

APPENDIX G QUALITATIVE FIT TEST PROTOCOL

RESPIRATOR SELECTION

- A. The employee shall be allowed to select the most comfortable respirator from an array of various sizes and models. The number of respirator sizes and models must be sufficient so that the respirator is acceptable to and correctly fits the user.
- B. Prior to the selection, the employee 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 assess a "comfortable" respirator. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator.
- C. The employee must understand that he/she is being asked to select the respirator which provides the most comfortable fit. Each respirator represents a different size and shape and, if fit properly, will provide adequate protection.
- D. The employee holds each facepiece up to the face and eliminates those which are obviously not giving a comfortable fit. Normally, selection will begin with a half mask and if a fit cannot be obtained, the employee will be asked to try the available full facepiece respirators. (A small percentage of users will not be able to wear any half-mask).
- E. The more comfortable facepieces are recorded; 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 F below. If the employee is not familiar with using a particular respirator, he/she shall be directed to don the mask several times and to adjust the straps each time, so that he/she becomes adept at setting proper tension on the straps.
- F. Assessment of comfort shall include reviewing the following points with the employee:
 - Chin properly placed.
 - Positioning of mask on nose.
 - Strap tension.
 - Fit across bridge of nose.
 - Room for safety glasses.
 - Distance from nose to chin.
 - Tendency to slip.
 - Cheeks filled out.
 - Self-observation in mirror.
 - Adequate time for assessment.
- G. The employee shall conduct the user seal checks according to the protocol shown on Page 68 of this document or the respirator manufacturer's instructions (see respirator packaging). Before conducting the user seal checks, the subject shall be told to "seat" the mask by moving the head side-to-side and up and down slowly while taking a few slow deep breaths.
- H. The employee is now ready for fit testing.
- I. If an employee exhibits difficulty in breathing during the tests, he/she shall be referred to a PLHCP, as appropriate, to determine whether the subject can wear a respirator while performing his/her duties.

- J. After passing the fit test, the employee shall be questioned again regarding the comfort of the respirator. If it has become uncomfortable, the employee shall be given the opportunity to select a different respirator and to be retested.

2. GENERAL PRECAUTIONS AND PROCEDURES

- A. Prior to beginning the fit test, the employee shall be given a description of the fit test and the employee's responsibilities during the test procedure.
- B. The fit test shall be performed while the employee is wearing any applicable safety equipment that may be worn during actual respirator use, which could interfere with respirator fit.
- C. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test and the fit test must be repeated.

3. FIT TEST PROTOCOL USING 3M'S QUALITATIVE FIT TEST KIT

This protocol can be used with either the FT-10 Qualitative Fit Test Apparatus (sweet solution) or the FT-30 Qualitative Fit Test Apparatus (bitter solution).

A. EQUIPMENT

- 1. FT-10 Qualitative Fit Test Apparatus (sweet solution) or FT-30 Qualitative Fit Test Apparatus (bitter solution)
 - a. Hood
 - b. Collar
 - Nebulizer #1 (Sensitivity Solution)
 - c. Nebulizer #2 (Fit Test Solution)
 - d. FT-11 Sensitivity Solution (sweet) OR FT-31 Fit Test Solution (bitter)
 - e. FT-12 Fit Test Solution (sweet) OR FT-32 Fit Test Solution (bitter)

NOTE: If FT-11 Sensitivity Solution is used, FT-12 Fit Test Solution must be used. If FT-31 Sensitivity Solution is used FT-32 Fit Test solution must be used.

- 2. Respirators equipped with particulate filters

B. PREPARATION

- 1. Attach hood to collar by placing draw string between flanges on collar. Tighten draw string and tie with square knot or bow.
- 2. Pour a small amount (approximately one teaspoonful) of the Sensitivity Solution into the nebulizer labeled "#1 Sensitivity Solution."
- 3. Pour the same amount of Fit Test Solution into the second nebulizer labeled "#2 Fit Test Solution."

C. SENSITIVITY TEST

This test is done to ensure that the person being fit tested can detect the taste of the test solution at very low levels. The Sensitivity Solution is a very dilute version of the Fit Test Solution.

The employee should not eat, drink, or chew gum for 15 minutes before the test.

1. Have the employee put on the hood and collar assembly without a respirator.
2. Position the hood assembly forward so that there is about six inches between the subject's face and the hood window.
3. Instruct the employee to breathe through the mouth.
4. Tell the employee the taste response to expect (sweet or bitter).
5. Using Nebulizer #1 with the Sensitivity Solution, inject the aerosol into the hood through the hole in the hood window. Rapidly inject ten squeezes of the bulb, fully collapsing and allowing the bulb to expand fully on each squeeze. Both plugs on the nebulizer must be removed from the openings during use. The nebulizer must be held in an upright position to ensure aerosol generation.
6. Ask the employee if he/she can detect the taste of the solution. If tasted, note the number of squeezes and proceed to the fit test.
7. If not tasted, inject an additional ten squeezes of the aerosol into the hood. Repeat with ten more squeezes if necessary. Note the number of squeezes required to produce a taste response. If the number of squeezes required was 1-10, note 10; if the number of squeezes required was 11-20, note 20; if the number of squeezes required was 21 -30, note 30. This number, 10, 20 or 30, will be used in the next part of the test.
8. If 30 squeezes are inadequate, in that the subject does not taste the Sensitivity Solution, terminate the test. Another type of fit test must be used.
9. Remove the test hood and give the subject a few minutes to clear the taste from the mouth. It may be helpful to have the subject rinse the mouth with water.

D. FIT TEST

NOTE: If FT-11 Sensitivity Solution was used in the sensitivity test, FT-12 Fit Test Solution must be used in the fit test. If FT-31 Sensitivity Solution was used in the sensitivity test, FT-32 Fit Test Solution must be used in fit test.

1. Have the employee put on the respirator and perform the user seal check per the instructions provided with the respirator.
2. Have the employee put on and position the test hood as before, and breathe through the mouth.
3. Using Nebulizer #2 with the Fit Test Solution, inject the fit test aerosol using the same number of squeezes noted in the Sensitivity Test (10, 20, or 30). A minimum of 10 squeezes is required, fully collapsing and allowing the bulb to expand fully on each squeeze. Both plugs on the nebulizer must be removed from the openings during use. The nebulizer must be held in an upright position to ensure aerosol generation.
4. To maintain an adequate concentration of aerosol during this test, one half the number of squeezes used in step 3 (5, 10, or 15) is injected every 30 seconds for the duration of the fit test procedure.
5. After the initial aerosol is injected, ask the employee to perform the following test exercises for 60 seconds each.
 - a. Normal breathing. In normal standing position, without talking, the subject shall breathe normally.
 - b. Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate. Breaths should be deep and regular.
 - 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. Movement should be complete, with one turn about every second.
- d. 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). Movement should be complete and made about one per second.
 - 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 such as the "Rainbow Passage" (see below), count backward from 100, or recite a memorized poem or song. is suggested.
 - f. Bending over. The employee shall bend over 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 QLFT units that do not permit bending over at the waist.
 - g. Normal breathing. Same as exercise #1.
6. Terminate the test if the subject detects the taste of the test solution at any time. This indicates an inadequate fit. Wait 15 minutes and perform the sensitivity test again.
 7. Repeat the fit test after re-donning and readjusting the respirator. A second failure may indicate that a different size or model respirator is needed.
 8. If the entire test is completed without the subject detecting the taste of the test solution, the test is successful and acceptable respirator fit has been demonstrated.
 9. Immediately after completion of the fit test, rinse the nebulizers with warm water to prevent clogging. Wipe out the inside of the hood with a damp cloth or paper towel to remove any deposited Fit Test Solution.

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 his reach, his friends say he is looking for the pot of gold at the end of the rainbow.”