented. Such methods will include, but are not limited to:
  - (1) Substitution of less hazardous substances.
  - (2) Installation of general or local ventilation.

(3) Enclosure or confinement of the operation.

f. Respiratory protection devices will be selected and used based upon the extent and nature of the hazards to which the worker is exposed, the work requirements and conditions, and the characteristics and limitations of the respirator. All respiratory protection devices will carry the NIOSH approval for the use for which it is intended. Respiratory Protection equipment will be used only for the intended purposes, and modifications of the equipment will not be made. Only filters designed for each specific facepiece and hazard will be used.

g. Each section, unit, department, or contractor will develop and maintain a written respiratory protection program that is work-site specific.

h. Filtering facepieces (dust masks) will not be used for protection against any Occupational Safety and Health Administration (OSHA) regulated substance or in the industrial environment.

i. Only NIOSH-certified respirators will be selected and used. The respirators will be used in compliance with the conditions of their certification.

j. The military protective masks M9, M17, and M40 shall not be used as respiratory protection in the industrial work setting.

k. Respirator fit testing for DA civilians and active duty military will be conducted only by Respiratory Protection Section, USA MEDDAC unless otherwise approved by the Garrison Commander.

l. Disposable respirators used by medical personnel for protection against tuberculosis shall be NIOSH approved. These respirators shall be fit tested in accordance with OSHA standards and disposed of when they become soiled, damaged, or breathing resistance is noticed.

m. Separate air sources (compressor or Self Contained Breathing Apparatus) shall be used for personnel who enter a confined space and for the designated rescue personnel.

n. Continuous flow, positive pressure supplied air respirators shall be used for entry into permit required confined spaces (fuel cells, storage tanks, HMETTs etc). For Immediately Dangerous to Life or Health (IDLH) situations, see paras 2-2b(1) and 2-2b(2) below.

## **2-2. Immediately dangerous to life or health (IDLH) atmospheres**

a. Personnel shall not enter an IDLH atmosphere unless an emergency exists. An emergency exists when a situation arises that requires immediate attention, e.g., rescue of personnel is required or an imminent danger situation exists.

b. When entry into an IDLH atmosphere is necessary, the following respiratory protection is required:

(1) A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or

(2) A combination full facepiece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply.

c. All oxygen deficient atmospheres will be considered IDLH.

d. Respirators (EEBAs) used for escape from an IDLH will be NIOSH certified and have a service life greater than the time it takes to egress the IDLH area.

e. During an emergency the protocol listed in 29 CFR 1910.134(g)(3)(i)-(vi) shall be followed when entering the IDLH atmosphere. In addition, the requirements of 29 CFR 1910.134(g)(4)(i)-(iii) (Procedures for Interior Structural Firefighting) shall be implemented.

## **2-3. Non-IDLH atmospheres**

a. The respirators will be appropriate for the chemical state and physical form of the contaminant.

b. For protection against gases and vapors the following respiratory protection is required:

(1) An atmosphere-supplying respirator, or

(2) An air purifying respirator, provided that:

(a) The respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or

(b) A respirator change schedule be implemented for cartridges or canisters when no ESLI is available.

c. For protection against particulates, the following respiratory protection is required:

(1) An atmosphere-supplying respirator, or

(2) An air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR part 84.

## **2-4. Medical evaluation**

a. Medical evaluations for the use of respiratory protection will be accomplished by using a medical questionnaire or medical examination. They will be completed initially (prior to use of a respirator or exposure to a contaminant) and annually thereafter. See 29 CFR 1910.134(e)(2) and 29 CFR 1910.134 Appendix C.

b. A medical evaluation will be completed for individuals who use a voluntary respirator, initially and annually thereafter.

c. Occupational Health Section, Preventative Medicine Service, will conduct the medical evaluations and act as the physician or other licensed health care provider (PLHCP) for DA civilians and active duty soldiers. Medical evaluations for contractors will be completed by the PLHCP they have identified.

d. No individual shall perform any duties where respiratory protection is required prior to completing a medical evaluation or examination. Personnel shall not use a voluntary respirator until medically qualified to use such equipment.

e. Personnel or employees who are identified as having a medical condition that may be affected by the use of a respirator, will be disqualified until the PLHCP clears them for respirator use.

f. Medical questionnaires shall be reviewed only by the identified PLHCP.

## **2-5. Respirator training and fit testing**

### **a. Respirator training.**

(1) To ensure the proper and safe use of a respirator, personnel required to wear respiratory protection shall be given training prior to fit testing.

(2) Training shall be conducted initially and annually thereafter, for all respirator wearers and their supervisors, and will be worksite specific. Respirator types include, but are not limited to, Hoods, EEBAs, SCBAs, PAPRs, voluntary respirators, and all other tight or loose fitting respirators.

(3) Training will be presented in a manner that is easily understood by all trainees in attendance.

(4) Training will consist of the following:

(a) Why the respirator is necessary;

(b) How improper fit, usage, or maintenance can compromise the respirator's protective effect;

(c) What the limitations and capabilities of the respirator are;

(d) How to use the respirator in emergency situations;

(e) What to do if the respirator malfunctions;

(f) How to inspect, put on, remove, use, and check the seals of the respirator;

(g) What the procedures are for storage and maintenance;

(h) How to recognize medical signs and symptoms that may limit or prevent effective use of the respirator and;

(i) The warning signs of the chemical/substance involved.

(5) Retraining shall be administered annually and in the following situations:

(a) When changes in the workplace or type of respirator renders previous training obsolete;

(b) If the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or

(c) If any other situation arises in which retraining appears necessary to ensure safe respirator use.

(6) The basic advisory information on respirators, as presented in Appendix B, shall be presented in any written or oral format to employees or personnel when respirators are not required and voluntary respirators are used.

### **b. Respirator fit testing.**

(1) Respirator fit testing shall not be accomplished until respiratory protection personnel have received written notification from the PLHCP, clearing the prospective respirator wearer for respirator use. A MED FC Form 2273, Respiratory Evaluation Data, signed by the Occupational Health PLHCP (physician or designated physician assistant) will be used for DA civilians and active duty military.

(2) The respirators used for fit testing shall be stored to protect them from dust, sunlight, heat, extreme cold, excessive moisture, distortion or damaging chemicals. Damaged or distorted respirators will not be used for fit testing. The filters will be changed as needed to ensure proper fit.

(3) Respirator fit testing will not be conducted if any of the following conditions exist:

(a) Facial hair comes between the sealing surface of the facepiece and the face or interferes with valve function.

(b) Any condition that interferes with the facepiece-to-face seal or valve function.

(4) Selection of the respirator to be fit tested shall be based upon Industrial Hygiene recommendations or the workplace hazard survey. Information gathered from the shop supervisor and the material safety data sheet for the chemical or substance in question may also be used to determine the necessary respirator to be selected.

(5) Either quantitative or qualitative fit testing shall be conducted on all personnel required to wear respiratory protection.

(6) Quantitative fit testing shall be consistent with the fit testing protocol established in 29 CFR 1910.134, Appendix A, Section C.

(7) Qualitative fit testing shall be conducted using the isoamyl acetate, irritant fume or saccharin/bitrex protocol established in 29 CFR 1910.134, Appendix A, Section B.

(8) Qualitative fit testing shall only be used for negative pressure air-purifying respirators that must achieve a fit factor of 100 or less, such as disposable respirators used at the hospital. Only quantitative testing will be used for any full-face respirator.

(9) The prospective respirator wearer shall be given the opportunity to select the respirator they feel the most comfortable wearing.

(10) An assessment of comfort will include the following:

- (a) Chin properly placed
- (b) Positioning of mask on nose
- (c) Strap tension
- (d) Fit across nose bridge
- (e) Room for safety glasses
- (f) Distance from nose to chin
- (g) Room to talk
- (h) Tendency to slip
- (i) Cheeks filled out
- (j) Self-observation in mirror
- (k) Adequate time for assessment

(11) If a user seal check or fit test cannot be achieved with the initial respirator, a selection from other available respirators shall be made.

(12) The fit test shall be performed while the respirator user is wearing any applicable safety equipment that may be worn during actual respirator use and that could interfere with the respirator fit.

(13) During the training session the individual shall wear the respirator to determine comfort. The respirator will be worn for at least 5 minutes before the start of the fit test to assess comfort. If the respirator feels uncomfortable at any time another selection shall be made.

(14) Prior to starting the fit test personnel shall perform a positive or negative user check (Appendix C). If a proper user check cannot be attained, selection of another respirator is required.

(15) The respirator fit test shall be consistent with the exercises listed in 29 CFR 1910.134, Appendix A.

(16) One fit test shall be conducted for each mask fitted. If the wearer fails the fit test another mask shall be selected.

(17) If the respirator wearer is unable to be fitted they shall be disqualified from performing duties that require the use of respiratory protection.

(18) Test subjects must attain a minimum fit factor as follows during quantitative fit testing:

- (a) Half face piece--->500 Fit Factor
- (b) Full face piece--->3000 Fit Factor

## **2-6. Respirator use**

a. Respirators will be used in compliance with the conditions of their certification.

b. Personnel/employees will perform a user seal check each time they put on the respirator.

c. Personnel/employees shall not wear a tight-fitting facepiece who have:

(1) Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function.

(2) Any condition that interferes with the facepiece-to-face seal or valve function.

d. Corrective lenses, goggles, or other personal protective equipment shall be worn in a manner that does not affect the facepiece-to-face seal.

e. Personnel/employees shall leave the respirator use area:

(1) To wash their faces or respirator facepiece as necessary to prevent eye or skin irritation, or

(2) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage, in order to change or replace the filters, cartridges, or canister elements.

## **2-7. Maintenance and care of respirators**

a. Respirators will be kept clean, sanitary, and in good working order.

b. A respirator used exclusively by one individual will be cleaned as often as necessary to maintain a sanitary condition, usually after each day of use. A respirator used by more than one individual must be cleaned and disinfected between users.

- c. The following procedures will be followed for cleaning, disinfecting, and storing respirators:
  - (1) Disassemble by removing the cartridges, pre-filters, headband, and other parts.
  - (2) Wash the respirator by immersing in warm water (about 110 degrees Fahrenheit maximum) with a mild detergent. A stiff bristle brush (not wire) may be used to help remove dirt or foreign material.
  - (3) Rinse the respirator in fresh warm running water (about 110 degrees Fahrenheit maximum) drain the respirator components, then air dry or dry with a lint free cloth.
- d. If the wash solution does not contain a disinfecting agent, use 1 milliliter of laundry bleach per liter of warm water (approximately 1/2 ounce of laundry bleach per gallon of water). Immerse the respirator components for two minutes; rinse all components in clean warm (110 degrees Fahrenheit maximum), preferably running water. Drain the respirator components, then air dry or dry with a lint free cloth.
- e. Reassemble the respirator and test it to ensure that it functions properly.
- f. All respirators will be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They shall be stored to prevent deformation of the face piece and exhalation valve.
- g. Emergency use respirators will be stored as follows:
  - (1) Kept accessible to the work area;
  - (2) Stored in compartments or in covers that are clearly marked as containing emergency respirators; and
  - (3) Stored in accordance with any applicable manufacturer instructions.
- h. Respirators will be inspected as follows:
  - (1) All respirators used in routine situations shall be inspected before each use and during cleaning.
  - (2) Emergency use respirators will be inspected at least monthly and in accordance with manufacturer's recommendations, and shall be inspected for proper function before and after each use.
  - (3) Emergency escape-only respirators (EEBAs) shall be inspected before being carried into the workplace.
  - (4) All self-contained breathing apparatus (SCBA) shall be inspected monthly. The air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to below 90% of the manufacturer's recommended pressure level. Regulators and warning devices will be checked daily to ensure proper function.
- i. The respirator inspection shall include:
  - (1) A check of the respirator's function, tightness of connections, and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, cartridges, filters, or canisters.
  - (2) A check of elastomeric parts for pliability and signs of deterioration.
- j. A record of inspection dates and findings shall be maintained in a retrievable manner on each emergency use respirator, EEBA, and SCBA and will include the following information:
  - (1) Date of inspection.
  - (2) Findings (discrepancies).
  - (3) Name of person conducting the inspection.
  - (4) Required remedial action.
  - (5) Serial number or other means of identifying the inspected respirator.
- k. Respirators that fail inspection or are otherwise found defective shall be removed from service and discarded, repaired, or adjusted in accordance with the following:
  - (1) Repairs or adjustments are to be made only by persons appropriately trained to perform such operations.
  - (2) Use only the manufacturer's NIOSH-approved parts designed for the respirator.
  - (3) Repairs shall be made according to the manufacturer's recommendations for the type and extent of repairs to be performed.
  - (4) Reducing and admission valves, regulators, and alarms shall be adjusted or repaired by the manufacturer or a technician trained by the manufacturer.

## **2-8. Breathing air quality and use**

- a. Compressed breathing air will meet the requirements of Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989 to include:
  - (1) Oxygen content 19.5 - 23.5%
  - (2) Hydrocarbons (condensed) content of 5 milligrams per cubic meter of air or less;
  - (3) Carbon monoxide (CO) content of 10 ppm or less;
  - (4) Carbon dioxide content of 1000 ppm or less; and
  - (5) Lack of noticeable odor.
- b. Cylinders used for breathing air will meet the following requirements:



(1) Cylinders will be tested and maintained as prescribed in the Shipping Container Specification Regulation of the Department of Transportation (49 CFR part 173 and part 178).

(2) Cylinders of breathing air that are purchased will have a certificate of analysis from the supplier stating that the breathing air meets the requirements of Grade D breathing air.

(3) The moisture content shall not exceed -50 degrees Fahrenheit at 1 atmosphere pressure.

(4) Hydrostatic test dates will be legible and stenciled on the cylinder in accordance with the provisions of 49 CFR part 173.

c. Oil lubricated compressors:

(1) Will be constructed and prevent entry of contaminated air into the air supply system.

(2) Will not be situated inside a building where maintenance is performed.

(3) Will minimize moisture content (dew point shall be >10 degrees below the ambient temperature.

(4) Will have suitable in-line air purifying sorbent beds and filters to ensure breathing air quality. (Sorbent beds and filters will be replaced in accordance with manufacturers' recommendations).

(5) Will have a tag affixed to the compressor identifying when the filters and sorbent beds were changed and signed by the person who performed the maintenance.

(6) Will have air-line couplings that are incompatible with outlets for other gas systems to prevent inadvertent servicing of air-line respirators with nonrespirable gases or oxygen.

(7) Will use a length of airline that is in compliance with the manufacturer's recommendation for the compressor and respirator in use. At no time shall the length of airline exceed 300 feet.

(8) Will have in place or installed a testable high-temperature or carbon monoxide alarm, or both. Carbon monoxide shall not exceed 10 ppm in the breathing air.

(9) Shall be tested monthly for carbon monoxide, carbon dioxide, hydrocarbons, and water content.

d. Compressors not oil lubricated (e.g., portable or electric):

(1) Carbon monoxide shall not exceed 10 ppm in the breathing air.

(2) The length of airline used shall be in compliance with the manufacturer's recommendation for the compressor in use. At no time shall the length of airline exceed 300 feet.

(3) Breathing air couplings will be incompatible with outlets for nonrespirable worksite air or gas systems.

(4) Compressors used to supply grade D breathing air shall be situated to prevent contaminated air from entering the system.

(5) Air Quality Tests for CO and CO2 shall be accomplished monthly on portable breathing air compressors (i.e., electric).

## 2-9. Recordkeeping

a. Records of medical evaluations shall be maintained in accordance with 29 CFR 1910.1020.

b. Installation Respiratory Protection and/or the Supervisor or the Respiratory Protection Monitor shall keep records of fit testing on file, until the next fit test is administered. The following data shall be maintained:

(1) The name or identification of employee/individual tested.

(2) Type of fit test performed.

(3) Specific make, model, style, and size of respirator tested.

(4) Date of test.

(5) The pass/fail results for QLFTs, or the fit factor and strip chart recording or print out of the test results for QNFTs.

FOR THE COMMANDER:



MARK L. RITTER  
Colonel, GS  
Chief of Staff

DISTRIBUTION:  
Intranet

## **Appendix A References**

AR 11-34, The Army Respiratory Protection Program, 15 February 1990

TB MED 502, Respiratory Protection Program.

29 CFR 1910.134, Respiratory Protection, Occupational Safety and Health Standard for General Industry, U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), 1 July 1998.

ANSI Z88.2, American National Standard Practices for Respirators., American National Standards Institute.

DoD Instruction 6055.1, DoD Safety and Occupational Health (SOH) Program

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

B-1. 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:

B-2. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

B-3. Choose respirators certified 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 was designed for and how much it will protect you.

B-4. 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 fume or smoke.

B-5. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

## **Appendix C User Check Procedures**

C-1. To determine if a satisfactory facepiece-to-face seal is achieved each time the respirator is put on, a user check (positive and/or negative pressure check) will be performed.

a. Positive Pressure Check: Using the palm of the hand cover the exhalation valve and gently exhale into the facepiece. The face fit is considered satisfactory if a slight positive pressure is maintained inside the facepiece with no leakage of air around the face seal.

b. Negative Pressure Check: Using the palms of the hands cover the inhalation openings on the cartridges. Inhale gently so the facepiece collapses slightly, hold breath for ten seconds. If the facepiece remains collapsed and no inward leakage of air is felt around the facepiece-to-face seal the fit is considered to be satisfactory.

C-2. To check the facepiece seal on supplied air-supplied respirators, pinch off or block the airline on the facepiece. Inhale gently. The facepiece should collapse onto the face with no inward leakage of air around the facepiece-to-face seal. To perform a positive pressure check follow the steps in (a) above.

C-3. The manufacturer's recommended method of conducting the user check may also be used to determine the facepiece-to-face seal.

## **Glossary**

**Air-purifying respirator** - a 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, sorbent, or catalyst, or a combination of these items, which removes specific contaminants from the air passed through the container.

**Demand respirator** - an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

**Emergency situation** - any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

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

**End-of-service-life indicator (ESLI)** - a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

**Escape-only respirator** - a respirator intended to be used only for emergency escape. (For example, an emergency escape breathing apparatus (EEBA)).

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

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

**High efficiency particulate air filter** - a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. NIOSH 42 CFR filters are the N-100, R-100, and P-100 filters.

**Hood** - a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

**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 respirator inlet covering that is designed to form a partial seal with the face.

**Negative pressure respirator (tight fitting)** - a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

**Oxygen deficient atmosphere** - an atmosphere with an oxygen content below 19.5% by volume.

**Positive pressure respirator** - a respirator in which the air pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

**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.

Pressure demand respirator - a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

Qualitative fit test (QLFT) - a pass/fail test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT) - an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Self-contained breathing apparatus (SCBA) - an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life - the period of time a respirator, filter, sorbent, or other respiratory equipment provides adequate protection to the wearer.

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 respirator inlet covering that forms a complete seal with the face.

User seal check - an action conducted by the respirator user to determine if the respirator is properly sealed to the face.