General Policies

Subject: Respiratory Protection Policy
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Section: 246.00

Background:

This SOG includes requirements consistent with the provisions established in 29CFR 1910.134, Respiratory Protection Standard, as amended, issued by the United States Department of Labor, Occupational Safety and Health Administration, and COMAR 09.12.21.9999UU, for implementation by the Ocean City Fire Department (OCFD) personnel. The policy includes provisions for the selection, fit testing, maintenance, repair and safe use of all components of respiratory protection equipment, and the medical evaluations, training certifications, and record keeping required for fire and rescue service personnel who use them.

246.01 Purpose

To reduce the risk of injury and illness to fire and rescue personnel while they are working in IDLH atmospheres, and in hazardous and toxic atmospheres shall wear and use an SCBA or Half face mask. When in the presence of infectious disease EMS personnel shall wear an N95 mask.

246.02 Scope/Applicability:

This SOG applies to all OCFD personnel who perform Firefighting, Rescue, EMS, Fire Investigation, and hazardous material response duties.

246.03 Definitions

. **Facepiece**:

The respirator component that covers the wearer's nose, mouth, and in some cases, the eyes. It includes; headbands, exhalation valves, and in some cases, components that are required to connect it to a breathable air supply.

Fit Test:

The use of a protocol to qualitatively (QLFT) or quantitatively (QNFT) evaluate the fit of a respirator on an individual.

Hazardous and or Toxic Atmosphere:

An environment that may present or contain respiratory hazards during OCFD activities, including, but not limited to; those related to overhaul, hazardous materials, EMS, fire investigation operations, and fire rescue operations.

Immediately Dangerous to Life or Health (IDLH):

An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair and individuals' ability to escape from a dangerous atmosphere.

N95 Respirator/Mask:

A surgical N95 respirator/mast is a NIOSH-approved respirator that has been cleared by the Food and Drug Administration (FDA) as a surgical mask that has a filter efficiency of 95% or greater against solid particulates and non-aerosols that do not degrade filter performance.

Qualitative Fit Test (QLFT):

A subjective test that relies on an individual's response to the test agent by his/her ability to taste or smell the challenge agent used in a pass/fail test. This test is used for negative-fitting respirators.

Quantitively Fit Test (QNFT):

An assessment of the adequacy of the respirator fit test that uses numerical measurements calculated by a computer-generated program. This is a more accurate test method than the QLFT because it is objective and provides a numerical test result.

Self-Contained Breathing Apparatus (SCBA):

An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

29 CFR 1910.134:

Alpha-numeric identifier of the respiratory protection standard issued by the United States Department of Labor, Occupational Safety and Administration (OSHA), that provides rules and regulations on the selection, maintenance, and use of SCBA.

49 CFR 180.25

Alpha-numeric identifier of the code of Federal Regulations by the United States Department of Transportation (DOT), pertaining to SCBA cylinder testing.

N95 Respirator/Mask Fit Testing:

A qualitative fit test is conducted once a year in accordance with 29 CFR 1910.134

Annual Physical:

All personnel must successfully complete an annual physical to be in compliance with the NFPA 1582 Standard on Comprehensive Occupational Medical Program for Fire Departments.

Operational Personnel:

Those who are SCBA or driver operator qualified.

SCBA Training and Annual Recertification:

All personnel must receive initial SCBA training that complies with NFPA 1404 Standard for Respiratory Protection Training as part of the Firefighter training course, or through an approved equivalent program, and must obtain annual re-certification through the OCFD in-service training program.

SCBA Face-pieces:

All personnel must use a correctly fitted SCBA face-piece. Correct face-piece fit will be determined by a quantitative fit test. Personnel will be tested during the on-boarding process, annually, when changes to facial features no longer allow for appropriate fit, and when a new face-piece design is adopted.
Personnel who wear eyeglasses must use approved frames that do not interrupt the seal of the face-piece. OCFD will reimburse the cost of the lenses to the member and supply the frames and a storage bag

SCBA Maintenance and Repair Requirements:

An SCBA unit must be taken out of service when any defect is found. Notification to be made to the chain of command.

1. An SCBA repair tag must be completed and attached to the unit by the person placing the unit out of service. The unit must be transported to Headquarters and placed on the rack next to the compressor.
2. The Incident Commander must impound and secure all PPE, including SCBA (if worn), that was used by a firefighter/rescuer who has suffered respiratory injuries, burn injuries, or line of duty death where their PPE may have been a factor. The impounded PPE/SCBA unit must be bagged, and a tag must be competed and attached to the equipment.
3. All personnel who have handled the involved equipment must sign off on the impound tag to document the chain of custody.
    - Chain of command notified
    - OCFD FMO will ensure all items are collected, tag, and secure evidence.
4. Personnel whose PPE has been impounded as a result of being involved in an incident will use an issued a set of loaner gear.

On-boarding fit testing process of any new FMO, Fire and EMS career and volunteer personnel:

a. A quantitative fit test will be performed when gear is issued.
b. The BC of Training Health & Safety will ensure annual fit testing for all divisions is completed between January 1st and March 1st each year.

246.04

a. **Inventory and Distribution**.
   i. N-95 mask inventory will be maintained by the Logistics Supply Technician
      i. A supply of N-95 mask for all apparatus will be maintained per the Operative I.Q. system and any replacement needs will be identified through this system.
      ii. The Logistics Supply Technician will forward any needs for replacement of the on-hand stock to the Deputy Chief for ordering.

b. **Record keeping**.
   i. The Quantifit FitTrack Gold testing machine maintains an electronic copy of each test under the name of the individual. The test operator will print off a hard copy of each test and forward them to the Office of the Fire Chief. The hard copy of the report will be maintained in his/her office for the current year. The previous year records will be electronically stored.
   ii. The fit for duty report will be maintained by the BC of Training Health & Safety. A hard copy of the report is filed in the individual's folder. The record will also be entered in to red alert or Laserfiche. In addition, the date for the physical is entered into the Red Alert system.
   iii. The date the fit test was completed will be entered into the Red Alert system.

c. Record keeping process for issuance of SCBA facepieces to any personnel
   i. The BC of Training Health & Safety will maintain a database of all individual facepieces that are issued.
      i. Personal facepieces will be issued to any individual that needs a small, large, X-large, or ones that need eye glass inserts.

d. Maintenance, upkeep and supplies for the fit testing machine
   i. The Quantifit FitTrack Gold testing machine will be calibrated per manufacturer's standards every July.
   ii. The BC of Training Health and Safety will maintain an inventory of all supplies and will forward any needs to the Deputy Chief for ordering.
   iii. The Quantifit FitTrack Gold testing machine will be located in and attached to the computer in the office of Training, Health and Safety.

Procedures for Qualitative and Quantative Fit Testing are outlined in Appendix I – Attached.

Appendix I- Fit Testing Procedures

1. Quantitative Fit Test Procedure

a. No member will be fit tested if they have smoked any tobacco products within ½ hour of the start of the fit test.
b. Before starting, the tester will ensure that the member has no facial hair that will interfere with the face piece seal per CFR standard.
c. The exhalation valve of the member's face piece will be inspected for debris and cleaned as required.
d. The test adapter will be sanitized and attached to the members face.
e. A user seal check using the Quantifit FitTrack Gold machine will be completed while the tester is present.

2. REDON Test Exercises.

a. Normal breathing. The subject needs to hold head straight ahead and hold his or her breath for 8 seconds during the test measurement.

b. Bend Over. The subject shall bend over looking at the floor and hold his or her breath for 8 seconds during test measurement.

c. Shake head. After the subject shakes their head, the subject needs to hold head, facing forward and hold his or her breath for 8 seconds during test measurement.

d. REDON number one. The subject will remove the facepiece and then REDON the facepiece. Standing in place, the subject shall hold his or her head facing forward and hold his or her breath for 8 seconds during test measurement.

e. REDON number two. The subject will remove the facepiece and then REDON the facepiece. Standing in place, the subject shall hold his or her head facing forward and hold his or her breath for 8 seconds during test measurement.

3. REDON Test Instrument

a. The test instrument must have an effective visual-warning device in the form of a screen tracing, that indicates when the test subject fails to hold his or her breath during the test. The test must be terminated and restarted from the beginning when the test subject fails to hold his or her breath during the test. The test subject then may be refitted and retested.

b. All procedures will be in full compliance with manufacturer's recommendation and in accordance with Federal Register 1910.134. The fit test will be conducted using a Quantifit FitTrack Gold machine and software generated fit test report.

c. This fit test report will be maintained in each member's file. The minimum acceptable fit factor will be equal to or greater than 500.

4. N95 for testing for EMS certified personnel

a. A qualitive fit test will be performed when gear is issued.
b. The BC of Training Health & Safety will ensure annual fit testing is completed for all divisions by March 1st.
c. 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.

d. Taste Threshold Screening.

   i. 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.

   ii. 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.

   iii. The test enclosure shall have a 3⁄4 inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

   iv. 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.

v. 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.

vi. The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.

vii. 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.

viii. 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.

ix. 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.

x. 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.

xi. The test conductor will take note of the number of squeezes required to solicit a taste response.

xii. 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.

xiii. If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

xiv. Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

xv. 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.

e. Bitrex Solution Aerosol Fit Test Procedure.

i. The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

ii. The fit test uses the same enclosure as that described in 4. (a) above.

iii. The test subject shall don the enclosure while wearing the respirator selected. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

iv. A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

v. The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

vi. As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.

vii. The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

viii. After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

ix. Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

x. The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

xi. If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).