This Instruction implements the Department of Labor, Occupational Safety and Health Administration (OSHA) standard Title 29, Code of Federal Regulations (CFR), Part 1910.134, Respiratory Protection, and National Fire Protection Agency (NFPA) 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA), current editions as authorized under DODI 6055.05 Occupational and Environmental Health, DODI 6055.1 DoD Safety and Occupational Health Program, DODD 4715.1E, Environment, Safety, and Occupational Health. This Instruction applies to all Air Force (AF) installation commanders, all AF military and civilian personnel (including Air Force Reserve Command (AFRC) and Air National Guard (ANG) units and members). This Instruction does not apply to employees working under government contract or private contractors performing work under government contracts. Contractors are solely responsible for compliance with OSHA standards and the protection of their employees unless otherwise provided by law or regulation to be specifically included in the contract. The OSHA standard and this Instruction comprise a unit, which prescribes the minimum requirements for an effective respiratory protection program. Report conflicts in guidance between this Instruction, Federal standards, or Air Force directives through major commands (MAJCOM), direct reporting units (DRU), or field operating agencies (FOA) Surgeons to: Air Force Medical Support Agency, Bioenvironmental Engineering Branch
(AFMSA/SG3PB), 7700 Arlington Blvd, Falls Church, VA 22042-5158. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, Recommendation for Change of Publication; route AF Forms 847 from the field through the appropriate functional chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See Air Force Instruction (AFI) 33-360, Publications and Forms Management, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. This Instruction may be supplemented with additional or more stringent criteria. Supplements must be routed to the OPR of this publication for coordination prior to certification and approval. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located in the Air Force Records Information Management System (AFRIMS). This AFI requires collecting and maintaining information protected by the Privacy Act of 1974 authorized by Title 5 USC 552a. The applicable Privacy Act System of Record Notice is DHA-19, Defense Occupational & Environmental Health Readiness System – Industrial Hygiene (DOEHRS-IH). The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

**SUMMARY OF CHANGES**

This document has been substantially revised and must be completely reviewed. Significant changes include converting from an AF Occupational Safety and Health Standard to an Air Force Instruction, Tiering requirements IAW AFI 33-360, Publications and Forms Management, and updating roles and responsibilities.

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Chapter 1

PROGRAM OVERVIEW

1.1. Applicability.

1.1.1. This Instruction contains the minimum elements required to implement an acceptable installation-level respiratory protection program and should be used as the installation-level (or unit if tenant on installation) respiratory protection program. It applies to operations performed by Department of the Air Force civilians and military employees and direct hire foreign nationals (as established by Status of Forces Agreements) of the AF, ANG, and AFRC. This Instruction does not apply to government-owned, contractor-operated operations. Specific requirements and procedures that apply to uniquely military respiratory protective devices designed for use in chemical, biological, radiological, and nuclear (CBRN) contaminated environments are identified in this Instruction. Uniquely military respiratory protective devices shall not be used for protection of workers in non-uniquely military work environments such as an industrial workplace.

1.1.2. The specific requirements outlined in this Instruction are based on 29 CFR 1910.134 requirements at the time of publication. Should additional OSHA requirements be published that are more stringent than the requirements in this Instruction, they shall apply and this Instruction shall be changed. The respiratory protection requirements outlined for specific contaminants in Title 29, CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Parts 1926.1101-1152 (not all inclusive), and Part 1926.62, Lead, shall apply. Additionally, the respiratory protection requirements in Title 10, CFR Part 20, Standards for Protection Against Radiation, also apply.

1.2. Respirator Use. Whether respirator use is required or voluntary, unless otherwise specified in this Instruction, all requirements apply to all respirator use. Special use circumstances are described in paragraph 4.2. (T-1)

1.2.1. Required. Respirator use shall be required by the workplace supervisor when notified by Bioenvironmental Engineering (BE):

1.2.1.1. That other means of control do not reduce exposure below the occupational or environmental exposure limit (OEEL); (T-0)

1.2.1.2. That other means of control are not feasible (this may include use during intermittent, non-routine operations); (T-0)

1.2.1.3. That use is specified by an OSHA standard or AF directive. Some substance-specific OSHA standards, such as the Lead Standard, require the employer to provide workers with respirators whenever they request them, even if exposures are below applicable OEELs; (T-0)

1.2.1.4. For use as an interim measure while permanent controls are awaiting funding, or being designed or installed; (T-0)

1.2.1.5. That, in the professional opinion of the Bioenvironmental Engineer (BEE), exposures could potentially be greater than OEEL; (T-0)
1.2.1.6. That emergency situations could dictate use of respiratory protection. See paragraph 4.2 for requirements for escape-only respirators. (T-0)

1.2.2. Voluntary. Voluntary use respirators will not be worn by government employees in AF industrial workplaces except for filtering face-pieces as described in paragraph 4.1 and when authorized by BE. BE will authorize voluntary use after verifying the use does not create a hazard to the employee. Voluntary use of respirators must be conducted IAW 29 CFR 1910.134. (T-0)
Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Assistant Secretary of the Air Force for Installations, Environment, and Logistics. Provides direction and oversight of matters pertaining to the formulation, review and execution of policies, plans, programs, and budgets relative to environment, safety and occupational health (ESOH) resources and missions.

2.2. The Office of the Air Force Surgeon General (USAF/SG). Formulates, publishes, reviews, and executes plans, policies, programs, and budgets for the medical support of the occupational and environmental health program.

2.3. Air Force Medical Support Agency (AFMSA). Proposes policy and interprets guidance and policy to ensure the effective implementation of the Air Force respiratory protection program.

2.4. Air Force Medical Operations Agency (AFMOA).

2.4.1. Reviews the National Institute for Occupational Safety and Health (NIOSH) Respirator User Notices and the NIOSH National Personal Protective Technology Laboratory Press Releases quarterly and sends a summary to MAJCOM BEEs for dissemination to installation BE offices.

2.4.2. Advocates for Defense Health Program (DHP) funding needed for the AF Medical Service (AFMS) to execute Respiratory Protection Program requirements.

2.4.3. Validates and allocates DHP resources required for occupational and environmental health surveillance associated with Respiratory Protection Program activities at MAJCOM installations and GSUs.

2.4.4. Maintains the self-assessment checklist (SAC) for this Instruction.

2.5. MAJCOM SGPB.

2.5.1. Advocate for resources within the command for the respiratory protection program.

2.5.2. Resolve questions regarding specific interpretations of this and applicable OSHA standards, and if necessary, coordinate with AFMSA/SG3PB.

2.5.3. Forward a copy of AF Technical Order (AFTO) Form 22, Technical Order Improvement Report and Reply, for inconsistencies between technical orders and this Instruction to AFMSA/SG3PB.

2.6. Installation and Unit Commanders.

2.6.1. Establish and conduct an installation respiratory protection program conforming to the requirements of this Instruction and applicable OSHA standards when respiratory protection is required and used within their organization. (T-0)

2.6.2. Develop procedures to ensure personnel deploy with the same type and size CBRN mask worn during quantitative fit testing (QNFT) and ensure personnel obtain CBRN mask QNFT, as required. (T-2)
2.7. USAF School of Aerospace Medicine, Occupational and Environmental Health Department (USAFSAM/OE).

2.7.1. Provides respiratory protection training for BE personnel through initial technical training courses. (T-1)

2.7.2. Recommends technical changes to this Instruction, as needed. (T-3)

2.8. Logistics Readiness Squadron Commander.

2.8.1. Issues serviceable CBRN masks after performing an initial sizing measurement or visual sizing technique IAW the applicable CBRN mask technical order (T.O.). (T-2)

2.8.2. Notifies BE immediately upon receipt of a respirator recall notice or notice of defect from either a manufacturer or NIOSH. (T-2)

2.8.3. Institutes procedures for controlling the ordering and issuing of respirators and coordinates with installation BE to ensure adequacy. (T-3)

2.9. Medical Group Commander. Ensures a physician or other licensed health care professional (PLHCP), as defined in 29 CFR 1910.134 (e), makes the determination that a worker is medically able to wear a respirator. (T-0)

2.10. Aerospace Medicine Council (AMC). Establishes a medical evaluation protocol for respirator users per 29 CFR 1910.134(e) and Appendix C, Part B. The council is the installation-level authority on medical surveillance of respirator users and makes medical recommendations to unit commanders as necessary regarding CBRN mask QNFT requirements. (T-0)

2.11. Occupational and Environmental Health Working Group (OEHWG).

2.11.1. Develops actions to facilitate the identification of workers who may have developed medical conditions affecting respirator use since initial fit testing. (T-1)

2.11.2. At least annually briefs the medical facility professional staff to notify the AMC Chair and BE, as soon as possible, if a patient who uses a respirator develops a medical condition that could affect their ability to use a respirator. (T-1)

2.12. BE.

2.12.1. Is the OPR for the installation respiratory protection program and conducts all aspects of an installation level program unless otherwise specified by this Instruction.

2.12.2. Is the authority for determining if respiratory protection is required and the appropriate manner in which to conduct fit test(s) that comply with 29 CFR 1910.134, Appendix A, including what additional safety equipment, if any, will be required while conducting the fit test.

2.12.2.1. Selects respirators IAW 29 CFR 1910.134 (d), Attachment 2, and the NIOSH Certified Equipment List. Documents rationale for selection by process in the workplace-specific written plan and on the AF Form 2773, Respirator Selection Worksheet, and uploads to the Shop Detail page in DOEHRS-IH. (T-0)

2.12.2.2. Reviews/approves LRS procedures for controlling the ordering and issuing of respirators. (T-3)
2.12.3. Trains workplace supervisors on the requirements of the respiratory protection program that apply to their workplace and documents appropriately IAW local procedures. Supervisor training will be repeated if the individual becomes a supervisor of a different workplace. (T-0)

   2.12.3.1. Provides guidance to workplace supervisors, as necessary, in the preparation of the workplace-specific written plan and annual training requirements. (T-2)

   2.12.3.2. Reviews and approves workplace-specific written plans annually to ensure respiratory protection procedures are addressed and uploads the approved plan to the Shop Detail page in DOEHSRS-IH. (T-3)

2.12.4. Refers individuals requiring respirator related medical evaluations (initial respiratory questionnaire, periodic, or for physical/work condition changes) to Public Health (PH), Occupational Medicine Services (OMS), or equivalent. (T-0)

2.12.5. Conducts industrial respirator and CBRN mask fit testing. Before a worker may be required to wear an industrial respirator with a tight-fitting facepiece, the worker must be fit tested with the same make, model, style, and size of respirator that will be used in the workplace. As determined by BE, current fit tests from other installations may be used if the worker will be using the same make, model and style of respirator. (T-0)

   2.12.5.1. Ensures fit testing for industrial respirators is conducted according to 29 CFR 1910.134. Conducts fit testing only on those individuals who have been medically cleared by a PLHCP. (T-0)

      2.12.5.1.1. Provides industrial respirator fit test results to the respirator wearer's workplace supervisor. (T-1)

      2.12.5.1.2. If a medically cleared worker cannot attain an adequate fit with a tight-fitting respirator, BE will write a letter authorizing the worker to utilize a positive pressure, loose-fitting facepiece, helmet, or hood, if appropriate, and send to the workplace supervisor. (T-2)

      2.12.5.1.3. If a loose fitting respirator does not provide adequate protection for the workplace exposures, BE will write a letter to the worker to that effect, with copies distributed for the worker’s medical record, the worker’s supervisor, and, if the worker is civilian, the Civilian Personnel Office. (T-1)

   2.12.5.2. Ensures that CBRN mask QNFT is conducted IAW this Instruction. (T-1)

   2.12.5.3. Documents both industrial respirator fit test and CBRN mask QNFT in DOEHSRS-IH IAW guidance published by USAFSAM. (T-1)

   2.12.5.4. Allows installation organizations/units other than BE to conduct fit-testing only under specific circumstances and obtains MAJCOM SGPB concurrence on the written agreements with those organizations. (T-1)

   2.12.5.5. Maintains oversight and responsibility if installation organizations/units other than BE are authorized to conduct fit testing. (T-1)

2.12.6. Develops and provides appropriate filter/cartridge change-out schedules based on objective exposure data and ensures they are specified in the workplace-specific written plans. (T-0)
2.12.7. Resolves inconsistencies between T.O.s and this Instruction using official channels. (T-1)

2.12.7.1. Uses AFTO Form 22 to request a change to a T.O. (T-1)

2.12.7.2. Sends a coordinated copy of the AFTO Form 22 to the MAJCOM BEE. (T-3)

2.12.8. Upon request, provides commanders a respiratory protection recommendation and health risk assessment regarding the use of CBRN masks (e.g., M-50, Joint Service General Purpose Mask or Joint Service Chemical Environment Survivability Mask) during military unique operations (i.e., readiness training exercises, home station defense during CBRN events, etc.). During military unique operations, OSHA standards do not apply, NIOSH-certified respirators are not required and enrollment in the base respiratory protection program is not required. However, hazardous material incident responders (i.e., BE, Fire and Emergency Services, Emergency Management, etc.), as their duties require them to respond, enter or remain in hazardous material sites, are required to comply with OSHA standards and must wear appropriate NIOSH-certified respiratory protection. (T-0)

2.12.9. Administers or appoints an individual in writing to administer the installation respiratory protection program. The administrator must have attended either the 4BXXX or 43EX initial technical training course, a respiratory protection training course (i.e., OSHA Training Institute or equivalent) or be certified by the BE Flight Commander (or equivalent) as technically proficient to administer the program. The program administrator: (T-2)

2.12.9.1. Is appointed and approved by the BE Flight Commander (or equivalent) or the non-commissioned officer-in-charge. (T-2)

2.12.9.2. Maintains or has immediate access to current copies (paper or electronic) of applicable OSHA standards (i.e., 29 CFR 1910, 29 CFR 1926), the NIOSH Certified Equipment List, and this Instruction. (T-0)

2.12.9.3. Ensures PH or OMS personnel use the appropriate respirator medical evaluation questionnaire per 29 CFR 1910.134. (T-0)

2.12.9.4. Annually inspects installation organizations/units other than BE to ensure they are conducting fit-testing IAW 29 CFR 1910.134 and written agreements as described in paragraphs 2.12.5.4 and 2.12.5.5. (T-1)

2.12.9.5. Annually conducts and documents a respiratory protection program review according to provisions in this Instruction. Ensures that the review is included in the annual Program Management Review required IAW AFI 48-145, Occupational and Environmental Health Program. (T-0)

2.12.9.6. Respirator Defects and Recall Notices. Notifies respirator users when a respirator recall notice or notice of defect is received from a manufacturer or NIOSH. (T-1)

2.13. Public Health (PH).

2.13.1. Ensures the correct occupational health examinations are identified for all respirator wearers based on BE workplace assessments and recommendations made by the OEHWG. (T-2)
2.13.2. Records completion of respirator test in ASIMS when notified by BE for Unit Health Monitor and Unit Commander visibility. (T-1)

2.13.3. For AFRC units at collocated AFRC installations (i.e. AD is host and AFRC units are tenant), the ground Reserve Medical Unit (RMU) Commander will assure the requirements listed in 2.13.1 and 2.13.2 are accomplished for Traditional Reservists (TR) and the RMU coordinated with the host Medical Treatment Facilities BE and PH functions to ensure respiratory protection program effectiveness. The installation host or lead AF PH or OMS will accomplish same for all AF DoD civilians, including Air Reserve Technicians on the installation. For those installations with AFRC full-time BE/PH offices, the full time office will accomplish the requirements directed in paragraphs 2.13.1 and 2.13.2 as necessary to ensure overall respiratory protection program effectiveness, covering both TR and civilian personnel. (T-2)

2.14. PH or OMS.

2.14.1. Administers respirator medical evaluation questionnaires per 29 CFR 1910.134 to individuals placed on the respiratory protection program. Respirator medical evaluation questionnaires are required prior to initial fit testing and wearing a respirator (this does not apply to individuals only being fit tested on uniquely military respiratory protective devices). (T-0)

2.14.2. Ensures that respirator medical evaluation questionnaires and evaluations are administered confidentially and filed in the medical record of the individual. (T-0)

2.14.3. Arranges for medical evaluations of respirator users required by this Instruction and OSHA standards. (T-2)

2.14.4. Provides the PLHCP conducting medical evaluations for respirators, copies of the documents described in 5.2.3 and ensures workers bring the workplace-specific written program for their workplace. (T-2)

2.14.5. Notifies BE of personnel who have been medically cleared by a PLHCP to wear a respirator. (T-2)

2.14.6. For AFRC units at collocated AFRC installations (i.e. AD is host and AFRC units are tenant) the OMS responsibilities in 2.14.1 to 2.14.5. (above, and 5.2.3 below) for TR personnel shall be completed by the ground RMU and for Civilian Federal Employees, including Air Reserve Technicians, by the active duty host military treatment facility or equivalent. At stand-alone AFRC installations, the OMS responsibilities in 2.14.1 to 2.14.5. (above, and 5.2.3 below) for TR personnel shall be completed by the ground RMU and for Civilian Federal Employees, including Air Reserve Technicians, by the AFRC full-time BE/PH Office. (T-2)

2.15. PLHCP.

2.15.1. Reviews the respirator medical evaluation questionnaires and documents as outlined in Chapter 5. (T-0)

2.15.2. Conducts medical evaluations of individuals identified to wear a respirator, as required, and determines fitness to use the respiratory protection specified in the individual’s workplace-specific plan and/or medical evaluation questionnaire. (T-0)
2.16. **Infection Control Officer.**

2.16.1. Determines the occupational activities that may expose or potentially expose medical personnel to airborne infectious diseases. (T-2)

2.16.2. Recommends to BE patient care areas that may require respiratory protection based on potential exposures to infectious diseases. (T-2)

2.17. **Ground Safety.** Refers any suspected problems on respirator usage discovered during their inspections to BE. (T-2)

2.18. **Fire and Emergency Services.**

2.18.1. In coordination with BE, provides training on the use and maintenance of SCBAs. Installations will locally determine who provides these services, BE or Fire and Emergency Services, or other functional area. (T-1)

2.18.2. In coordination with BE, ensures required maintenance for regulating or admission valves, regulators, and alarms for SCBAs is performed by the respirator manufacturer or appointed individuals who are trained and certified by the manufacturer to conduct such maintenance. Installations will locally determine who provides these services, BE or Fire and Emergency Services, or other functional area. (T-0)

2.18.3. Performs flow test and hydrostatic testing of emergency and first responder SCBAs IAW NFPA 1852 guidelines and enters into the Fire Department module of the Automatic Civil Engineer System for tracking. (T-0)

2.18.4. Provides NFPA 1852 inspection requirements to installation emergency and first responders whenever they are updated or upon request. (T-1)

2.19. **Unit Deployment Managers (UDM).**

2.19.1. Ensures unit personnel are scheduled for CBRN mask QNFT. (T-3)

2.19.2. Monitors CBRN mask QNFT status and ensures unit commander is aware of current statistics for personnel assigned to standard Unit Type Codes. (T-2)

2.19.3. Ensures a copy of each individual’s CBRN mask QNFT documentation is located in the appropriate mobility folder (or equivalent). (T-2)

2.19.4. Monitors requirement to re-accomplish QNFT for reasons listed in paragraph 7.2.3 (T-3)

2.20. **Workplace Supervisors.** Supervisors, in workplaces where respiratory protection is used, have a direct responsibility for protecting their workers.

2.20.1. Develop, maintain, and enforce a workplace-specific written respiratory protection plan according to the guidance in Chapter 3 of this Instruction. Supervisors shall review the workplace-specific written plan and provide a copy to BE for approval annually. (T-0)

2.20.2. Contact BE whenever workplace operations change (e.g., when new hazardous materials are introduced, processes or procedures change, or engineering controls are modified or added) to schedule appropriate evaluations. (T-1)

2.20.3. Notify BE of conflicts between respiratory protection guidance and applicable TOs and initiate an AFTO Form 22 for resolution. (T-2)
2.20.4. Provide initial and periodic (annual and as changes occur) respiratory protection training per 29 CFR 1910.134 including training to all personnel in their workplace who use "voluntary use" respirators (filtering facepieces). (Refer to 29 CFR 1910.134, Appendix D for mandatory training requirements for voluntary use respirators.) Document training on AF Form 55, Employee Safety and Health Record, or electronic equivalent. (T-0)

2.20.5. Provide for quality control of respirator breathing air (if used) according to T.O. 42B-1-22, Quality Control of Compressed and Liquid Breathing Air, and furnish sample results to BE for review. Immediately discontinue the use of compressed breathing air and contact BE if sample results are unsatisfactory and/or personnel complain of taste, odor or irritation from compressed breathing air. (T-1)

2.20.6. Appoint an individual to be responsible for the use, maintenance, inspection, and care of common use, emergency or escape respirators, as appropriate. (T-0)

2.20.7. Ensure personnel on the respiratory protection program procure and wear only the approved respiratory protection for the hazard and for which they have been fit tested and trained. (T-0)

2.20.8. Advise all respirator wearers that they may safely leave the area at any time for relief from respirator use in the event of equipment malfunction, physical or psychological distress, procedural or communication failure, significant deterioration of operating conditions, or any other conditions that might warrant such relief. (T-0)

2.20.9. Ensure workers have received the necessary medical evaluations, training, and fit testing before engaging in workplace operations requiring the use of the respirator. Supervisors receive training from BE and should contact BE should they become a supervisor of a new workplace. (T-0)

2.20.10. Follow and enforce the filter/cartridge change-out schedule developed by BE and include the schedule in the workplace-specific written plan. (T-1)

2.20.11. Notify BE when new employees require fit testing or current employees have a change in medical status that may affect their wear of respiratory protection. (T-0)

2.20.12. Provide copies of workplace-specific written plan to employees to hand-carry to their medical evaluation. (T-0)

2.20.13. Complete the SAC IAW local schedule. (T-1)


2.21.1. Complete initial respirator medical evaluation questionnaire and other physical examination requirements as needed prior to performing duties requiring respiratory protection. Provide workplace-specific written program to the provider for the medical evaluation. (T-0)

2.21.2. Use the provided respiratory protection according to the instructions and training received. (T-0)

2.21.3. Guard respirators against damage; do not use unsanitary, damaged or unserviceable respirators; and turn in unserviceable respirators to their supervisor. (T-1)
2.21.4. For air-purifying respirators, maintain records of use of filters/cartridges to ensure compliance with change-out schedule developed by BE. (T-1)

2.21.5. Report to their supervisor any change in medical status which may impact their ability to safely wear respiratory protection (e.g., physical changes such as weight changes, facial scarring, dental changes, cosmetic surgery, disfigurement, etc.; medical conditions such as asthma, pulmonary disease, etc.). (T-0)

2.21.6. Inspect, clean, and maintain any respiratory protection device issued to them for their individual use IAW 29 CFR 1910.134 and Chapter 6 of this Instruction. (T-0)

2.21.7. Receive initial and periodic training and fit testing (annual, and as changes occur) for industrial respiratory protection. (T-0)

2.21.8. Wear only that respiratory protection for which they have received fit testing and training, and only for the processes specified. (T-0)

2.21.9. Maintain the integrity of the NIOSH certification by not mixing respirator parts from different manufacturers. (T-0)

2.21.10. Ensure that no facial hair comes between the sealing surface of the facepiece and the face or interferes with valve function, if required to wear a tight-fitting facepiece. (T-0)

2.21.11. Maintain current CBRN mask QNFT documentation, either in the individual mask carrier (if issued) or with other personal training records. (T-2)

2.21.12. Ensure CBRN mask is inspected, stored and maintained IAW T.O. 14P4-20-1, Operator and Field Maintenance Manual for Mask, Chemical-Biological: Joint Service General Purpose, Field, M-50. (T-1)

2.22. Personnel Issuing Respirators. All personnel who issue respirators will be briefed annually by their supervisor on the following:

2.22.1. The issue of “suitable substitutes” for respirators or respirator parts is prohibited. (T-0)

2.22.2. Bench stocked respirators must be maintained per manufacturer’s instructions. (T-0)

2.23. Respirator Maintainers. Supervisor shall train respirator maintainers initially, and as needed (if determined by local BE), in the following areas, as a minimum:

2.23.1. Inspection for defects, cleaning and sanitization, repairs, and maintenance of respirators. This training shall be specific for the types of respirators the person will maintain. (T-1)

2.23.2. Respirator storage. (T-0)

2.23.3. Respirator filter/cartridge change-out procedures, if needed. (T-0)

2.23.4. Importance of maintaining NIOSH certification of respirators (e.g., replacement parts). (T-0)
Chapter 3

RESPIRATORY PROTECTION PROGRAM ELEMENTS

3.1. General Requirements. The installation respiratory protection program shall be conducted in accordance with OSHA’s standard 29 CFR 1910.134, which does not apply to CBRN masks, and this Instruction.

3.1.1. The respiratory protection program elements are shared among workplace supervisors and other functional areas such as BE, PH, and healthcare providers.

3.1.2. Only government-provided respirators shall be used by government employees in Air Force workplaces, except as authorized for voluntary use per paragraphs 1.2.2 and 4.1.

3.1.3. Only respirators approved by NIOSH shall be used, except for those respirators addressed in 2.12.8.

3.1.4. The only respirator authorized for voluntary use in the AF is the filtering facepiece device (FFPD) as described in paragraph 4.1. A FFPD is defined by OSHA as a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

3.2. Respiratory Protection Program Elements.

3.2.1. BE shall develop procedures to address the following:
   3.2.1.1. Training requirements per 29 CFR 1910.134(k). (T-0)
   3.2.1.2. Fit testing of tight-fitting respirators per 29 CFR 1910.134(f). (T-0)

3.2.2. The respiratory protection program will be evaluated annually, IAW 29 CFR 1910.134(l). Mandatory items include: (T-0)
   3.2.2.1. Evaluation of respirator wearers to ensure that they are using their respiratory protection properly; (T-0)
   3.2.2.2. Consultation with respirator wearers on any workplace or individual issues arising from or restricting respirator use; (T-0)
   3.2.2.3. Appropriate respirator selection for the hazards to which the employee is exposed; (T-0)
   3.2.2.4. Proper respirator maintenance; (T-0)
   3.2.2.5. Consultation with respirator wearers on program effectiveness; (T-0)
   3.2.2.6. Number of workplaces on the program. (T-3)
   3.2.2.7. Number of workplaces with current workplace-specific written plans. (T-3)
   3.2.2.8. Number of personnel on the program. (T-3)
   3.2.2.9. Number of personnel current on fit testing and training. (T-3)

3.2.3. BE will maintain a listing of the workplaces that use respiratory protection. The list (master respirator inventory) includes at least the name of the workplace, the workplace
identifier, types of respirators used, contaminants of concern, and the processes during which the respirator is used. This will be maintained in DOEHRS-IH. (T-0)

3.2.4. BE will ensure respiratory protection information is provided to workplaces as part of their certified personal protection equipment list including details on the respirator type used for specific processes as well as the voluntary use filtering facepieces and escape only respirators. Respiratory protection requirements will be included on the Occupational and Environmental Health Exposure Data report. (T-2)

3.2.5. Workplace Assessments. BE will conduct routine and special assessments (when needed) in workplaces where respirators are used. Specific items (minimum) to be included in the evaluations include: adequacy of the respirator for workplace exposures; adequacy of maintenance and storage practices (shared, emergency use, and individual respirators); adequacy of filter/cartridges used for each hazard; adequacy of air supply and breathing air (review of air testing results as appropriate); breathing air outlet incompatibilities with other gas lines; adequacy of work practices; documentation of inspections of shared and emergency use respirators; documentation of respirator training; and documentation of compliance with any voluntary use of FFPD. The findings of these evaluations may be included in the workplace assessment reports. (T-0)

3.2.6. Medical evaluations will be conducted as outlined in Chapter 5. (T-0)

3.3. Workplace-Specific Program Elements.

3.3.1. Workplace-specific written respiratory protection plans. Supervisors of workplaces in which respiratory protection is used shall develop a written plan as required by 29 CFR 1910.134(c), and the plan shall be reviewed and approved by BE annually. Workplace-specific written plans shall be based on BE evaluations and recommendations and include:

3.3.1.1. This Instruction. (T-0)
3.3.1.2. 29 CFR 1910.134. (T-0)
3.3.1.3. Workplace supplemental information:
  3.3.1.3.1. Selection criteria. Describe the processes in which respirators are required. See Chapter 4. (T-0)
  3.3.1.3.2. Use, maintenance, and care procedures. Describe the criteria that workers use to determine when respirator filters/cartridges must be changed. (T-0)
  3.3.1.3.3. Workplace exposure monitoring and assessment results. This can be accomplished by maintaining all current BE assessment letters that describe the monitoring and assessment results with the workplace-specific written respiratory protection plan. (T-0)
  3.3.1.3.4. Proper use of respirators in routine and emergency situations. (T-0)
  3.3.1.3.5. Type and weight of the respirators used by employees. (T-0)
  3.3.1.3.6. Duration and frequency of respirator use (including use for rescue and escape). (T-0)
3.3.1.3.7. Expected physical work effort involved in the process requiring respiratory protection. OSHA’s 29 CFR 1910.134 (e)(5)(i)(C) requires a statement on the expected physical work effort. See also 29 CFR 1910.134 Appendix C, Part B. (T-0)

3.3.1.3.8. Additional protective clothing and equipment to be worn while wearing the respirator. (T-0)

3.3.1.3.9. Temperature and humidity extremes that may be encountered. (T-0)

3.3.1.3.10. Training procedures for required respirators (see 29 CFR 1910.134(k)(1-6)). (T-0)

3.3.2. Surveillance of Respirator Use. Supervisors shall ensure that approved respirators in their workplace are used, are used correctly and in good condition. (T-1)

3.3.3. Determination of Degree of Exposure. It is the supervisor's duty to inform BE of workplace changes such as changes in operations, processes, chemicals/materials, or workplace environment, so monitoring may be accomplished if necessary. (T-1)

3.4. Purchasing of Respirators.

3.4.1. Purchase respirators through the Standard Base Supply System (SBSS). The stock class for respirators is 4240. Organizations that use respirators are responsible for purchasing approved respirators and parts for the respirator's operation and maintenance.

3.4.2. Special levels of respirators may be established in base supply as specified in Air Force Handbook (AFH) 23-123, Vol 2, Integrated Logistics System-Supply, by BE and issued to the wearer immediately after fit testing. BE is the approval authority for establishing special levels and initiates the AF Form 1996, Adjusted Stock Level, as needed.

3.4.3. BE will maintain an adequate selection of respirators to be used for fit-tests so all workers can be fitted; however, attempt to keep the number of respirator brands to a minimum. (T-2)

3.5. Inventory Control of New Respirators and Spare Parts.

3.5.1. Inventory control should be a shared responsibility among BE, base supply, and supervisors who oversee respirator use on the job. Inventory control not only prevents untrained personnel from receiving respirators, but will also ensure that there are enough respirators for trained personnel.

3.5.2. Supervisors will ensure an ample supply of spare parts are on hand so that a designated person can perform proper replacement or repair. Spare parts have their own national stock number (NSN) so the exact ones can be ordered. (T-0)

3.5.3. Spare parts for respirator repair will be installed according to the manufacturer's instructions so as not to invalidate the NIOSH certification. The manufacturer of the given respirator and spare parts shall be the same. Using a different manufacturer's part invalidates the NIOSH certification, and is not authorized.

3.6. Environmental Considerations. Used respirator filters/cartridges shall be disposed of according to applicable federal, state, and local environmental regulations. Supervisors will consult installation environmental management for the state or local disposal guidelines. Paint
booth filters are sometimes classified as hazardous waste; if this is the case, used respirator filters/cartridges from related processes may be disposed of with this waste. (T-0)
Chapter 4

RESPIRATOR LIMITATIONS

4.1. Use of FFPDs

4.1.1. Employees must request an evaluation of their individual work conditions by BE if they are not already on the respiratory protection program prior to wearing a voluntary use respirator. (T-1)

4.1.2. FFPDs (i.e., N-95, N-99, etc.) are the only type of respiratory protection that may be worn at the discretion of a government employee “for comfort purposes” in an AF industrial workplace and must be approved and authorized by BE. Elective use FFPDs will not be used in place of respiratory protection specified by BE for protection against specific hazards in the workplace.

4.1.3. Personnel who wear voluntary use FFPDs must receive initial and annual training from their supervisors on the appropriate use of the device, including its limitations per 29 CFR 1910.134 (c)(2) and Appendix D. (T-0)

4.2. Escape-Only Respirators. See Attachment 3 (Selection Options for Escape-Only Respirators) and the “NIOSH Guide to Industrial Respiratory Protection.”

4.3. Respirator Limitations. In addition to the following, refer to the requirements in 29 CFR 1910.134:

4.3.1. Communications. Ambient environmental noise and communication needs shall be considered when specific respirators are selected. See Attachment 4. (T-2)

4.3.2. Eye Irritation. If contaminants cause eye irritation, full facepiece respirators or chemical protective goggles with half facepiece respirators shall be worn. (T-0)

4.3.3. Respirator Use in Low Temperature Environments. Low temperatures may cause detrimental effects on the performance of respirators. The effects of low temperatures shall be considered in the selection and maintenance of respirators and respirable gas supplies. See Attachment 5. (T-2)

4.3.4. Respirator Use In High Temperature Environments. High temperatures may affect the performance of the respirator, and may add undue physiological stress. The effects of high temperatures shall be considered in respirator selection and for medical approvals. See Attachment 6. (T-2)

4.4. Spectacle Inserts. Refer to AFJII 44-117, Ophthalmic Services, for determination of benefits and authorizations for spectacle inserts for use with respirators. (T-2)
Chapter 5

MEDICAL EVALUATION

5.1. General Information. Potential respirator wearers will complete a respirator medical evaluation questionnaire and may receive a physical examination prior to initial fit testing to identify existing medical conditions that would place the worker at an increased health risk from the use of a respirator or interfere with the use or wear of a respirator. The OSHA standard (29 CFR 1910.134 (e) and Appendix C) specifies the minimum mandatory requirements for medical evaluations.

5.2. Respirator Questionnaires and Medical Evaluations.

5.2.1. The medical evaluation consists, at a minimum, of completing the respirator medical evaluation questionnaire for PLHCP review, and is only an initial requirement. There is no requirement to re-accomplish respirator medical evaluation questionnaires annually, however, medical evaluation will need to be redone under certain circumstances (i.e., job duty change, respiratory protection changes, relocation to a new duty location, etc.) as determined by BE. At a minimum, the mandatory questions stated in the 29 CFR 1910.134, Appendix C, will be used. In addition to the mandatory questions, OSHA’s optional questions and other questions developed locally may be used. The current respiratory questionnaire must be filed in the individual’s medical record.

5.2.2. All health care providers conducting medical evaluations and reviewing completed respirator medical evaluation questionnaires for the respiratory protection program will be PLHCPs, as defined in 29 CFR 1910.134 (b).

5.2.3. PH (or OMS) will provide the evaluating PLHCP a copy of 29 CFR 1910.134(e)(5)(i)(A-E) and at least Chapter 5 of this Instruction. PH (or OMS) will ensure a copy of the workplace-specific written program from the worker’s workplace is available for the medical evaluation. The worker should provide this when he/she turns in his/her completed respiratory questionnaire. The PLHCP must review the physical work effort statement within the workplace-specific written program as part of the medical evaluation.

5.2.4. Following review of the respirator medical evaluation questionnaire, follow-up medical evaluation, if needed, and the information required in 5.2.3, the PLHCP will determine the worker’s ability to use a respirator.

5.2.5. The PLHCP’s written recommendation will include only the information required in 29 CFR 1910.134 (e)(6). To maintain the confidentiality of the respirator medical evaluation questionnaire, the PLHCP’s recommendation will be documented on a separate form or letter – not on or attached to the questionnaire itself.

5.2.5.1. When the PLHCP recommends the worker can wear a respirator without restrictions, the written recommendation will be filed in the medical record and a copy given to the worker and the worker’s supervisor; BE will be formally notified (i.e., a copy of written recommendation or other notification as determined by the installation) to proceed with fit testing.

5.2.5.2. When a worker recovers from a medical condition that leads to respirator wear restrictions, the PLHCP’s recommendations will be re-accomplished and annotated in the
individual's medical record; distributed to the worker, the worker's supervisor or civilian personnel office (if applicable); and BE will be notified (i.e., a copy of written recommendation or other notification as determined by the installation) to proceed with fit testing.

5.2.5.3. When a worker recovers from a medical condition that lead to respirator wear restrictions, the PLHCP’s recommendation will be re-accomplished and annotated in the individual’s medical record, and distributed to the worker, the worker’s supervisor or civilian personnel office (if applicable), and BE will be notified (in case a new fit test needs to be accomplished).

5.2.5.4. When the PLHCP recommends against respirator use, the written recommendation will be placed in the worker’s medical record, with copies given to the worker, the worker’s supervisor, and, if the worker is civilian, the civilian personnel office. BE will be formally notified.

5.3. Follow-up Medical Evaluations.

5.3.1. Based on worker’s answers on the respirator medical evaluation questionnaire, a follow-up medical evaluation may be required. The follow-up medical evaluation is required if the criteria in 29 CFR 1910.134 (e)(3) are met. Additional criteria may be established locally.

5.3.2. Pulmonary function studies are often included in respirator certification evaluations, however, they are not reliable in predicting who can and cannot wear a respirator. They should not be routinely performed. Thus it is recommended that spirometry, chest x-rays and other tests are only conducted when clinically indicated.

5.3.3. There are no annual or periodic requirements for medical reevaluations. Refer to 29 CFR 1910.134 (e)(7) for the minimum criteria for medical reevaluations.
Chapter 6
CARE, INSPECTION, AND MAINTENANCE

6.1. General Discussion. Each individual issued a respirator is responsible for its primary maintenance and care. Where respirators are used collectively or kept ready for emergencies by a workplace or operating activity, the supervisor of the activity is responsible for establishing a respirator maintenance and cleaning program as specified in 29 CFR 1910.134. This program shall include care, inspection, and maintenance of respirators.

6.2. Care of Respirators.

6.2.1. Cleaning and Disinfecting. In addition to the requirements in 29 CFR 1910.134, respirators issued to an individual shall be cleaned and disinfected, at a minimum, using a respirator wipe at the end of each day in which the respirator is used. Each respirator shall be thoroughly cleaned and disinfected before being worn by a different individual. Emergency use respirators shall be thoroughly cleaned and disinfected after being used. Refer to 29 CFR 1910.134, Appendix B-2 for additional information. (T-0)

6.2.2. Storage. All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve. (T-0)

6.2.3. Respirable Air and Oxygen for SCBA and Air-line Respirators. Compressed gaseous air, compressed gaseous oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity and tested according to T.O. 42B-1-22 and 29 CFR 1910.134(i). (T-0)

6.2.4. Inspection.

6.2.4.1. Inspect respirators per 29 CFR 1910.134, except for installation emergency and first responder SCBAs, which will follow NFPA 1852 inspection requirements. (T-0)

6.2.4.2. OSHA and NFPA do not require a specific form to document user inspections, maintenance or functional tests for respirators. At a minimum, documentation will include the date, name of person conducting the inspection or test, and results. Respirators that do not meet applicable inspection criteria shall be immediately and clearly marked as unserviceable, removed from service and repaired or replaced. (T-1)

6.2.5. Maintenance.

6.2.5.1. The maintenance and repair of respirators will be accomplished per 29 CFR 1910.134(h).

6.2.5.2. Filters/cartridges of air-purifying respirators shall be changed before the end of their service life per the filter/cartridge change-out schedule developed by BE. See Attachment 7 for guidance on developing change-out schedules or consult USAFSAM.

6.2.5.3. If, at any time a worker detects an increase in breathing resistance, smells or tastes the contaminant, or detects the irritant properties of the contaminant the worker should immediately leave the area and replace the filter/cartridge.
6.2.5.4. If the filters/cartridges on an air-purifying respirator are not replaceable, the respirator shall be replaced when one of the conditions in paragraph 6.2.5.2 or paragraph 6.2.5.3 are met.

6.3. **Ambient or Free-Air Pumps and Compressors.** The workplace supervisor is responsible for inspecting ambient or free-air pumps and compressors used with air-line (supplied-air) systems:

6.3.1. The pumps shall be located in a position to avoid entry of contaminated air into the system. (T-0)

6.3.2. Air-line couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of air-line respirators with other gases or oxygen. (T-0)

6.3.3. An inspection of the air-line, compressor and respirator shall be conducted to ensure all three components match the air pressure and other requirements specified by the manufacturers. (T-0)

6.3.4. Document any maintenance activities (i.e., filter change-out, oil changes, routine preventive maintenance, etc.) on pumps on AF Form 1071, *Inspection/Maintenance Record* or IAW local procedures. (T-1)
7.1. **General Requirements.** CBRN mask QNFT applies to uniquely military respiratory protective devices (CBRN masks) designed specifically for use in a CBRN environment; it does not include the aircrew CBRN mask.

7.1.1. The Air Force target Fit Factor (FF) is 2000. CBRN mask QNFT will be accomplished in accordance with T.O. 14P4-15-11, *Operator and Unit Maintenance Manual for Protective Assessment Test System (PATS), M41*. (T-1)

7.1.2. BE will perform M-41 Preventive Maintenance Checks and Services as defined in T.O. 14P4-15-11. (T-1)

7.2. **Completion of CBRN mask QNFT.**

7.2.1. Each military member must complete CBRN mask QNFT upon arrival at his/her first permanent duty station or within 30 days of assignment to a deployable Unit Type Code. (T-1)

7.2.2. Testing Protocol will be accomplished IAW Attachment 8. (T-1)

7.2.3. If a member does not achieve the target FF, BE will notify the unit commander utilizing the memo at Attachment 9. (T-3)

7.2.4. Member must re-accomplish CBRN mask QNFT if a new size or type mask is issued, the wearer gains/loses 10% or more of body weight following completion of the initial QNFT or the wearer experiences extensive dental work, facial surgery, scarring, or disfigurement. (T-1)

7.2.5. Refer members with specific questions regarding CBRN mask QNFT to Attachment 10. (T-3)

7.3. **Recordkeeping.** The BE Flight will provide individuals with three (3) hard copies of the QNFT results: one copy will be maintained by the individual in the mask carrier, one copy will be provided to the UDM for placement in the individual’s mobility folder and one copy will be maintained by the member for obtaining a mask at future duty stations. (T-1)

THOMAS W. TRAVIS, Lieutenant General, USAF
MC, CFS
Surgeon General
Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References
DODI 6055.05 Occupational and Environmental Health, 11 Nov 2008
DODI 6055.1 DoD Safety and Occupational Health Program, 19 Aug 1998
DODD 4715.1E, Environment, Safety, and Occupational Health, 19 Mar 2005
NFPA 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA), 1 Jan 2013
AFMAN 33-363, Management of Records, 1 Mar 2008
AFI 33-360, Publications and Forms Management, 25 Sep 2013
Title 29 CFR, Part 1910, Occupational Safety and Health Standards, 11 Jun 2008
Title 10 CFR, Part 20, Standards for Protection Against Radiation, 11 Mar 2014
NIOSH, Certified Equipment List, current edition (updated quarterly)
AFI 48-145, Occupational and Environmental Health Program, 15 Sep 2011
T.O. 42B-1-22, Quality Control of Compressed and Liquid Breathing Air, 8 May 2012
T.O. 14P4-20-1, Operator and Field Maintenance Manual for Mask, Chemical-Biological: Joint Service General Purpose, Field, M-50, 30 May 2008
NIOSH, Guide to Industrial Respiratory Protection, Sept 1987
AFJI 44-117, Ophthalmic Services, 1 Jan 1986
T.O. 14P4-15-11, Operator and Unit Maintenance Manual for Protective Assessment Test System (PATS), M41, 12 May 2003
AFI 10-403, Deployment Planning and Execution, 20 Sep 2012

Prescribed Forms
AF Form 2773, Respirator Selection Worksheet

Adopted Forms
AF Form 55, Employee Safety and Health Record
AF Form 847, Recommendation for Change of Publication
AF Form 1071, Inspection/Maintenance Record.
AF Form 1996, Adjusted Stock Level
AFTO Form 22, Technical Order Change Recommendation and Reply

Abbreviations and Acronyms

AF—Air Force
AFH—Air Force Handbook
AFMAN—Air Force Manual
AFMOA—Air Force Medical Operations Agency
AFMSA—Air Force Medical Support Agency
AFMS—Air Force Medical Service
AFRC—Air Force Reserve Command
AFTO—Air Force Technical Order
ANG—Air National Guard
BE—Bioenvironmental Engineering
BEE—Bioenvironmental Engineer
CBRN—Chemical, Biological, Radiological and Nuclear
CFR—Code of Federal Regulations
DHP—Defense Health Program
DOEHRS-IH—Defense Occupational Environmental Health Reporting System Industrial Hygiene
DRU—Direct Reporting Unit
FF—Fit Factor
FFPD—Filtering Facepiece Device
FOA—Forward Operating Agency
IDLH—Immediately Dangerous to Life and Health
MAJCOM—Major Command
NEC—National Electric Code
NFPA—National Fire Protection Agency
NIOSH—National Institute for Occupational Safety and Health
NSN—National Stock Number
OEHWG—Occupational and Environmental Health Working Group
OMS—Occupational Medicine Services
OPR—Office of Primary Responsibility
OSHA—Occupational Safety and Health Administration
PF—Protection Factor
PH—Public Health
PLHCP—Physician or other Licensed Healthcare Provider
QNFT—Quantitative Fit test
RDS—Records Disposition Schedule
SAC—Self-assessment Checklist
SCBA—Self-contained Breathing Apparatus
SG—Surgeon General
T.O.—Technical Order
TR—Traditional Reservist
UDM—Unit Deployment Manager
USAFSAM—United States Air Force School of Aerospace Medicine

Terms
Shall—Indicates a mandatory requirement.
Will—Indicates a mandatory requirement that expresses a declaration of intent, probability or determination.
Should—Indicates a preferred method of accomplishment.
May—Indicates an acceptable or satisfactory method of accomplishment.

Air-line Respirator—An atmosphere-supplying respirator in which the respirable gas is not designed to be carried by the wearer, and which uses air delivered under pressure through a hose (formally called Supplied Air Respirators).

Ambient Air Pump—An electrical or pneumatically driven positive displacement pump which takes ambient air and provides it to a respirator at pressures of less than 25 pounds per square inch gauge (psig). This is also known as a "free-air" pump.

Approved Respirator—An approved device designed to provide the wearer with respiratory protection against inhalation of harmful atmospheres. The respirator shall be tested and listed by the National Institute for Occupational Safety and Health (NIOSH). Refer to the latest NIOSH Certified Equipment List for approved respirators. If a tight-fitting respirator is used, the respirator shall have a design which allows the following tests to be performed: (1) Positive and negative pressure tests, and (2) Fit test.

Assigned Protection Factor (APF)—Minimum level of respiratory protection provided by a properly functioning respirator or a class of respirators used in a specific workplace by properly fitted and trained users.

Maximum Use Concentration (MUC)—The lowest of the following: (1) The occupational exposure limit multiplied by the assigned protection factor; (2) The “immediately dangerous to
life and health” concentration; and (3) The maximum contaminant concentration for the given filter/cartridge (if specified).

**Uniquely Military Respiratory Protective Device**—A respiratory protection device which is exempt from the requirements of the OSH Act of 1970 per Executive Order 12196 and 29 CFR 1960.2. In most cases, these devices are not approved by NIOSH and are specifically designed for use in CBRN environments.

**Occupational or Environmental Exposure Limit (OEEL)**—The OEEL is the most appropriate limit adopted from established recognized standards including, but not limited to, those in AFIs, the latest edition of the TLV® Booklet published annually by the American Conference of Government Industrial Hygienists, 29 CFR 1910.1000 Tables Z-1, Z-2, and Z-3 and 40 CFR 141. OEELs are limits of exposure established to protect personnel from hazardous OEH threat exposures. OEELs apply to OEH threat exposures for individuals and/or similarly exposed groups of individuals. (Source: AFMAN 48-155)

**Respirator Maintainer**—A person who maintains common use respirators (i.e. used by more than one person).

**NOTE:**—See 29 CFR 1910.134 for additional definitions.
## ASSIGNMENT PROTECTION FACTORS (APFS)


<table>
<thead>
<tr>
<th>Type of Respirator</th>
<th>Half Mask</th>
<th>Full Facepiece</th>
<th>Helmet/Hood</th>
<th>Loose Fitting Facepiece</th>
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</tr>
<tr>
<td>Powered Air Purifying Respirator (PAPR)</td>
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<td>25/1,000</td>
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<td>Supplied Air Respirator</td>
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<td></td>
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<tr>
<td>Demand Mode</td>
<td>10</td>
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<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Continuous Flow Mode</td>
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<td>1,000</td>
<td>25/1,000</td>
<td>25</td>
</tr>
<tr>
<td>Pressure-demand/other positive-pressure mode</td>
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<td>1,000</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Self-contained Breathing Apparatus</td>
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<td></td>
</tr>
<tr>
<td>Demand Mode</td>
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<td>50</td>
<td>50</td>
<td>--</td>
</tr>
<tr>
<td>Pressure-demand/other positive-pressure mode</td>
<td>--</td>
<td>10,000</td>
<td>10,000</td>
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</tr>
</tbody>
</table>

1. Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.
2. The assigned protection factors in Table A2.1 are only effective when the employer implements a continuing, effective respirator program as required by 29 CFR 1910.134, including training, fit-testing, maintenance, and use requirements.
3. This APF category includes filtering facepieces and half-masks with elastomeric facepieces.
4. The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

**NOTE:** These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other Immediately Dangerous to Life and Health (IDLH) atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).
Attachment 3

SELECTION OPTIONS FOR ESCAPE-ONLY RESPIRATORS

Table A3.1. Selection Options for Industrial Use Escape-Only Respirators.

<table>
<thead>
<tr>
<th>ESCAPE CONDITIONS</th>
<th>TYPE OF RESPIRATOR¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short distance to exit, no obstacles (no oxygen deficiency)</td>
<td>Any escape-only respirator⁴</td>
</tr>
<tr>
<td></td>
<td>(canister respirator) or half-</td>
</tr>
<tr>
<td></td>
<td>mask of facepiece (canister respirator)</td>
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<tr>
<td></td>
<td>Any escape SCBA having a suitable service life⁴</td>
</tr>
<tr>
<td></td>
<td>Any acceptable device for entry into emergency situations</td>
</tr>
<tr>
<td>Long distance to exit or obstacles along the way (no oxygen deficiency)</td>
<td>Any air-purifying respirator</td>
</tr>
<tr>
<td></td>
<td>Any escape SCBA having a suitable service life⁴</td>
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<td>Any self-contained self-rescuer having a suitable service life</td>
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<tr>
<td>Potential oxygen deficiency</td>
<td>Any escape SCBA having a suitable service life⁴</td>
</tr>
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<td></td>
<td>Any self-contained self-rescuer having a suitable service life</td>
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NOTES:
1. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.
2. Escape-only respirators are designed for use during escape from IDLH or non-IDLH atmospheres. It may consist of a half-mask facepiece or mouthpiece, appropriate air-purifying element for the contaminant, and associated connections. The manufacturer designates maximum use concentrations for these types of respirators.
3. Escape SCBA can have rated service lives of 3 to 60 minutes.
Attachment 4

VERBAL COMMUNICATION CONSIDERATIONS

Verbal communication in a noisy industrial environment can be difficult. It is important to ensure that respirator wearers can comfortably communicate when necessary because a worker who is speaking very loudly or yelling may cause a facepiece seal leak, and the worker may be tempted to temporarily dislodge the device to communicate. Both situations are undesirable. There are several options that may be employed to aid communications when wearing respirators:

A4.1. Speaking Diaphragms. A speaking diaphragm consists of a resonating surface and cavity that vibrates during speech, thereby amplifying the wearer's voice outside of the respirator. Several points must be considered when using speaking diaphragms:

A4.1.1. There are key components in maintaining the airtight integrity of the facepiece requiring care when installing and handling.

A4.1.2. Use of a respirator having a speaking diaphragm during welding, cutting, burning, or grinding operations is of special concern, as flying sparks may burn a hole in the diaphragm, thereby creating a leak. Some manufacturers have compensated for these applications by providing shrouds to cover the diaphragm or by using metal diaphragms.

A4.1.3. Not all facepiece respirators are available with speaking diaphragm. Check with the equipment manufacturer for availability.

A4.2. Built-in Microphones. Some respirator manufacturers make available small microphones that are mounted inside or connected to the respiratory inlet covering. The microphone may be connected to a radio, telephone, loudspeaker, or other means of electronic transmittal. Two considerations are:

A4.2.1. Any component that is attached to or through the respiratory inlet covering may affect its function. In cases where the manufacturer provides components, strict adherence to the installation instructions and leak test procedures is necessary to ensure that the airtight integrity is maintained.

A4.2.2. Voice actuated communication systems may cause continuous sound pickup of the blower, when used with powered air-purifying respirators, or air flow noise, when used with supplied-air devices.

A4.3. Hand or Coded Signals. A predetermined set of signals may be useful in communicating.

A4.4. Cranial, Throat, or Ear Microphones. Cranial and throat microphones are held in place with a harness against the wearer's head and larynx, respectively. Ear microphones are worn in the same manner as a transistor radio earphone and function as both a microphone and speaker. Use of these devices does not require making penetrations or attachments to the respirator, and does not impact the NIOSH certification status. They may be used with radios, telephones, loudspeakers, or other means of electronic transmittal, similar to facepiece microphones. Considerations when using these devices are:
A4.4.1. Cranial microphones shall never be placed under the head harness of facepiece respirators since their dislodgment may loosen the respirator straps.

A4.4.2. When connecting wires are passed underneath the bibs or neck seals of supplied-air hoods or helmets, they shall be attached to the worker's body to avoid disturbing the bib positioning.

A4.5. **Use of Telephone Handsets.** Since a person exhales while speaking, the exhalation valve in a facepiece respirator is partially open. This is a perfect location to place a handset or handheld microphone to obtain the clearest voice transmission. An alternative is to hold the handset or microphone to the wearer's throat while speaking.

A4.6. **Safety Considerations.** Electronic devices shall be selected and used with caution in explosive atmospheres or Class I hazardous locations identified in Article 501 of the National Electric Code (NEC). When required, ensure all such devices comply with requirements for permissibility and intrinsically safe systems according to Article 504 of the NEC. Consider the effects of radio frequency emissions when utilizing such devices in the vicinity of sensitive electronic equipment.
Attachment 5

LOW TEMPERATURE ENVIRONMENT CONSIDERATIONS

A5.1. A low temperature environment may cause fogging of the lens in a respiratory inlet covering and freezing or improper sealing of the valves. Coating the inside surface of the lens may inhibit fogging at low atmospheric temperatures approaching 0 degrees Celsius (C) (32 degrees Fahrenheit (F)). Full facepieces are available with nose cups that direct the warm and moist exhaled air through the exhalation valve without contacting the lens. Facepieces with nose cups may provide satisfactory vision at temperatures as low as -32 degrees C (-25 degrees F).

A5.2. It is important to note that SCBA equipped with a full facepiece and certified for use below 32 degrees F shall be equipped with a nose cup or other suitable accessory or coating to maintain the device's NIOSH certification when it is used in environments below 32 degrees F.

A5.3. Additionally, there are several other important considerations that users should be aware of when using SCBA in a low temperature environment. Users should thoroughly review the manufacturer's instructions and, if necessary, consult with the manufacturer to become thoroughly familiar with the precautions and recommendations for use of a specific SCBA in cold weather conditions.

A5.4. Such general considerations include (in addition to moisture content requirements for air).

   A5.4.1. The checking of all connections that may be affected when exposed to low temperatures.

   A5.4.2. The proper storage of elastomeric components such as facepieces and breathing tubes that may be prone to distortion if improperly stored in cold weather; such distortion of components as facepieces could prevent the user from attaining an adequate fit.

   A5.4.3. The availability of accessories and other components that are specially designed to withstand cold temperatures. This includes special elastomeric gaskets and diaphragms that are designed to retain their elasticity at low temperatures.

A5.5. At very low atmospheric temperatures, the valves of a respirator may freeze open or closed due to the presence of moisture.

A5.6. Some air-line respirators are approved with a device called a vortex tube to warm the air supplied to the respiratory inlet covering of the respirator.
Attachment 6

HIGH TEMPERATURE ENVIRONMENT CONSIDERATIONS

A6.1. Working in a high temperature environment while wearing a respirator creates additional stress on the wearer. Using a respirator that has a low weight, offers a low resistance to breathing, possesses a minimal dead air space, and, if feasible, provides a tempering of inlet air should minimize the additional stress.

A6.2. Dead air volume is the volume of previously exhaled air (which is available to be inhaled) remaining in a respiratory inlet covering. Reducing the amount of dead air volume in a respirator reduces the level of carbon dioxide in the inhaled air, which is a major source of respirator usage related stress. This can be accomplished through the use of powered air purifying respirators, continuous flow air-line respirators, use of a half face-piece respirator in lieu of a full face-piece, and use of a nose cup in full face-piece devices (regardless of the mode of operation).

A6.3. Air-line respirators are recommended for use in a high temperature environment. Air-line respirators approved with a vortex tube will substantially reduce the temperature of the air supplied to the respirator. If air-purifying respirators are to be used, a half facepiece respirator, where it offers adequate protection, is preferable to the full facepiece.

A6.4. Elastomeric components of respirators stored in high temperature environments may deteriorate at an accelerated rate and the facepiece may become permanently distorted. Special care shall be used to prevent facepiece distortion. Inspection frequency should be established considering the effects of high temperatures.
Attachment 7

ESTIMATING CARTRIDGE SERVICE LIFE FLOWCHART
*Note: Oil aerosols are typically friction reducing oils and require R- or P-series filters. R-series filters must be changed out after each 8-hour shift. Oils are hydrocarbon liquids with high boiling points, high molecular weights, and low vapor pressure. Oil aerosols can consist of mineral, vegetable, animal and synthetic substances that are slippery, combustible, and soluble in organic solvents such as ether but not soluble in water. Oil aerosols tend to degrade filter efficiency.*
Attachment 8

CBRN MASK QNFT FLOWCHART

A8.1. QNFT Flowchart. BE Flights should use the flowchart to guide them through the QNFT process.

Figure A8.1. QNFT Flowchart.
Attachment 9

SAMPLE QNFT MEMORANDUM TO UNIT COMMANDER

DATE

MEMORANDUM FOR (UNIT COMMANDER)

FROM: XXX/SGPB

SUBJECT: Report of NBC Mask Quantitative Fit Training (QNFT), MSgt Ron S. Smith

1. QNFT was conducted on MSgt Smith on (date) according to AFI 48-137, Respiratory Protection Program. MSgt Smith attained a fit factor (FF) of XXXX, which does not meet the Air Force minimum target FF of 2000. This could indicate inadequate protection against CBRN agents. We used all available options to achieve the best possible fit. The highest FF attained during the test was XXXX. A fact sheet that explains the QNFT program is attached for your information.

2. If you have any questions, please call me at DSN: XXX-XXXX.

JACK BLACK, Maj, USAF, BSC
Bioenvironmental Engineering Flight Commander

Attachment:

Fact Sheet

cc:
Member’s Unit/Attn: MSgt Smith
FACT SHEET FOR CBRN MASK QNFT

Q: What is CBRN mask QNFT?

A: The Air Force has implemented a program to perform “quantitative” fit training for CBRN protective masks. This program is conducted by the Bioenvironmental Engineering Flight. The quantitative method determines how well the mask fits the wearer. In the past the Air Force used subjective qualitative (go/no go) methods to determine if the gas masks fit. QNFT does not rely on an individual’s smell and taste sensitivity to a test agent. AFI 48-137, Respiratory Protection Program, outlines the program. QNFT involves measuring the dust concentration in the atmosphere and inside the mask cavity, and calculating a fit factor (FF). The higher the FF, the better the fit.

Q: Why do QNFT?

A: The purpose of the CBRN mask QNFT program is to enhance CBRN defense training, help Air Force personnel maximize their CBRN mask protection, and instill mask confidence. The CBRN mask QNFT program applies to negative pressure masks designed specifically for use in a CBRN environment. This program is intended to be a training aid rather than a certification tool to ensure personnel meet or exceed the minimum target FF.

QNFT increases protection through training personnel to attain an adequate FF by:
1. Confirming individuals’ mask sizes are correct.
2. Teaching individuals what their mask feels like when an adequate fit is attained (for example, head harness tension).
3. Teaching individuals how to properly don their masks to attain an adequate fit (for example, sequence of head harness adjustment).

Q: What is the “minimum target” FF?

A: The Air Force selected a FF of 2000 as a division between “adequate” and “poor” fitting gas masks. The FF indicates how well the mask fits; it is not a protection factor (PF). A PF indicates the degree to which an adequately fitted mask will reduce the concentration of a contaminant. For a given contaminant, an adequately fitted mask with a protection factor of 10,000 will reduce the wearer’s exposure to 1/10,000th of the contaminant level outside the mask. The QNFT does not measure the protection factor. It is also important to realize that the Air Force masks were not designed to fit 100 percent of the Air Force population; there will be persons who, due to the size and shape of their heads, will fall outside the design percentiles for the mask. Currently there is no capability to make custom masks.

Q: What could preclude a valid QNFT?
A1: It could be medical condition or a mask problem.
A2: If an individual reporting for QNFT has an obvious medical condition that might interfere with a valid evaluation (for example: swelling due to dental surgery; a skin condition; or a
If a person has questions regarding the need for another QNFT, the person should contact the BE Flight.