

**Salina Fire Department
Respiratory Protection Program**

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SECTION 1 – INTRODUCTION

It is the policy of the Salina Fire Department to maintain comprehensive occupational safety and health programs based upon sound engineering, education, and enforcement. This document establishes Departmental policy, responsibilities, and requirements for the protection of firefighters whose job requires the use of respiratory protection. This document will also provide assistance to the firefighter in the use and care of respiratory protection.

The Salina Fire Department Respiratory Protection Program Administrator is the EMS Division Chief. The Program Administrator will develop written detailed instructions covering each of the basic elements in this program and make recommendation to the Fire Chief.

The Program Administrator shall appoint an SCBA Fit Test Coordinator. The Fit Test Coordinator shall administer the fit test portion of this program and shall evaluate and make recommendation to the Program Administrator on issues relative to the SCBA respiratory program.

The Program Administrator shall appoint an SCBA Manufacture Certified Technician. The SCBA Technician shall report to the SCBA Fit Test Coordinator and shall evaluate and make recommendation on issues relative to the SCBA program.

SECTION 2 - STANDARD OPERATING GUIDES

Department Standard Operating Guides to be referenced and adopted as part of the Respiratory Program include:

- SOG S-600 Personal Protective Equipment
- SOG S-615 SCBA Maintenance
- SOG S-601 Procedures for Interior Structural Firefighting

Adopted in reference shall be the manufacturer's documentation;
SCOTT operating & maintenance instructions AIR-PAK Model 2.2, 3.0, 4.5
Fifty SCBA.

SCOTT operating & maintenance instructions SKA-PAK PLUS
5min/10min, combination SCBA for escape / supplied air.

Department Forms

- FD - 132 Medical History Questionnaire
- FD – 208 Daily Vehicle Checklist
- FD – 209 Cascade System Log
- FD - 134 Physician's Respiratory Clearance Form
- FitTrack 3000 FitTest Summary

SECTION 3 - TRAINING

Firefighters wearing respiratory protection shall be trained in proper use, cleaning and maintenance. No firefighter shall wear respiratory protection without first having been trained as specified in this document.

New Recruit Training

Initial training is to be provided during recruit training. No firefighter is to use respiratory protection unless training has been successfully completed. Firefighters shall obtain certification at the Fire Fighter I level.

Annual Training

On-going training shall be provided to all firefighters of the Department.

SCBA

At a minimum, the following topics are to be covered in the SCBA training.

1. Why the SCBA is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.
2. What the limitations and capabilities of the SCBA are.
3. How to use the SCBA effectively in emergency situations, including situations where the SCBA malfunctions.
4. Instruction on recognizing medical signs and symptoms that may limit or prevent the effective use of the SCBA.
5. How to inspect, put on and remove, use, and check the seals of the SCBA.
6. What the procedures are for maintenance, and storage of the SCBA.
7. The general requirements of the Respiratory Protection Standard & Policy.

FILL STATION TRAINING

SCBA cylinders will be filled only by firefighters who have completed fill station training. Retraining will be provided annually.

At a minimum the following topics are to be covered in the fill station training:

1. Procedures for inspecting the SCBA cylinder for damage.
2. Information to ensure that the cylinder has the proper hydrostatic test date.
3. Information to ensure that composite cylinders older than 15 years are not refilled and are removed from service.
4. Procedures for safely operating the fill station.
5. Information on the importance of using at least grade D air.
6. Information on the consequences of cylinder failure.
7. The manufacturer's instructions for the fill station.
8. Record keeping requirements.

SECTION 4 - RESPIRATOR FITTING AND SEAL CHECK

Inspection Before Use

When using SCBA, each firefighter shall select and wear the correct size facepiece as determined by initial and annual fit testing. A firefighter shall not wear respiratory protection unless the proper size facepiece is available and the equipment is in proper working condition according to the manufacturer's specifications.

Effective Seal Required

An effective face-to-facepiece seal is extremely important when using respiratory protective equipment. Minor leakage can allow contaminants to enter the facepiece, even with a positive pressure SCBA. Any outward leakage will increase the rate of air consumption, reducing the time available for use and safe exit. The facepiece must seal tightly against the skin, without penetration or interference by any protective clothing or other equipment.

Nothing can be between the sealing surface of the mask and the face of the wearer, including but not limited to, eyeglasses, protective hoods, and beards or other facial hair.

Firefighters shall perform a seal check prior to every SCBA use. SCBA can only be worn when an adequate seal is achieved.

User Seal Check Procedures

Firefighters using an SCBA are to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on.

Negative pressure check. Close off the inlet opening by covering with the palm of the hand, inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The test can be performed by covering the inlet opening with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

SECTION 5 - INSPECTION, STORAGE, MAINTENANCE AND SUPPLY

Inspection and Maintenance

All SCBA and spare cylinders shall be inspected after each use and daily during apparatus equipment checks. Utilize SFD Form FD208 –Daily Vehicle Checklist.

All SCBA, exposed to a hazardous material environment or extreme heat shall be removed from service until inspected by the Department Certified Technician. SCBA units determined to be unfit for use shall be taken out of service, and tagged with a description of the particular defect, date, time, Employee ID, SCBA location, and other pertinent information. The Battalion Chief shall be notified.

In the event replacement or repair of SCBA components is necessary, it shall be performed according to manufacturer's instructions and only by the department SCBA Certified Technician or the manufacturer's service facility.

Firefighters shall take care not subject SCBA units to unnecessary abuse due to neglect or carelessness. Caution must be exercised to protect the facepiece section of the mask from being scratched or damaged.

SCBA cylinders shall be hydrostatically tested within the period specified by the manufacturer. Cylinders must be tested every five (5) years. Composite cylinders will be removed from service after 15 years from the first hydrostatic test date.

Storage

All units shall be stored so that they are protected against direct sunlight, dust accumulation, severe temperature changes, excessive moisture, fumes, and damaging chemicals. Care is to be taken so that the means of storage does not distort or damage rubber or elastomeric components.

Air Supply

Breathing air in the SCBA cylinder shall meet the requirements of the Compressed Gas Association G-7.1-1989, COMMODITY SPECIFICATION FOR AIR, with a minimum air quality of Grade D. A competent laboratory shall check the purity of the air from the Fire Department's air compressor quarterly .

Cleaning Procedures

Manufacturer recommendation as defined by department policy shall be used in cleaning harnesses, back frames, regulators and bottles.

SECTION 6 - MEDICAL EVALUATION

A medical evaluation to determine the firefighter's ability to wear a SCBA will be provided prior to fit testing or use of SCBA. Only firefighters that are medically able to wear SCBA will be allowed to do so.

MEDICAL HISTORY QUESTIONNAIRE

The Program Administrator will initiate the department Medical History Questionnaire in the month of July. All firefighters will be given a copy of the questionnaire to fill out, along with a stamped and addressed envelope for mailing to Comcare. The form and other documentation may be completed on duty. (Note: Form # FD-132)

ANNUAL MEDICAL EVALUATION

Beginning in the month of September, Comcare will provide Firefighter medical evaluations to determine the ability to wear SCBA.

A follow-up medical examination may be provided for an employee whose initial medical examination demonstrates the need for a follow-up medical examination. The follow-up medical examination may include any medical tests, consultations, or diagnostic procedures that the City Physician deems necessary to make a final determination. Upon the findings of the medical examination, the City Physician may find it necessary to make a referral of the firefighter to their personal physician.

Comcare will provide the Program Administrator and firefighter with a written recommendation regarding the firefighter's clearance or non-clearance to wear an SCBA. Only the following information will be provided:

A statement on the firefighter's ability to wear an SCBA, The need for follow-up medical evaluation or physician referral if necessary,

A statement the firefighter has been provided with a copy of the recommendation.

(SFD Form #RP01 Physician's Respiratory Clearance Form)

Upon request, the firefighter will have the opportunity to consult with the City Physician about their medical evaluation.

Additional medical evaluations or personal physician referrals may be provided to firefighters under the following circumstances:

The firefighter reports signs and/or symptoms related to their ability to wear to use an SCBA, such as shortness of breath, dizziness, chest pains, or wheezing;

The City Physician informs the Program Administrator the firefighter needs reevaluated;

Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation.

All examinations and questionnaires are to remain confidential between the firefighter and Comcare. Comcare will keep all medical records and completed questionnaires as part of the patient record. Medical records will be maintained in compliance with the Access to Employee Exposure and Medical Records (29CFR1910.1020). The City Physician will provide employees access to their medical records. Access means the right and opportunity to examine and copy records.

Should any employee fail to receive Physicians Respiratory Clearance the employee will be referred to the Deputy Fire Chief for restricted or light duty consideration.

**SALINA FIRE DEPARTMENT
PHYSICIANS RESPIRATORY CLEARANCE FORM**

Firefighters's

Name: _____ SS#: _____

Comments

_____ Based on the Pulmonary Function Testing/Spirometry and medical questionnaire, this employee **has clearance** to work as a firefighter with a self contained breathing apparatus.

_____ Based on the Pulmonary Function Testing/Spirometry and medical questionnaire, this employee **does not** have clearance for duty as a firefighter with self contained breathing apparatus.

A copy of this written recommendation has been provided to the employee.

Physician's Signature Date

SECTION 7 – RECORDKEEPING

Completed SCBA inspection forms will be maintained by an assigned service technician.

The Fire Department Mechanic will maintain Records and results of air quality tests.

The assigned Testing Coordinator will maintain completed fit test records. Each firefighter will receive a copy of their fit test record.

Records for SCBA initial training, on going SCBA training, Firefighter I, Firefighter II, and Fill station training will be maintained by the Division Chief of Training.

The Division Chief of EMS will maintain medical Evaluation Physician's Respiratory Clearance Forms.

SUMMARY OF RESPIRATORY PROTECTION PROGRAM RECORDS

Type of Record	Keep Records For
SCBA Inspection Records	After Use until replaced Monthly one month
SCBA Maintenance/Repair Records	Life of equipment
Air Quality Tests	1 Year
Fit Test	1 Year
Medical Evaluation	length of employment , plus thirty years
Training	5 Years
Records Documenting Training	
Those Who Fill Cylinders	for 1 Year

SECTION 8 - PROGRAM EVALUATION

Evaluation Requirements

The effectiveness of the SCBA program shall be evaluated annually by the Health and Safety Committee and corrective actions taken to ensure the respiratory protection program is properly implemented. The fire department Health and Safety committee will regularly consult with firefighters to assess their views on the effectiveness of the program and to identify any problems.

The evaluation will ensure:

1. Procedures for purchasing of approved equipment are in place;
2. All firefighters are being properly fitted with respiratory protection;
3. All firefighters are properly trained;
4. The proper equipment, cleaning, inspection, and maintenance procedures are implemented;
5. The required records are being kept; and
6. Changes are implemented to correct deficiencies.

Program Monitoring

Periodic monitoring of the respiratory protection program is necessary to ensure that all firefighters are adequately protected. Random inspections shall be made by the Division Chief of EMS to ensure that the provisions of the program are being properly implemented.

Appendix A - Respirator Fit Test Record & Fit Test Protocol

The following pages outline the fit testing protocol utilized by the Fit Test 3000 and include a copy of the fit testing form.

Protocol Summary

Step Number	<u>Step Description</u>	<u>Step Type</u>	<u>Exercise Duration (sec)</u>
1	<i>Breathing</i>	Exercise	60
2	<i>Face Forward</i>	Test	0
3	<i>Deep Breathing</i>	Exercise	60
4	<i>Face Forward</i>	Test	0
5	<i>Side-to-Side</i>	Exercise	60
6	<i>Face Left</i>	Test	0
7	<i>Face Right</i>	Test	0
8	<i>Move Head Up-Down</i>	Exercise	60
9	<i>Face-Up</i>	Test	0
10	<i>Face Down</i>	Test	0
11	<i>Talking</i>	Exercise	60
12	<i>Face Forward</i>	Test	0
13	<i>Grimace</i>	Exercise	15
14	<i>Bend Over</i>	Exercise	60
15	<i>Face Forward</i>	Test	0
16	<i>Redon w/Normal Breathing</i>	Exercise	60
17	<i>Face Forward</i>	Test	0

FIT TEST PROTOCOL

3

A. Fit Testing Procedures -- General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.
5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. The test subject will be allowed adequate time to determine the comfort of the respirator: Assessment of comfort shall include a review of the following points;
 - (a) Position of the mask on the nose
 - (b) Room for eye protection
 - (c) Room to talk
 - (d) Position of mask on face and cheeks
7. The following criteria shall be used to help determine the adequacy of the respirator fit:
 - (a) Chin properly placed;
 - (b) Adequate strap tension, not overly tightened;
 - (c) Fit across nose bridge;
 - (d) Respirator of proper size to span distance from nose to chin;
 - (e) Tendency of respirator to slip;
 - (f) Self-observation in mirror to evaluate fit and respirator position.
8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep

breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.

9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
10. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.
11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retest.
12. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.
14. Test Exercises. (a) The following test exercises are to be performed for all fit testing methods prescribed in this appendix, except for the CNP method. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject shall perform exercises, in the test environment, in the following manner:
 - (1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
 - (2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
 - (3) 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.
 - (4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
 - (5) 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 such as the 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 form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.

(8) Normal breathing. Same as exercise (1).

(b) Each test exercise 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 shall 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.

A. Quantitative Fit Test Protocols

FitTest 3000 Instrument.

(1) The instrument will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.

(2) Since the pass or fail criterion of the Instrument is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this Appendix.

(3) A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.

B. Qualitative Fit Test (QLFT) Protocols

Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste Threshold Screening.

The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

- (1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.
- (2) The test enclosure shall have a $\frac{3}{4}$ inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle. (3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste
- (4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.
- (5) The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.
- (6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.
- (7) An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.
- (8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.
- (9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.
- (10) The test conductor will take note of the number of squeezes required to solicit a taste response.
- (11) If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.
- (12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.
- (13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.
- (14) The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

The Fit Test Failure.

Should an employee fail the fit test, after exhausting all measures identified in these protocols, the employee will be referred to the Deputy Chief for restricted or light duty consideration. The employee must be successful in fit testing within 30 days of the original test.