

Appendix E: PLU School of Nursing Respirator Fit Testing Procedure

3M FT-30 Qualitative Fit Test Apparatus Instructions

Please note that a medical evaluation and clearance must be performed prior to fit testing.

You may perform the Respirator Selection prior to OR after performing the Sensitivity Test.

STEP 1: Preparation of Materials

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

STEP 2: Sensitivity Test



This test is done to assure that the person being fit tested can detect the bitter 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 should not eat, drink (except water), or chew gum for 15 minutes before the test.

1. Have the test subject 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 test subject to breathe through his/her mouth with tongue extended.
4. Using Nebulizer #1 with the Sensitivity Test Solution (#1), inject the aerosol into the hood through the hole in the hood window. 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.
5. Ask the test subject if he/she can detect the bitter taste of the solution. If tasted, note the number of squeezes as 10 and proceed to Respirator Selection.
6. If not tasted, inject an additional ten squeezes of the aerosol into the hood. Repeat with ten more squeezes if necessary. Note whether 20 or 30 squeezes produced a taste response.
7. If 30 squeezes are inadequate, in that the subject does not detect a bitter taste, the test is ended. Another type of fit test must be used (eg. saccharine, isoamyl acetate).

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8. Remove the test hood, and give the subject a few minutes to clear the taste from his/her mouth. It may be helpful to have the subject rinse his/her mouth with water.

STEP 3: Respirator Selection

1. Inform the test subject:
 - a. To choose the most comfortable respirator that provides an adequate fit over nose and mouth
 - b. That each respirator sample represents a different size and, if more than one model is supplied, a different shape
 - c. That if fitted and used properly, the respirator chosen will provide adequate protection
2. Provide a mirror and show the subject how to:
 - a. Put on the respirator
 - b. Position the respirator on the face
 - c. Set strap tension.
3. Review with the subject how to check for a comfortable fit around the nose, cheeks, and other areas on the face. Inform them that the respirator should be comfortable while talking or wearing eye protection.
4. Have the subject hold each facepiece against the face, taking enough time to compare the fit of each. They can then either:
 - a. Reject any facepiece that clearly does not feel comfortable or fit adequately; or
 - b. Choose which facepiece is most acceptable and which are less acceptable, if any.
5. Have the subject wear the most acceptable respirator for AT LEAST 5 minutes to evaluate comfort and fit. Do ALL of the following during this time:
 - a. Ask them to observe and comment about the comfort and fit:
 - i. Around the nose, cheeks, and other areas on the face
 - ii. When talking or wearing eye protection
 - b. Have them put on the respirator and adjust the straps until they show proficiency
 - c. Evaluate the respirator's general fit by checking:
 - i. Proper chin placement
 - ii. Properly tightened straps (do NOT over tighten)
 - iii. Acceptable fit across the nose bridge
 - iv. Respirator size; it must span the distance from nose to chin
 - v. To see if the respirator stays in position
 - d. Have them complete a successful seal check. Prior to the seal check they must settle the respirator on their face by taking a few slow deep breaths WHILE SLOWLY:
 - i. Moving their head from side-to-side; and
 - ii. Up and down.

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6. If the subject finds the respirator unacceptable, allow them to select another one and return to Step 5. Otherwise, proceed to Step 7.
7. Before starting the fit test, you must:
 - a. Describe the fit test including screening procedures, employee responsibilities, and test exercises; and
 - b. Make sure the employee wears the respirator AT LEAST five minutes.

STEP 4: Fit Test



NOTE: The PLU Fit Test Record form is available for logging the activities and results of each person's test.

1. Have the test subject don the respirator and **perform a user seal check per the instructions provided on the respirator package.**
2. Have subject wear any applicable safety equipment (goggles, glasses, face shield, etc.) that may be worn during actual respirator use that could interfere with respirator fit.
3. Have the subject put on and position the test hood as before, and breathe through his/her mouth with tongue extended.
4. Using Nebulizer #2 with Fit Test Solution (#2), inject the fit test aerosol using the same number of squeezes as required in the Sensitivity Test (10, 20, or 30). A minimum of ten squeezes is required, fully collapsing and allowing the bulb to expand fully on each squeeze. The nebulizer must be held in an upright position to ensure aerosol generation.
5. To maintain an adequate concentration of aerosol during this test, inject one-half the number of squeezes (5, 10, or 15) every 30 seconds for the duration of the fit test procedure.
6. After the initial injection of aerosol, ask the test subject to perform the following test exercises for 60 seconds each:
 - a. **Normal breathing** - In a 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.

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- 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 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).
- 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, 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.

- f. **Bending over** - The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place may be substituted for this exercise.
 - g. **Normal breathing** - Same as exercise a.
- 7. The test is terminated at any time the bitter taste of aerosol is detected by the subject because this indicates an inadequate fit. Wait 15 minutes and perform the sensitivity test again.
 - 8. Repeat the fit test after redonning and readjusting the respirator. A second failure may indicate that a different size or model respirator is needed.
 - 9. If the entire test is completed without the subject detecting the bitter taste of the aerosol, the test is successful and respirator fit has been demonstrated.
 - 10. Periodically check the nebulizer to make sure that it is not clogged. If clogging is found, clean the nebulizer and retest.

STEP 5: Cleanup

Please disinfect the inside of the hood between each user.

At the end of each session or at least every four hours, discard the unused solutions from the nebulizers. DO NOT pour unused solutions back into bottles. Rinse the nebulizers with warm water to prevent clogging and shake dry. Wipe out the inside of the hood with a damp cloth or paper towel to remove any deposited Test Solution.

Both the fit test solution (FT-32) and the sensitivity solution (FT-31) are classified as non-hazardous and may be disposed of down the drain.