



Respiratory Protection Program

Appendix 5-06a

Category: HEALTH & SAFETY

Approved _____

Replaces: N/A
Revised August 31, 2003

REFERENCE

Appendix 5-06a, Respiratory Protection Program • Appendix 5-11j, Self Contained Breathing Apparatus (SCBA) Inspections and Repairs • WAC 296-305-02017 • WAC 296-305-04001 • WAC 296-62 WAC, Part E - Respiratory Protection

PREFACE

South Kitsap Fire and Rescue (the District) has adopted the following Respiratory Protection Program. The program establishes comprehensive guidelines to assist in reducing the risk of exposure to respiratory hazards. This Program will be reviewed annually and updated as necessary to address additional or modified tasks and procedures.

These guidelines apply to all members who provide fire, rescue and emergency medical care. The District recognizes that exposure to respiratory hazards is a potential occupational health hazard to all members. Exposure to respiratory hazards is possible during many aspects of emergency response, including routine in-station activities. The health and welfare of each member is a joint concern of the individual and the Fire District. While members are ultimately responsible for their own health, the District recognizes a responsibility to provide as safe a workplace as possible. The goal of this program is to provide all members with the best available protection from occupational exposure to respiratory hazards.

PROGRAM OBJECTIVES

The goal of the District's Respiratory Protection Program is to reduce the risk of exposure to workplace respiratory hazards for all District members.

Program objectives include:

- To ensure that members are provided with protective equipment that provides them with an appropriate level of protection from workplace respiratory hazards.
- To establish standard operating procedures designed to ensure the personal safety of individuals operating within environments of potential respiratory hazard.
- To establish general fitness and training guidelines for all members assigned to use respiratory equipment.
- To establish standard procedures for the inspection, repair, and routine maintenance of respiratory equipment.

PROGRAM DEFINITIONS – WAC 296-63-07105

Approved – Tested and listed as satisfactory by the Bureau of Mines (BM) of the U.S. Department of Interior, or jointly by the Mining Enforcement and Safety Administration (MESA) of the U.S. Department of Interior and the National Institute for Occupational Safety and Health (NIOSH) of the U.S. Department of Health and Human Services, or jointly by the Mine Safety and Health Administration (MSHA) of the U.S. Department of Labor and NIOSH under the provisions of Title 30, Code of Federal Regulations, Part 11.

Contaminant – A harmful, irritating, or nuisance material that is foreign to the normal atmosphere.

Corrective Lens – A lens ground to the wearer's individual corrective prescription to permit visual acuity.

Face Piece – That portion of a respirator that covers the wearer's nose and mouth in quarter-mask (above the chin) or half-mask (under the chin) face piece or that covers the nose, mouth, and eyes in a full face piece.

Hazardous Atmosphere – Any atmosphere, either immediately or not immediately dangerous to life or health, which is oxygen deficient or which contains a toxic or disease-producing contaminant.

HEPA Respirator – High efficiency particulate air respirator.

High-Efficiency Filter – A filter that removes from air 99.7% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometer.

Immediately Dangerous to Life or Health (IDLH) – Any atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitating effects on health.

Inhalation Valve – A device that allows respirable air to enter a respirator and prevents exhaled air from leaving the respirator through the valve.

MSA – Mine Safety Appliances – respiratory equipment manufacturer.

MSHA – Mine Safety Health Administration.

Oxygen Deficiency – Immediately Dangerous to Life or Health – An atmosphere which causes an oxygen partial pressure of 95 millimeters of mercury column or less or has less than 12.5% by volume in the freshly inspired air in the upper portion of the lungs which is saturated with water vapor.

Oxygen Deficiency – Not Immediately Dangerous to Life or Health – An atmosphere having an oxygen concentration below the minimum legal requirement of 19.5% by volume or has a partial pressure of oxygen of 148 millimeters of mercury for respirable air at sea-level conditions, but above that which is immediately dangerous to life or health.

Positive-Pressure Respirator – A respirator in which the air pressure inside the respiratory-inlet covering is positive in relation to the air pressure of the outside atmosphere during exhalation and inhalation.

Respiratory-Inlet Covering – That portion of a respirator which connects the wearer's respiratory tract to an air-purifying device or respirable gas source, or both. It may be a face piece, helmet, hood, suit, or mouthpiece/nose clamp.

Self-Contained Breathing Apparatus (SCBA) – Respiratory equipment specifically designed for use within hazardous atmospheres. SCBA provides the user with an independent supply of breathable air.

Smoke – A system, which includes the products of combustion, pyrolysis, or chemical reaction of substances in the form of visible and invisible solid and liquid particles and gaseous products in air. Smoke is usually of sufficient concentration to perceptibly obscure vision.

Time Weighted Average (TWA) – The average concentration of a contaminant in air during a specific time period.

Section 1 – Program Administration – WAC 296-62-07109

The District shall ensure that self-contained breathing apparatus (SCBA) and/or respirators are provided for, and used by, all members working in areas where the atmosphere is known to be hazardous, is suspected of being hazardous, or may rapidly become hazardous.

The following sections are intended to establish standard criteria for the use, limitations, training, inspection, and maintenance of Self-contained breathing apparatus (SCBA) and/or respirators.

1.1 – Respiratory Equipment Selection – WAC 296-62-07109 (4, 5)

The District shall provide and members shall only utilize approved respiratory equipment that is designated for the hazard to which they are likely to be exposed to.

1.2 – Medical Limitations – WAC 296-62-07109 (3)

The District's Occupational Health Physician will review [WISHA Respirator Medical Evaluation Questionnaire \(Form 5-06a\) for Firefighters](#) to determine whether or not a member may be assigned to a task requiring the use of respiratory equipment. This confidential questionnaire shall be filled out and sent to the District's Physician by the member, for review. Members with physical disabilities such as, but not limited to, respiratory impairments, or claustrophobia when wearing a respirator, shall not be assigned to tasks requiring the use of respiratory equipment unless it has been determined by the District's Physician that they are physically able to perform the work and use the equipment.

1.3 – SCBA Limitations – WAC 296-62-07109 (8)

SCBA shall be used in accordance with the Kitsap County Training Manual. In addition, the following specific limitations shall apply to use of SCBA respiratory equipment.

1. SCBA shall only be used by members who have been adequately trained in accordance with District adopted procedures.
2. SCBA shall not be used as an underwater device.
3. Members with beards, facial hair, or similar physical characteristics that limit the ability of the face piece to seal properly shall not use respiratory equipment. An improper face seal may allow contaminants to leak into the face piece, reducing or eliminating respiratory protection.
4. The face-to-face piece seal shall be checked before each use.
5. Never remove SCBA face pieces except in a safe, non-hazardous, non-toxic atmosphere.
6. Return to a safe atmosphere immediately if discoloration, crazing, blistering, cracking, or other deterioration of the lens material is observed.
7. Members shall wear full protective clothing including protective hood when SCBA is utilized.
8. Members shall not alter, modify, or substitute any components without the written approval of MSA and the Fire Chief. Such alterations void the NIOSH/MSHA approval.
9. Members shall inspect SCBA face pieces regularly and shall maintain SCBA in accordance with applicable manufactures instructions. Face pieces not performing as specified in the MSA instruction manual shall not be used until inspected by MSA trained or certified air mask maintenance members assigned to the Respiratory Protection Program (SCBA Program).

1.4 – SCBA Training – WAC 296-62-07109 (6)

In accordance with WAC 296-305, all members shall receive initial, as well as on-going SCBA training. Members shall be tested initially, and annually thereafter, in donning proficiency, standard operating procedures, performance of adopted emergency procedures, and the proper servicing of SCBA. Training shall be performed in accordance with procedures established by the Kitsap County Training Manual.

1.5 – Fit Testing Procedures – WAC 296-62-07109(7), 62-07113 (3), 62-07739 (Appendix C)

All members shall be fit tested before being permitted to use SCBA or HEPA respirators in a hazardous atmosphere. SCBA and HEPA respirator fit testing shall be conducted annually, whenever there are changes in the type of SCBA face piece or HEPA respirator used, or

whenever there are significant physical changes in the user such as a 10% weight gain/loss; scarring of the face piece seal area; cosmetic surgery; etc.. Only members with a properly fitting SCBA face piece or HEPA respirator shall be permitted to function in a hazardous atmosphere.

Fit testing is only done in a negative-pressure mode. Any modifications to the face piece used for testing shall not affect the fit of the face piece seal. Modified face pieces shall only be used for fit testing. Qualitative fit testing shall be documented on [Form 5-06b, Respirator Fit Test Record](#). Completed forms will be sent to the Districts Health / Safety officer and kept in the members medical file. The qualitative fit test will be conducted per WAC 296-62 Appendix C utilizing the saccharin or Bitrex solution protocol as follows:

Materials Required

Testing hood
Nebulizer #1 – Sensitivity
Nebulizer #2 – Fit test
Replacement nebulizer inserts (2)
Fit test solution
Sensitivity Solution (Saccharin or Bitrex)

Preparation

Connect snaps at the top of the hood so that the connections help to support the hood.
Pour a small amount (approximately one cc) of the Sensitivity Test Solution into the nebulizer labeled #1 Sensitivity Test Solution.
Pour the same amount of Fit Test Solution into the nebulizer labeled #2 Fit Test Solution.

Sensitivity Test

This test is done to assure that the person being fit tested can detect the taste of the test solution at very low levels. The Sensitivity Test Solution is a very dilute version of the Fit Test Solution. The test subject may not eat, drink, or chew gum for 15 minutes before the test.

1. The entire screening and testing process shall be explained to the test subject prior to conducting the screening test.
2. Don the hood without a respirator. Throughout the Sensitivity Test, the test subject must breathe through his/her wide-open mouth with tongue extended.
3. Position the hood forward so there are about six (6) inches between the subject's face and the hood window.
4. Instruct the test subject to breath through his/her mouth.
5. Using Nebulizer #1 with the Sensitivity Test Solution, spray the aerosol into the hood through the hole in the hood window. Inject ten (10) squeezes of the bulb, fully collapsing and allowing the bulb to expand fully on each squeeze.

6. Ask the test subject if he/she can detect the sweet taste of the solution. If tasted, note the number of squeezes and proceed to the Fit Test.
7. If not tasted, spray an additional ten (10) squeezes of the aerosol into the hood. Repeat with ten (10) more squeezes if necessary. Note the number of squeezes required to produce a taste response.
8. If thirty (30) squeezes are inadequate, the test should be ended and another type of solution used because the test subject cannot detect the taste agent. If a taste response is elicited, the test subject must be instructed to take note of the taste for reference during the Fit Test.
9. Remove the test hood and give the subject a few minutes to clear the taste from his/her mouth.
10. The nebulizer must be thoroughly rinsed in water, shaken dry and refilled at least each morning and afternoon or at least every four (4) hours.

Fit Test

1. Have the test subject put on and fit check the respirator using the instructions provided with the respirator. The respirator must be equipped with a particulate filter(s).
2. Have the subject put on and position the test hood and, as before, breathe through his/her mouth with tongue extended.
3. Using Nebulizer #2 with the Fit Test Solution, spray the fit test aerosol using the same number of squeezes as required to elicit a taste response in the Sensitivity Test.
4. To maintain an adequate concentration of aerosol during the test, one-half the number of squeezes used in step 1.5.4.3 is injected every thirty (60) seconds.
5. After the initial aerosol is injected, ask the test subject to perform the following test exercises for a one minute duration:

Normal Breathing

Deep Breathing – Breaths should be deep and regular

Turning head from side to side – Movement should be completed with one (1) turn every second.

Nodding head up and down – Movement should be completed and made about one (1) nod per second.

Talking – Ask the subject to read “The Rainbow Passage” aloud slowly.

Normal Breathing

6. If the entire test is completed without the test subject detecting the test solutions of the aerosol, the test is successful and the respirator fit test is deemed adequate. If the taste of test solutions is detected, the fit test is deemed unsatisfactory and a different respirator model or size should be tried.

The Rainbow Passage

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

Section 2 – Respiratory Equipment Inspection, Care, and Maintenance

2.1 – Routine Inspection – WAC 296-62-07109(10), 07115(6), 07117(3)

All respirators (SCBA) shall be inspected routinely before and after use and immediately prior to each use by the wearer to ensure that it is in proper working condition. SCBA shall be inspected daily at staffed stations and weekly at unstaffed stations. In no instance shall SCBA be inspected less than monthly. A record of inspection dates, findings, and remedial actions shall be kept for each respirator maintained for emergency or rescue use.

SCBA inspections shall be completed be assigned personal on a scheduled basis. Inspections shall be completed using the following procedures and documented on approved forms or electronically through RMS. Copies of the appropriate SCBA Functional Check, SCBA Inspection Record and Out Of Service Criteria shall be maintained in each apparatus Rig Check Book.

STAFFED STATIONS (Career)

SCBA Inspection Record – In addition to the Functional Check an SCBA Inspection Record shall be conducted on a weekly basis in accordance with [SCBA Inspection Record Form 5-11n](#).

SCBA Functional Check – An SCBA Functional Check shall be conducted on a daily basis and after each use. The check shall be completed in accordance with [SCBA Functional Check Form 5-11m](#).

UNSTAFFED STATIONS (Volunteer)

SCBA Inspection Record – In addition to the SCBA Functional Check an SCBA Inspection Record shall be conducted on a monthly basis in accordance with [SCBA Inspection Record Form 5-11n](#).

SCBA Functional Check – An SCBA Functional Check shall be conducted prior to any routine use of an apparatus in which it's assigned (i.e., V-Shift, training or community events) and after each use. The check shall be completed in accordance with [SCBA Functional Check Form 5-11m](#).

DOCUMENTATION

When available, electronic documentation shall be done on the District RMS System. If everything meets standards as outlined, inspectors need only document in the note section what Group of packs was checked (i.e., G01A, G01B, G01C, G01D).

When electronic documentation is not available the proper Functional or Inspection Record shall be completed and forwarded to the RMS / Administrative office. If any deficiencies are found that can not be resolved by the inspector, they should be listed on the back of the form and the proper repair request submitted.

When an SCBA is found to be out-of-service or needs repair, in addition to the repair request the SCBA must be tagged and routed to the appropriate station for repair. Tags are provided at each station and should be filled out with the following information: Apparatus number, Type of repair needed, Date and Name of person filling out the tag.

2.2 – Cleaning and Sanitizing – WAC 296-62-07109 (14), 07117

Each respirator shall be cleaned and sanitized to ensure that the respiratory equipment wearer is provided with a clean and sanitized respirator at all times. General firefighting debris should be cleaned by thoroughly washing the harness, backpack and cylinder with a mild cleaning detergent, rinsing with clean water, and allowing to air dry. A respirator issued for other than continuous personal use by a particular worker, such as routine, non-routine, emergency, or rescue use, shall be cleaned and sanitized after each use.

Disposable respiratory equipment shall not be re-used. Respiratory equipment that becomes contaminated with hazardous materials shall be decontaminated in accordance with the manufacture's recommendations.

After cleaning and sanitizing, each SCBA and respirator shall be inspected to determine if it is in proper working condition, if it needs replacement of parts or repairs, or if it should be discarded. Each respirator stored for emergency or rescue use shall be inspected at least monthly.

2.3 – Following use, SCBA shall be specifically inspected with the following criteria:

Examine the face piece for contamination, damage and deterioration. Decontaminate as needed.

Examine all straps and harnesses for wear and the proper function of all hardware. Adjust as needed.

With the regulator removed from waist strap mount and the shut-off button engaged, open the main cylinder valve to pressurize regulator and hose. The low air alarm should ring as pressure increases, indicating the alarm is cocked. Once charged, close the main cylinder valve.

While watching the remote pressure gauge open the bypass valve, note the pressure at which the low air alarm activates. The low air alarm should activate at about 20% of the cylinder's rated service pressure (-1100-1200 psi). With the main cylinder valve closed, allow the remaining pressure to bleed from the system.

If the low air alarm does not activate, check to ensure that the system was not pressurized prior to testing system. If still inoperable, tag the equipment out-of-service until the equipment can be inspected by the MSA trained or certified SCBA maintenance members assigned to the Respiratory Protection Program (SCBA Program).

Check cylinder pressure gauge for "full" indication (4,500 PSI). Replace or recharge cylinder if pressure is less than 4,000 psi.

Close the cylinder valve. Compare the remote pressure gauge to the cylinder pressure gauge. A variance of 100 PSI plus or minus is allowable (200 PSI total).

Watch the remote pressure gauge for a drop in pressure that would indicate a leak.

2.4 – Repair and Parts Replacement – WAC 296-62-07117

Only members trained in proper respirator assembly and correction of possible respirator malfunctions and defects shall do replacement of parts and/or repairs. Replacement parts shall be only those designed for the specific respirator being repaired. Reducing or admission valves, regulators, and alarms shall be returned to the manufacturer or to a trained technician for repair or adjustment. Instrumentation for making valve, regulator, and alarm adjustments and tests must be approved by the valve, regulator, or alarm manufacturer.

2.5 – SCBA Scheduled Preventative Maintenance – WAC 296-62-07109 (14), 07117

SCBA shall receive, on a scheduled basis, preventive maintenance such as regulator overhaul, flow testing, hydrostatic testing in accordance with manufactures guidelines, and so on. Only members who have been qualified by the manufacture shall perform all preventative maintenance. The person assigned to the District's SCBA Program shall maintain complete records of all maintenance.

2.6 – Respiratory Equipment Storage – WAC 296-62-07117 (5)

Respiratory equipment shall be stored in a manner that will protect it against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators shall be stored to prevent distortion of rubber or other elastomeric parts. Respirators shall not be stored in such places as lockers and tool boxes unless they are protected from contamination, distortion, and damage. Emergency and rescue-use respirators that are placed in work areas shall be quickly

accessible at all times, and the storage cabinet or container in which they are stored shall be clearly marked.

2.7 – Air Quality – WAC 296-305-04001 (5, 6, 21), WAC 296-62-07111

SCBA breathing air shall meet the requirements of ANSI/CGA G7.1 - Commodity Specifications for Air, with a minimum air quality of grade D, and shall meet a water vapor level of 24 ppm or less. The District shall maintain documentation of quarterly air quality certification.

Section 3 – Personal Alert Safety Systems (PASS) – WAC 296-305-02017

3.1 – Application – WAC 296-305-02017

All District SCBA shall be equipped with a Personal Alert Safety System (PASS device) and shall be used in the “Auto” mode whenever SCBA are used in the “On Air” position (SCBA donned, breathing air). The following section is intended to establish standard criteria for the inspection and maintenance of PASS devices. PASS devices shall be used and operated in accordance with the criteria established in the Kitsap County Training Manual.

3.2 – Maintenance – WAC 296-305-02017

Cleaning, inspecting, testing, and battery replacement are the only maintenance details that can be performed by District members. Only the manufacturer may perform any repairs beyond battery replacement. PASS devices shall be maintained in accordance with the criteria established in the Kitsap County Training Manual.

3.3 – Inspection and Testing – WAC 296-305-02017 (2)

PASS devices shall be inspected along with weekly SCBA inspections. They shall be given a functional test at least weekly to ensure that they are ready for use. PASS devices shall be inspected and tested in accordance with the criteria established in the Kitsap County Training Manual.

3.4 – Cleaning

PASS devices shall be cleaned following use and on an as needed basis. PASS devices shall be cleaned in accordance with the criteria established in the Kitsap County Training Manual.

ATTACHMENTS

SOP 5-06	Respiratory Protection Program
Form 5-06a	WISHA Respirator Medical Questionnaire
Form 5-06b	Respirator Fit Test Record
Form 5-11m	SCBA Functional Check
Form 5-11n	SCBA Inspection Record