	City of Winchester **Fire & Rescue Department** **STANDARD OPERATING PROCEDURE**	

Section:	Health and Safety	**SOP:**	3.1
Subject:	Respiratory Protection Program	**Executed:** **Revised:**	September 18, 2000 December 25, 2010

Approved:

Scott Cullers, Fire Chief

PURPOSE

It is the policy of the Winchester Fire and Rescue Department (WFRD) to provide all personnel with a safe and healthful working environment. The Winchester Fire and Rescue Department will ensure all components of an effective respiratory protective program are implemented in accordance with the Commonwealth of Virginia Occupational Safety and Health Standard 29 CFR 1910.134.

1910.134 (a) (2)

Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee. The employer shall provide the respirators, which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protection program, which shall include the requirements outlined in paragraph (c) of this section.

1910.134 (c)

Respiratory protection program. This paragraph requires the employer to develop and implement a written respiratory protection program with required worksite-specific procedures and elements for required respirator use. The program must be administered by a suitably trained program administer.

1910.134 (c) (1)

In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer, the employer shall establish and implement a written respiratory protection program with worksite specific procedures. The program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use.

Volunteer Personnel Compliance

29 CFR 1910.134 applies to employers and employees in respect to regulations and requirements outlined by the Occupational Health and Safety Administration hereafter referred to as OSHA. The OSHA Regulations within the Commonwealth of Virginia are presently not applicable to volunteer (non-employee) personnel. Volunteer personnel (non-employee) may elect to utilize the full Respiratory Protection Program identified herein or may elect to omit the full medical evaluation while participating in all other aspects of the Program (i.e. Medical Evaluation Questionnaire, Quantitative Fit Testing, etc.).

Participating at this level will be acceptable until such time it is deemed necessary that the policy be mandated or when future changes in the OSHA Regulations pertaining to applicability are adopted.

RESPONSIBILITIES

The Winchester Fire and Rescue Department is responsible for establishing and maintaining a respiratory protection program to ensure WFRD personnel are properly protected from respiratory hazards. The WFRD will implement a Respiratory Protection Program which is designed and organized to ensure respirators are properly selected, used, and maintained by WFRD personnel, and meets federal regulatory standards (29 CFR 1910.134) and industry accepted standards (ANSI and NFPA).

The WFRD is also responsible for evaluating those tasks for which respiratory protection is thought t o be necessary, determine the degree of hazard posed by potential exposure, determine whether engineering or administrative controls are feasible, and will specify which respiratory protection device is to be used for each task. In addition, the WFRD will conduct quantitative fit testing of all respirators issued to all personnel.

2.1 Respiratory Protection Program Committee

The Winchester Fire and Rescue Department will form a Respiratory Protection Program Committee comprised of a volunteer representative selected by each of the volunteer stations, and a career representative as selected by the Winchester Fire and Rescue Department. As the Respiratory Protection Program Committee, they shall select the respiratory equipment used by WFRD personnel and address issues concerning respiratory protection equipment to the Fire Chief.

The Respiratory Protection Program Committee in conjunction with the Fire Chief is responsible for ensuring all personnel are properly trained in the respiratory hazards to which they are potentially exposed during routine and emergency situations. This includes the training of personnel in the proper selection and use of respirators, putting on and removing respirators, any limitations on respirator use, and respirator maintenance.

The Respiratory Protection Program Committee will be responsible for ensuring an adequate supply of properly maintained and serviced respirator assemblies are available to those personnel requiring such respirators in the performance of their duties. Air cylinder testing and air quality maintenance (e.g. compressor(s) will also be maintained by the Respiratory Protection Program Committee.

In addition, the Respiratory Protection Program Committee will maintain an equipment inventory, and ensure training, proper fit testing and regular maintenance in accordance with all provisions of VOSH, OSHA, NISOH, NFPA, and ANSI standards.

2.2 Physician or other Licensed Health Care Professional (PLHACP)

The PLHCP is responsible for conducting medical evaluations and reviewing the health status of all personnel who may be required to wear respiratory protective equipment in the completion of their assigned tasks in accordance with 29 CFR 1910.134 prior to quantitative fit testing.

2.3 Supervisors

Supervisors will ensure all personnel under his or her supervision using a respirator, has received appropriate training in its use. Supervisors must be aware of tasks requiring the use of respiratory protection, and ensure all personnel engaged in such in such work use the appropriate respirators at all times.

In addition, all supervisors are responsible for ensuring all personnel participating in any emergency response or training function, are protected from the hazards of an immediately dangerous to life or health (IDLH) atmosphere. Whereby there is an immediate threat to life, the potential for irreversible adverse health effects, or impairment to an individual's ability to escape from a dangerous atmosphere.

2.4 Personnel

It is the responsibility of all Winchester Fire and Rescue Department personnel to wear the appropriate respirator when and where required and in the manner in which they were trained. Personnel utilizing respirators shall report any malfunction of the respirator to their supervisor immediately. Personnel shall also guard against mechanical damage to the respirator, clean the respirator as instructed, and store the respirator in a clean, sanitary location.

MEDICAL EVALUATION

3.1 Regulatory Requirement

Per 29 CFR 1910.134 (c), personnel required to wear respirators shall receive a respiratory clearance assessment and medical examination by a PLHCP. The results of the examination shall remain confidential as required by 29 CFR 1910.20 and the Winchester Fire and Rescue Department's Medical Confidentiality Protocols.

3.2 Special Medical Evaluations

A respiratory assessment shall be conducted upon the request of an employee or the employee's immediate supervisor when appropriate. Special evaluations shall be

performed after prolonged absences from work for medical reasons or whenever a functional disability has been identified.

3.3 Medical Evaluations

The use of a respirator may place a physiological burden on personnel that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status and physical fitness of the employee. Therefore, a respiratory clearance assessment shall be required for all personnel utilizing approved respiratory protection equipment.

3.4 Respiratory Clearance Assessment Components

The respiratory clearance assessment shall include, but is not limited to:

a. Chest x-ray at the request of the PLHCP physician
b. Questionnaire concerning recent exposures
c. Physical assessment (i.e. auscultation of lungs)
d. Pulmonary function testing including spirometry
e. Past medical history, known cardiovascular and/or respiratory disease, current medications, and previous injuries.

* Volunteer Personnel (non-employee) clearance assessment shall include if applicable, but not limited to:

a. Questionnaire concerning recent exposures
b. Past medical history, known cardiovascular and/or respiratory diseases, current medications, and previous injuries.

3.5 Respirator Use Classification

The PLHCP shall classify personnel in one of the following categories:

Category A: No restriction on respirator use.

Category C: No respirator use under any circumstances. The reason should not be identified on the report to the employee's immediate supervisor. The PLHCP physician shall determine what medical attention if any is warranted to the employee. The work status of personnel shall be recommended by the PLHCP physician and forwarded to the Fire Chief.

No personnel shall be assigned a task requiring the use of a respirator if; based upon his/her most recent examination, the PLHCP physician determines that the individual will be unable to continue to function normally while wearing a respirator.

It is imperative to provide safety for the individual, their peers, and to the community service which is performed. If the LHCP makes a determination as to a *Category C* for an individual, that individual will be referred to their personal physician at the individual's expense to have the necessary diagnostic tests completed to satisfy the necessary requirements indicated for a *Category A* by the PLHCP.

SELECTION AND USE OF RESPIRATORY PROTECTIVE DEVICES

4.1 Respirator Selection

Respirators shall be selected from among those jointly approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84.

Only respiratory protection equipment approved by the Fire Chief is authorized for use by Winchester Fire and Rescue Department personnel.

Current department approved respirator(s) are:

a. Scott Air-Pak 2.2/4.5/5.0 with AV-2000/AV-3000 facepiece or equivalent – Self Contained Breathing Apparatus

b. Scott Twin Cartridge Respirator (full facepiece) Model #65

c. Moldex (or equivalent) NIOSH N95 health care particulate respirator

4.2 Respirator Selection for Hazardous Environments

4.2.1 The Winchester Fire and Rescue Department shall be responsible for ensuring the proper respiratory protection for emergency field personnel. Respiratory protection will be provided by means of using the self contained breathing apparatus (SCBA) and shall be donned and utilized for firefighting (i.e. structure fires, vehicle fires, dumpster fires, etc.) and other hazards that are immediately dangerous to life and health (IDLH). Currently the WFRD selected Scott SCBA's will be the manufacturer of choice to provide respiratory protection for field operations. The Safety Officer (when applicable) shall determine when the removal of breathing apparatus is permissible and notify the Incident Commander. In the absence of an on-scene Safety Officer, the Incident Commander will make the determination.

If a hazard cannot be identified and/or measured, or an IDLH atmosphere exists, SCBA shall be donned and utilized.

4.2.2 Currently the Winchester Fire and Rescue Department has approved 3M N95 respirators that shall be donned and utilized to provide respiratory protection for field personnel against the transmission of the tuberculosis droplet nuclei (TB). Patient care situations that require the donning of the N95 respirators shall be; the confirmation for active tuberculosis by the patient, when personnel suspect tuberculosis by the signs and symptoms exhibited by the patient, and when certified EMS providers are intubating and or suctioning patients in the field.

The N95 respirators shall be a one-time, single use respirator and shall be discarded in the proper biohazard waste container.

4.2.3 Respiratory protection shall be required for Hazard Material Emergencies. Fire and Rescue personnel on the Haz-Mat Team and Haz-Mat First Responders shall don and utilize the department approved self-contained breathing apparatus (SCBA). In addition, department policy permits personnel to use air-purifying respirators (APR) with the appropriate cartridge(s) for operation where possible hazards have been identified and measured, the SCBA shall be utilized against possible contaminates and hazards. The Safety Officer shall determine when the removal of breathing apparatus is permissible and notify the Incident Commander. In the absence of an on-scene Safety Officer, the incident Commander shall make the determination.

4.2.4 Respiratory protection equipment shall be required for WFRD personnel when performing overhaul operations when it is determined that a hazardous environment exists. To date no selection of respiratory protection equipment has been determined for overhaul operations other than currently approved SCBA.

4.3 Respiratory Use

4.3.1 The Winchester Fire and Rescue Department Respiratory Protection Program Committee shall make a recommendation to the Fire Chief for the approval of breathing apparatus utilized by fire and Rescue personnel during incident operations. Only those individuals who have been trained appropriately are permitted to don and use the Self-Contained Breathing Apparatus (SCBA) in the field.

4.3.2 If any Fire and Rescue personnel are not familiar with using a particular respirator, or requests remedial training, he she shall be directed to their immediate supervisor for assistance training.

4.3.3 Personnel shall conduct the conventional negative and positive pressure fit checks. Procedures to perform the negative and positive pressure fit checks are outlined in the Fit Testing section (6.0) of this manual.

4.4 Warning signs of Respirator Failure and Emergency Procedures

Any loss of air, either a perceived leak or a change in airflow to the mask indicates that the user should immediately stop any activities; notify command; and the entire crew shall exit the hazard area as a unit.

There are two major failure modes that require immediate corrective action. Loss of demand air supply and loss of free flow of the air supply.

4.4.1 Loss of demand air supply: Should the user be unable to inhale easily, first verify that the unit has not run out of air by reading the regulator gauge of air tank pressure mounted on the SCBA shoulder strap. Then check that the cylinder valve is fully opened. If the air supply is insufficient, turn the red bypass knob at the regulator facepiece anti-

clockwise to add air. You can regulate the airflow easily by opening and closing this valve. Leave the hazard area immediately.

4.4.2 Free flow of air supply. Should the unit free flow, the user will notice air blowing into the facepiece and out the exhalation valve. Use the cylinder valve as the control by reaching back and closing the valve, opening as required. Leave the hazard area immediately.

RESPIRATOR TRAINING AND OPERATIONAL USE

5.1 Training

5.1.1 All WFRD personnel must satisfactorily complete training prior to assignment to an operational position. Training on respiratory hazards and protection shall be consistent with NFPA, OSHA, and department standards.

Supervisor shall ensure personnel participate in department training in respiratory
protection equipment.

5.1.2 Personnel shall be trained annually in the proper use of respirators, including donning and removal procedures, any limitations on their use, and their maintenance. Such training may also include participation of WFRD personnel with in-station drills.

5.2 Interior Structural Firefighting

5.2.1 All personnel engaged in interior structural firefighting shall use SCBA's.

5.3 IDLH Atmospheres

5.3.1 An IDLH is an area where there is "immediate danger to life and health." On interior structure fires, it is the area where "an advanced fire has spread inside a building and high temperatures, heat, and dense smoke are present." On many other incidents it can be defined as any area where the need for self contained breathing apparatus is needed to sustain life.

5.3.2 RIT is the acronym for "Rapid Intervention Team." The term Rapid Intervention Team (RIT) shall be used wherever Winchester Fire and Rescue Department personnel operate.

5.3.3 The term "two-in-two-out" refers to incident scene operations where the minimum number of firefighters (two) may enter an IDLH while a minimum number of firefighters (two) remain outside the IDLH area to monitor the activity of the interior crew. This minimum number applies during the initial stages of operations and may be increased, but never decreased, unless justified by the unit officer in charge (OIC) based on a known or perceived hazard.

5.3.4 The two-in, two-out rule is applicable to those incidents (during the initial stages of operations) where there may be a hazard to firefighters entering an IDLH area. It is imperative that all firefighters operating within any hazardous area always operate in teams of two or more, maintain constant communication with each team member through visual, audible, physical, safety device, or electronic means; and maintain close proximity to each other to provide assistance in case of an emergency.

One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer along as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.

5.4 Risk Analysis

5.4.1 It is important to emphasize that if any firefighter feels he or she must initiate actions that would involve entering a hazardous atmosphere because of a known imminent life-threatening situation where immediate action may prevent the loss of life or serious injury and sufficient minimum staffing is not yet on the scene, the firefighter must evaluate the level of risk that he or she would be exposed to prior to taking such action. Such action is intended to apply when, in the firefighter's professional judgment, the situation requires immediate action to prevent the loss of life or serious injury. In these instances, the firefighter shall communicate his or her intended actions to ECC so that information is conveyed to responding units.

5.4.2 It is critical that the first in officer continually perform a risk analysis of all tasks to be accomplished on every incident (i.e. recognize situations where firefighters may sustain injuries and identify IDLH areas). Given this information, firefighters may:

1. Risk their lives in a calculated manner to save a life

2. Place themselves in situations with moderate risk to save property

3. Risk nothing to try and save lives or property already lost

RESPIRATOR FIT TESTING

6.1 Fit Testing Eligibility

6.1.1 All Department personnel required to wear a respirator must be fit tested to assess the quality of fit.

6.1.2 Personnel required to wear respirators shall receive an annual fit test performed by a pre-determined fit testing agency in compliance with federal and industrial respiratory standards. In addition to the annual fit

testing evaluation, the personnel and his or her immediate supervisor may request a fit test to ensure proper respirator fit.

6.1.3 Requirements prior to being fit tested

If one of all of these requirements is not in compliance, the fit test shall not be conducted.

a. Personnel shall be in compliance with 29 CFR 1910 .134 (A) and department grooming standards pertaining to facial hair.

b. Personnel shall not smoke, eat, or chew tobacco for at lest 30 minutes prior to the fit test.

c. Personnel shall receive a category A respiratory clearance assessment from the LHCP physician prior to being fit tested.

d. Personnel shall successfully complete an approved respirator training course, and have been instructed on the use, limitations, selection, care, storage, and inspection of respirators.

6.2 Fit Checking

Fit checking shall be performed each time a respirator is donned by personnel to ensure a protective seal has been established.

6.2.1 Negative Fit Checking

a. Properly don the facepiece and fasten all supporting head straps.

b. Place your palm completely over the inlet port of the facepiece
c. The wearer shall inhale gently and hold his/her breath. If the facepiece collapses slightly and no inward leakage of air into the facepiece is detected, it can be reasonably assured that the fit of the respirator to the wearer is satisfactory.

d. If the wearer does not experience the slight collapse of the facepiece and/or detects an inward leakage, he/she shall tighten the head straps. The wearer should not experience an uncomfortable fit if additional tightening is required.

e. If the wearer does not achieve a satisfactory fit check, then another respirator size may be necessary.

6.2.2 Positive Fit Check

a. The positive fit check shall be conducted by the wearer after completing a successful negative fit test.

b. With the facepiece donned, the wearer should place his/her hand over the complete exhalation valve.

c. The wearer should gently exhale to test his or her facepiece to face seal. The fit of the facepiece is considered satisfactory if a slight positive pressure can be built up inside the facepiece without the detection of any outward leakage of air between the sealing surface of the facepiece and the respirator wearer's face.

d. If the wearer does not experience the positive pressure buildup inside the facepiece, he or she shall further tighten the head straps. The wearer should not experience an uncomfortable fit if additional tightening is required.

e. If the wearer does not achieve a satisfactory fit check, then another respirator size may be necessary.

6.3 Quantitative Fit Test (QNFT) Protocols

The following quantitative fit testing procedures have been demonstrated to be acceptable:

- Quantitative fit testing using a non-hazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebecate [DEHS], or sodium chloride0 generated in a test chamber, employing instrumentation to quantify the fit of the respirator.
- Quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit.
- Quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

1. General

(a) The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

2. Ambient aerosol Condensation Nuclei Counter (CNC) quantitative fit testing protocol.

The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Portacount IM) protocol quantitatively tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator that allows the probe to

sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Portacount Fit Test Requirements

(1) Check the respirator to make sure the sampling probe and line are properly attached to the facepiece and that the respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test. (e.g. NIOSH 42 CFR 84 series 100, series 99, or series 95 particulate filter) per manufacturer's instruction.

(2) Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.

(3) Check the following conditions for the adequacy of the respirator fit: Chin properly placed; adequate strap tension; not overly tightened; fit across nose bridge; respirator of proper size to span distance from nose to chin; tendency of the respirator to slip; self-observation in a mirror to evaluate fit and respirator position.

(4) Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece try another size of the same model respirator, or another model of respirator.

(5) Follow the manufacturer's instructions for operating the Portacount and proceed with the test.

(6) The test subject shall be instructed to perform the following test exercises in the test environment, in the following manner:

(a) Normal breathing. In normal standing position, without talking the subject shall breathe normally.

(b) Deep breathing. Ina normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

(c) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between

the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(d) Moving head up and down. Standing in place, the subject shall be instructed to inhale in the up position (i.e. when looking toward the ceiling).

(e) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text (rainbow passage), count backward from 100, or recite a memorized poem or song.

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

(f) Grimace. The test subject shall grimace by smiling or frowning.

(g) Bending over. The test subject shall bend at the waist as if he she were to touch his/her toes.

(h) Each test shall be performed for one minute except for the grimace exercise, which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator will be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

6.3.3 Facial Hair

It is essential that department personnel comply with grooming standards on facial hair prior to being fit tested. In addition, WFRD personnel shall comply with the department's grooming standards on duty when he or she may be subject to donning a respirator. Grooming standards shall be in accordance current SOP's.

6.3.1 Glasses an Eye/Face Protective Devices

Proper fitting of respiratory protective device facepiece for individuals wearing eyeglasses may not be established if temple bars or straps extend through the sealing edge of facepiece. If eyeglasses, goggles, or a face shield must be worn with a respirator, they must be worn as so not to adversely affect the seal of the facepiece.

It is recommended (ANSI) that contact lenses not be worn while wearing a facepiece. First, the facepiece pulls back the skin at the edges of the eyes, and the lenses could pop out. Second, the air sweeping into the facepiece over the lens could blow lint or dust into the eyes and under the contact lenses. Air coming into the facepiece could dry out the contact lens, making them uncomfortable to wear and perhaps damaging them irreparably.

6.3.2 Respirator User Cards

Respirator user cards will be issued by *WFRD* to personnel who have trained, fitted, and have been medically evaluated to use respirators. A Respirator user card will include:

a. Name of personnel being fit tested.

b. His/her social security number

c. Date of the test

d. Type of respirator fit test instrumentation and equipment used

e. Type of respirator

f. Brand, model, and size of respirator

g. Space for comments to include, but not limited to: scars, the use of an insert inside the natural rubber facepiece, etc.

6.3.3 Record Keeping

Respirator fit testing shall be documented and shall include the type of respirator, brand name and model, method of test and test results, test date and the name of the instructor/tester. All records shall be placed in the personnel's fit test master file as maintained by the WFRD and a copy retained by the individual station.

MAINTENANCE OF RESPIRATORS

7.1 Maintenance

Self contained breathing apparatus (SCBA) must be inspected, cleaned, and disinfected after each use. The SCBA consists of mask, bottle, and harnesses.

7.1.1 Repairs

ANSI Recommendations and OSHA regulations clearly state that repairs shall be completed by a factory trained technician. No attempt shall be made to replace components or to make adjustments beyond the manufacturer's recommendations. Under no circumstances shall station personnel make any repairs or alterations to breathing apparatus (unless minor in nature).

Cylinders shall not have adaptors used to change threads on any equipment other then approved parts provided from the manufacturer.

When repairs are required for a self contained breathing apparatus (SCBA), the entire ensemble, less the cylinder, will be placed out of service until appropriate repairs have been made. Information concerning the SCBA is to be documented on the apparatus inspection and/or SCBA check off sheet with a detailed description of the repairs needed.

7.1.2 Hydrostatic Testing

The original manufacturers date, adjacent to the serial number, and each successive hydrostatic test will be indicated by a stamp affixed to the bottle. This date indicates the last time the cylinder was hydrostatically tested. To determine the expiration date, add three years to the most recent date stamped on the cylinder.

7.2 Adverse Environmental Exposures and/or Mechanical Damage

Any SCBA unit component directly exposed to intense heat, chemicals, or water immersion shall be taken out of service until unit is inspected prior to being placed back in service. Any SCBA cylinder that has been dropped or struck by a vehicle shall be placed out of service. Manufacturer technicians may need to be contacted regarding any exposed or possible damage due to use and placed out of service until a technician can inspect them.

7.3 Cleaning of Self Contained Breathing Apparatus

All respirators with the exception of disposable type respirators will be cleaned and disinfected following each use. The following procedures are provided when cleaning respirators. They are general in nature, and personnel as an alternative may use the cleaning recommendations provided by the manufacturer, provided such procedures are as effective as those listed here. Equivalent effectiveness simply means that the procedures used must accomplish the objectives and is properly and is properly cleaned and disinfected in a manner that prevents damage to the respirators and does not cause harm to the user.

7.3.1 Procedures for cleaning respirators (masks)

a. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure demand assemblies, hoses, or any components recommended by the manufacturer.

b. Wash components in warm (110 degree F maximum) water with mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

c. Rinse components thoroughly in clean, warm (110 degree F maximum). Preferably running water. Drain.

d. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in <u>one</u> of the following:

    1. hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 110 degree F.

    2. Aqueous solution of iodine (50-ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100cc of 45% alcohol) to one liter of water at 110 degree F.

    3. Other commercially available cleansers of equivalent quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

e. Rinse components thoroughly in clean, warm (110 degree maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration or rubber or corrosion of metal parts if not completely removed.

f. Components should be hand dried with a clean lint free cloth or air dried.

g. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

h. Test the respirator to ensure that components work properly.

i. Wipe down the SCBA bottle and complete harness with a damp lint free towel. Exercise caution not to get water inside the regulatory assembly.

j. Perform a visual inspection of the entire SCBA ensemble.

k. Return the SCBA unit to its proper place on the apparatus or in storage.

l. The cleaner/sanitizer solutions can be used for several applications and shall be discarded after cleaning/sanitizing is completed.

m. Personnel utilizing the cleaner/sanitizer shall thoroughly wash his/her hands with soap and water when facepiece cleaning/sanitizing is completed.

7.3.2 Materials Safety Data Sheets (MSDS) for Cleaners/Sanitizers

Each station supervisor shall ensure that his/her station has on file the MSDS safety information sheets for the respirator cleaners/sanitizers.

7.4 Filling Air Cylinders

7.4.1 All breathing air cylinders shall be refilled only from a cascade system or air compressor that has been set up for this purpose.

7.4.2 WFRD breathing air compressors provide Grade D breathing air. Air quality checks are regularly provided and documented to *WFRD*.

7.4.3 Mobile units, which have cascade systems, shall carry and utilize fragmentation containers to hold cylinders being filled.

7.4.4 Stationary and mobile cascade systems shall have detailed procedures posted on how self-contained breathing apparatus (SCBA) are filled.

7.4.5 Cylinders shall be for SCBA only. Prior to filling, the condition of the cylinder and hydrostatic test date shall be assessed to determine if the cylinder should remain in service.

7.4.6 For safety reasons, only trained and authorized personnel shall fill SCBA cylinders from air compressors and/or cascade systems

7.4.7 Repairs or alterations to *WFRD* approved air compressors and cascade systems shall only be performed by authorized repair personnel.

INSPECTION PROGRAM

All self-contained breathing apparatus (SCBA) shall be inspected at the exchange of each shift and after each use. The user shall check the respirator immediately prior to each use to ensure that it is in proper working condition. In addition, after cleaning and sanitizing, each respirator shall be inspected to determine if it is in proper working condition.

During inspection, if any malfunctions or damage are identified on the facepiece, cylinder, regulator, or harness, then the unit shall be placed out of service with proper documentation and notification.

8.1 Facepiece Inspection

a. Check for overall cleanliness

b. Check head harness for dry rot or other damage

c. Check head harness for full extension

d. Check speaking diaphragm for leaks and proper function

e. Ensure that the nose cup is in place

f. Ensure with the inhalation valves are in place

8.2 Cylinder Inspection

a. Check cylinder for damage and date of hydrostatic test

b. Check cylinder gauge for proper pressure and for any visible damage. Refill (top-off) the cylinder if pressure is below 90% or 4000 psi.

c. Check tightness of high pressure line connecting to the cylinder (hand tighten only)

8.3 Regular Inspection (daily)

a. Check exterior of pressure reducing assembly for damage

b. Check exterior of face mounted regulator for damage

c. Inspect supply air hoses for damage

d. Depress “donning” switch located on face mounted regulator

e. Slowly open cylinder valve to supply air to face mounted regulator

f. Ensure that cylinder pressure has a minimum of 4000 psi. or higher.

g. Compare pressure shown on remote gauge (on shoulder strap) with pressure shown on cylinder gauge (maximum difference of 200 psi.)

h. With the regulator attached to the facepiece, don facepiece and forcefully inhale to activate automatic positive pressure. Inhale and exhale several times, ensuring proper function of regulator, inhalation valves and exhalation valve.

i. Depress “donning” switch and remove facepiece. No airflow should be detected.

j. Close cylinder valve

k. Slowly open bypass knob (red) to check bypass function. At this time observe remote gauge and ensure that the low air cylinder alarm activities at ¼ cylinder pressure or at 1100 psi.

l. Close bypass knob when residual air supply is exhausted

8.4 Harness Inspection

a. Check all straps and buckles for damage, proper function, and ensure they are secured to back frame.

b. Check to see that harness is not twisted, straighten as necessary

c. Check for proper placement and operation of PASS unit, operational and functioning properly

d. Check to see that the cylinder is secured, properly in place, and air connection is hand tight.

8.5 Annual Inspection

8.5.1 In accordance with National Fire Protection Association (NFPA) standard 1404 and the Winchester Fire and Rescue Department Respiratory Protection Policy, all self-contained breathing apparatus (SCBA) utilized by personnel shall undergo an annual inspection and "flow test." This inspection and the "flow test" shall be conducted by certified repair technicians and must include the following:

a. Disassembling the SCBA into major components

b. Flow testing of regulator

c. Disassembling and cleaning of the regulator

d. Replacement of worn and/or defective parts, or those recommended by the manufacturer

e. Disassembling of the low air warning alarm for cleaning and replacement of parts as needed.

f. Cleaning and replacement of needed components in the facepiece and harness assemblies.

g. Reassembling of entire SCBA and testing for proper performance.

8.6 Integrity of SCBA Unit

8.6.1 All SCBA shall be maintained as a complete unit.

8.7 Respiratory Program Effectiveness

The Winchester Fire and Rescue Department shall continuously measure the effectiveness of the Respiratory Protection Program. Efficiency of the program shall be measured by; but not limited to, the following:

a. Changes and recommendations by WFRD personnel to better meet their health and safety needs.

b. Minimally, station supervisor shall conduct a quarterly inspection of inventory of respiratory protection equipment (daily check records, cleaning and sanitizing facepieces, personnel unable to obtain a proper facepiece seal due to weight loss, etc.).

c. An annual questionnaire to randomly selected personnel to comment and rate current respiratory protection equipment.

RECORD KEEPING

9.1 Maintenance Records

9.1.1 Self Contained Breathing Apparatus Records

All inspection and cleaning sanitizing shall be recorded by the fire stations' SCBA Inspection Record. Each complete breathing apparatus shall have an inspection record. On the first day of the month, a new inspection record shall be started at the station for each apparatus that carries the SCBA. A monthly copy of these inspections (assignment of SCBA, repair and replacement, cylinders, and hydrostatic test dates) shall be forwarded to the WFRD office for record keeping in the master file and a copy retained by the individual stations. All records should be sent and kept as one package.

All station supervisors are responsible for ensuring that breathing apparatus assigned at their station are, in fact, at their station, and each inspection record corresponds to the breathing apparatus carried on that respective apparatus.

9.2 Fit Testing Records

9.2.1 Personnel Records

Upon completion of each fit test, the WFRD shall record on file; a record of the "fit test" results of the personnel being fit tested. Per OSHA 29 CFR section 1910.1027-Cadmium Standard. Appendix C. I. A. 12, the first fit test record shall be maintained until the next fit test is administered. Respiratory Protection Program Committee shall maintain all records concerning fit testing in a master file located in the WFRD offices.

The fit test record should include:

a. Name of personnel being fit tested

b. His or her social security number

c. Date of the test

d. Type of respirator fit test instrumentation and equipment used

e. Type of respirator

f. Brand, model, and size of respirator

g. Space for comments

In addition to maintaining a record for each fit test of personnel, department personnel will receive and maintain a "wallet card" with the following information noted:

a. Name of personnel

b. Date of fit test

c. Brand, model, and size of SCBA

d. Brand, model, and size of TB mask

e. Space for comments to include, but not limited to: scars, the use of an insert inside the natural rubber facepiece, etc.

f. The purpose of the wallet card is to assist personnel with what respirator equipment is necessary to maintain quality of fit resulting from the most recent fit test (SCBA and/or TB mask). The wallet card is NOT an official record and shall not be interpreted as such.

REFERENCES

The Respiratory protection program recommendations are based on, but not limited to, the following reference documents:

Title 29 Code of Federal Regulations – 1910.34

American National Standards Institute – Z88.2-1992

American National Standards Institute – Z88.6-1984

National Fire Protection Association – NFPA 1500 and NFPA 1404

OSHA CPL 2-2.54 – Respiratory Protection Manual

OSHA CPL 2-0.120 – Inspection Procedures for the Respiratory Protection Standard

CGA Specifications G-7-1, Type 1, Grade D Air

Small Entity Compliance Guide – Respiratory Protection Standard
Small Entity Compliance Guide

CHECKLIST FOR RESPIRATOR SELECTION

Check that at your facility:

□ Respiratory hazards in your workplace have been identified and evaluated.

□ Employee exposures that have not been, or cannot be, evaluated are considered IDLH.

□ Respirators are NIOSH certified, and used under the condition of certification

□ Respirators are based on the workplace hazards evaluated and workplace and user factors affecting respirator performance and reliability.

□ A sufficient number of respirator sizes and models are provided to be acceptable and correctly fit the users.

□ For IDLH atmosphere:

- □ Full facepiece pressure demand SARs with auxiliary SCBA unit or full face piece pressure demand SCBAs, with a minimum service life of 30 minutes, are provided.
- □ Respirators used for escape only are NIOSH certified for the atmosphere in which they will be used.
- □ Oxygen deficient atmosphere are considered IDLH.

□ For Non-IDLH atmosphere:

- □ Respirators selected are appropriate for the chemical state and physical form of the containment.
- □ Air-purifying respirators used for protection against gases and vapors are equipped with ESLs or a change schedule has been implemented.
- □ Air-purifying respirators used for protection against particulates are equipped with NIOSH-certified HEPA filters or other filters certified by NIOSH for particulates under 42 CFR part 84.

CHECKLIST FOR MEDICAL EVALUATION

Check that at your facility:

- □ All employees have been evaluated to determine their ability to wear a respirator prior to being fit tested for or wearing a respirator for the first time in your workplace.

- □ A physician or other licensed health care professional (PLHCP) has been identified to perform the medical evaluations.

- □ The medical evaluations obtain the information requested in Sections 1 and 2, Part A of Appendix C of the standard, 29 CFR 1910.134.

- □ Employees are provided follow-up medical exams if they answer positively to any of questions 1 through 8 in Section 2, Part A of Appendix C, or if their initial medical evaluation reveals that a follow-up exam is needed.

- □ Medical evaluations are administered confidentiality during normal work hours, and in a manner that is understandable to employees.

- □ Employees are provided the opportunity to discuss the medical evaluation results with PLHCP.

- □ The following supplemental information is provided to the PLHCP before he or she makes a decision about a respirator use:

    - □ Type and weight of the respirator.
    - □ Duration and frequency of respirator use.
    - □ Expected physical work effort.
    - □ Additional protective clothing to be worn.
    - □ Potential temperature and humidity extremes.
    - □ Written copies of the respiratory protection program and the Respiratory Protection standard.

CHECKLIST FOR MEDICAL EVALUATION (cont.)

- □ Written Recommendations are obtained from the PLHCP regarding each employee's ability to wear a respirator, and that the PLHCP has given the employee a copy of these recommendations.
- □ Employees who are medically unable to wear a negative pressure respirator are provided with a powered air-purifying respirator (PAPR) if they are found by the PLHCP to medically able to use a PAPR.
- □ Employees are given an additional medical evaluations when:
  - □ The employee reports symptoms related to his or her ability to use a respirator.
  - □ The PLHCP, respiratory protection program administrator, or supervisor determines that a medical reevaluation is necessary.
  - □ Information from the respiratory protection program suggests a need for reevaluation.
  - □ Workplace conditions have changed in a way that could potentially place an increased burden on the employee's health.

CHECKLIST FOR FIT TESTING

Check that at your facility:

□ Employees who are using tight fitting respirator facepieces have passed an appropriate fit test prior to being required to use a respirator.

□ Fit tested is conducted with the same make, model, and size that the employee will be expected to use at the worksite.

□ Fit tests are conducted annually and when different respirator facepieces are to be used.

□ Provisions are made to conduct additional fit tests in the event of physical changes in the employee that may affect respirator fit.

□ Employees are given the opportunity to select a different respirator facepiece and be retested, if their respirator fit is unacceptable to them.

□ Fit tests are administered using OSHA-accepted QNFT or QLFT protocols.

□ QLFT is only used to fit test PAPRs, SCBAs, or negative pressure APRs that must achieve a fit factor of 100 or less.

□ QNFT is used in all situations where a negative pressure respirator is intended to protect workers from contaminant concentrations greater than 10 times the PEL.

□ When QNFT is used to fit negative pressure respirators, a minimum fit factor of 100 is achieved for tight-fitting half-facepieces and 500 full-facepieces.

CHECKLIST FOR FIT TESTING (Cont.)

- □ For tight-fitting atmosphere-supplying respirators and powered air-purifying respirators:
  - □ Fit test are conducted in the negative pressure mode.
  - □ QLFT is achieved by temporarily converting the facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure APR.
  - □ QNFT is achieved by modifying the facepiece to allow for sampling inside the mask midway between the nose and mouth. The facepiece is restored to its NIOSH approved configuration before being used in the workplace.

CHECKLIST FOR PROPER USE OF RESPIRATORS

Check your facility to be certain that:

□ Workers using tight-fitting respirators have no conditions, such as facial hair, that would interfere with a face-to-facepiece seal or valve function.

□ Workers wear corrective glasses, goggles, other protective equipment in a manner that does not interfere the face-to-facepiece seal or valve function.

□ Workers perform user seal checks prior to each use of a tight-fitting respirator.

□ There are procedures for conducting on going surveillance of the work area for conditions that affect respirator effectiveness, and that, when such conditions exist, you take steps to address those situations.

□ Employees are permitted to leave their work area to conduct respirator maintenance, such as washing the facepiece, or to replace respirator parts

□ Employees to do not return to their work area until their respirator is repaired or replaced in the event of breakthrough, a leak in the facepiece, or a change in breathing resistance.

□ There are procedures for respirator use in IDLH atmospheres and during interior structural firefighting to ensure that: the appropriate number of standby personnel are deployed; standby personnel and employees in the IDLH environment maintain communication; standby personnel are properly trained, equipped, and prepared; you will be notified when standby personnel enter an IDLH atmosphere; and you will respond to this notification.

□ Standby personnel are equipped with a pressure demand or other positive pressure SCBA, or a positive pressure supplied air respirator with an escape SCBA, and appropriate retrieval equipment or other means for rescue.

□ Procedures for interior structural firefighting require that: at least two employees enter the IDLH atmosphere and remain in contact with one another at all times: at least two standby personnel are used; and all firefighting employees use SCBAs.

CHECKLIST FOR RESPIRATOR MAINTENANCE AND CARE

Check to make sure your facility has met the following requirements:

Cleaning and Disinfecting

□ Respirators are provided that are clean, sanitary, and in good working order.

□ Respirators are cleaned and disinfected using the procedures specified in Appendix B-2 of the standard.

□ Respirators are cleaned and disinfected:

- □ As often as necessary when issued for the exclusive use of one employee.
- □ Before being worn by different individuals.
- □ After each use for emergency use respirators.
- □ After each use for respirators used for fit testing and training.

Storage

□ Respirators are stored to protect them from damage from the elements, and from becoming deformed.

□ Emergency respirators are stored:

- □ To be accessible to the work area.
- □ In compartments marked as such.
- □ In accordance with manufacturer's recommendations.

Inspections

□ Routine-use respirators are inspected before each use and during cleaning.

□ SCBAs and emergency respirators are inspected monthly and checked for proper function before and after each use.

□ Emergency escape-only respirators are inspected before being carried into the workplace for use.

CHECKLIST FOR RESPIRATOR MAINTENANCE AND CARE (cont.)

□ Inspections include:

- □ Check of respirator function
- □ Tightness of connections
- □ Condition of the facepiece, valves, and carriages.
- □ Condition of elastomeric parts

□ For SCBAs, inspection includes checking that cylinders are fully charged, and that regulators and warning devices function properly.

□ Emergency use respirators are certified by documenting the inspection, and by tagging the information either to the respirator or its compartment, or storing it with inspection reports.

Repairs

□ Respirators that have failed inspection are taken out of service.

□ Repairs are made only by trained personnel

□ Only NIOSH-approved parts are used.

□ Reducing and admission valves, regulators, and alarms are adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

CHECKLIST FOR BREATHING AIR QUALITY AND USE

Check that at your facility:

General

□ Compressed breathing air meets the requirements for Grade D breathing air.

□ Compressed oxygen is not used in respirators that have previously used compressed air.

□ Oxygen concentrations greater that 23.5 percent are used only in equipment designed for oxygen service of distribution.

□ Breathing air couplings are incompatible with outlets for other gas systems.

□ Breathing gas containers are marked with appropriate NIOSH certification.

Breathing Air Cylinders

□ Cylinders are tested and maintained according to DOT 49 CFR Part 173 and 178.

□ A certificate of analysis for breathing air has been obtained from the supplier.

□ Moisture content in the cylinder does not exceed a dew point of -50º F at 1 atmosphere pressure.

CHECKLIST FOR BREATHING AIR QUALITY USE (cont.)

Compressors

- □ Are constructed and situated to prevent contaminated air from getting into the system.
- □ Are set up to minimize the moisture content.
- □ Are equipped with in-line air-purifying sorbent beds and/or filters that are maintained or replaced following manufacturer's instructions.
- □ Are tagged with information on the most recent change date of the filter and an authorized signature.
- □ Carbon monoxide does not exceed 10 ppm in the breathing air from compressors that are not oil-lubricated.
- □ High-temperature and carbon monoxide alarms are used on oil-lubricated compressors, or that the air is monitored often enough to ensure that the carbon monoxide does not exceed 10 ppm if only a high-temperature alarm is used.

TRAINING AND INFORMATION CHECKLIST

Check that at your facility:

□ Employees can demonstrate knowledge of:

- □ Why the respirator is necessary and the consequence of improper fit, use, or maintenance.
- □ Limitations and capabilities of the respirator.
- □ How to effectively use the respirator in emergency situations.
- □ How to inspect, put on, remove, use, and check the seals of the respirator.
- □ Maintenance and storage procedures.
  The general requirements of the respirator standard.

□ Training is understandable to employees

□ Training is provided prior to employee use of a respirator.

□ Retraining is provided:

- □ Annually.
- □ Upon changes in workplace conditions that affect respirator use.
- □ Whenever retraining appears necessary to ensure safe respirator use.

□ Appendix D of the standard is provided to voluntary users.

- Are you confident that your respirator is performing adequately?

PROGRAM EVALUATION CHECKLIST

Check that at your facility:

□ Workplace evaluations are being conducted as necessary to ensure that the written respiratory protection program is being effectively implemented.

□ Employees required to wear respirators are being regularly consulted to assess the employees' views and to identify problems with respirator fit, selection, use, and maintenance

□ Any problems identified during assessment are corrected.

1-2

RECORDKEEPING CHECKLIST

Check that at your facility:

- □ Records of medical evaluations have been retained.
- □ Fit testing records have been retained.
- □ A copy of the current respiratory protection program has been retained.
- □ Access to these records is provided to affected employees.

m-2