



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES
HARBOR-UCLA MEDICAL CENTER

SUBJECT: RESPIRATORY FIT TESTING

POLICY NO. 479B

CATEGORY: Safety	EFFECTIVE DATE: 6/11
POLICY CONTACT: Wilson Wu, RN	UPDATE/REVISION DATE: 11/21
REVIEWED BY COMMITTEE(S): Environment of Care	

PURPOSE:

To comply with the various state and federal laws and regulations governing Respiratory Protection Fit Testing (RPFT), and to ensure Harbor-UCLA Medical Center (HUMC) workforce members (WFM) are wearing assigned respirator(s) and obtain a proper fit to protect the health and safety of the WFM, patients and the public.

DEFINITIONS:

Fit Test: Use of a protocol to qualitatively or quantitatively evaluate the fit of the respirator on an individual.

Negative Pressure Respirator (tight fitting): Respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Physician or other Licensed Health Care Professional (PLHCP): An individual whose legally permitted scope of practice (i.e. license, registration, or certification) allows him/her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by the respirator regulation.

Positive Pressure Respirator: Respirator in which the pressure inside the respiratory inlet exceeds the ambient air pressure outside the respirator.


Program Administrator: The WFM responsible for the administration of the RPFT.


Qualitative Fit Test (QLFT): A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative Fit Test (QFT): This fit test may be conducted with the permission of the HUMC Chief Medical Officer based on the needs of the services for increased safety precautions and on an individual case-by-case

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basis.

Tight Fitting Face Piece: A respirator with an inlet covering that forms a complete seal with the face.

User Seal Check: An action conducted by the respirator user to determine if the respirator is properly seated to the face.

Workforce Members (WFMs) include employees, contract staff, affiliates, volunteers, trainees, students, and other persons whose conduct, in the performance of work for HUMC, is under its direct control, whether or not they receive compensation from the County.

POLICY:

HUMC is required to comply with various regulatory, accreditation, and licensing agencies, including Title 8 of the California Code of Regulations, Section 5144 and 5199 (8 CCR §5144 and §5199), the Joint Commission, Occupational Safety and Health Administration (OSHA), California Occupational Safety and Health Administration (Cal/OSHA), and the National Institute of Occupational Safety and Health (NIOSH).

This policy applies to all WFMs who are required to use respiratory protection. All WFMs must comply with the provisions outlined in this policy. Supervisors retain the responsibility to ensure that provisions outlined in this policy are enforced.

WFMs must be fit tested with the same make, model, style, and size of respirator to be used unless in an emergency situation when the same make, model, style, or size is not available. Fit Testing procedures for respirators must be conducted for the following:

- Initial Fit Test must be conducted after the WFM has passed health screening.
- When a new style of respirator face piece is to be worn by the WFM.
- Annual Fit Test for all WFMs required to wear a respirator.
- WFM reports, or the Physician or Licensed Health Care Professional (PLHCP), supervisor, or Program Administrator makes visual observations of changes in the WFM's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, facial hair, dental changes, cosmetic surgery, or an obvious change in body weight.
- WFM must be given a reasonable opportunity to select a different respirator face piece and be re-fit tested if required.
- If a WFM, volunteer, or affiliate fails the Fit Testing, a Powered Air-Purifying Respirator (PAPR) or Controlled Air Purifying Respirator (CAPR) shall be provided by HUMC, as appropriate.

WFMs required to wear respiratory protection must follow all established safe practices, rules, regulations, and procedures.



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PROCEDURE:

Employee Health Services (EHS) or qualified trained HUMC personnel will conduct the fit test for each type of respirator to be used by the WFM according to respirator fit test requirements. The fit test must be administered using a Cal-OSHA accepted Qualitative Fit Test (QLFT) or Quantitative Fit Test (QNFT). Records for each WFM documenting fit test dates, respirator type, name of the person conducting the training, and method of testing conducted will be maintained in the WFM health file. Certification is required to be completed annually. (Attachment I - Form N).

I. FIT TEST PROTOCOL

A. Fit Testing Procedures (General Requirements)

1. The WFM must 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 WFM must 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 must be available to assist the WFM in evaluating the fit and positioning of the respirator. This instruction may not constitute the WFM's formal training on respirator use.
3. The WFM must 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 WFM must be instructed to hold each chosen face piece up to the face and eliminate those that obviously do not give an acceptable fit.
5. The more acceptable face pieces are noted. The most comfortable mask is put on and worn for at least five minutes to assess comfort. If the WFM is not familiar with the use of a particular respirator, the WFM must be directed to put on the mask several times and to adjust the straps each time to become comfortable at setting proper tension on the straps.
6. Assessment of comfort must include a review of the following points with the WFM and allow the WFM adequate time to determine the comfort of the respirator.
 - a) Position of the mask on the nose;
 - b) Adequate room for eye protection (if applicable);
 - c) Room to talk; and
 - d) Position of mask on face and cheeks.
7. The following criteria must 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; and
 - f) Self-observation in a mirror to evaluate fit and respirator position.



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8. The WFM must conduct a user seal check, either the negative and positive pressure seal checks described below or those recommended by the respirator manufacturer which provides equivalent protection to the procedures in 8 CCR §5144, Appendix B-1. Before conducting the negative and positive pressure checks, the WFM must be told to sit 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 face piece must be selected and re-tested if the test subject fails the user seal check tests.

a) **User Seal Check**

(1) A WFM who uses a tight-fitting respirator must perform a user seal check to ensure that an adequate seal is achieved each time the WFM puts on the respirator. Either positive or negative pressure check or the respirator manufacturer's recommended user seal check method will be used. User seal checks are not substitutes for the qualitative fit test.

(2) **Positive Pressure Check**. Close off the exhalation valve and exhale gently into the face piece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of the air at the seal. If face piece seal leakage is detected, reposition the respirator on your face and/or adjust the tension of the elastic straps to eliminate the leakage. Repeat the above steps.

If a proper seal cannot be achieved, the WFM must not enter the contaminated area. The WFM must notify his or her supervisor immediately.

(3) **Negative Pressure Check**. Close off the inlet opening of the canister or cartridge by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the face piece collapses slightly, and hold your breath for ten (10) seconds. If the face piece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory. If face piece seal leakage is detected, reposition the respirator on your face and/or adjust the tension of the elastic straps to eliminate the leakage. Repeat the above steps.

If a proper seal cannot be achieved, the WFM must not enter the contaminated area. The WFM must notify his or her supervisor immediately.

9. The Fit Test must not be conducted if there is any hair growth between the skin and the face piece sealing surface, such as stubble beard growth, beard, mustache, or sideburns that cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit must be altered or removed.
10. If the WFM exhibits difficulty in breathing during the tests, he or she must be referred to a physician or other licensed health care professional, as appropriate, to determine whether the WFM can wear a respirator while performing his or her duties.
11. If the WFM finds the fit of the respirator unacceptable, the WFM must be given the opportunity to select a different respirator and to be re-tested.
12. Exercise regimen: Prior to the commencement of the fit test, the WFM must be given a description



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of the fit test and the WFM's responsibilities during the test procedure. The description of the process must include a description of the test exercises that the WFM will be performing. The respirator to be tested must be worn for at least five minutes prior to the start of the fit test.

13. The fit test must be performed while the WFM wears any safety equipment that may be worn during actual respirator use which would interfere with respirator fit.

B. TEST EXERCISES

1. The following test exercises are to be performed for all fit testing methods prescribed in this section. The WFM must perform exercises, in the test environment, in the following manner:
 - a) Normal breathing: In a normal standing position, without talking, the WFM must breathe normally.
 - b) Deep breathing: In a normal standing position, the WFM must breathe slowly and deeply, taking caution so as not to hyperventilate.
 - c) Turning head side to side: Standing in place, the WFM must slowly turn his/her head from side to side between the extreme positions on each side. The head must be held at each extreme momentarily so the WFM can inhale at each side.
 - d) Moving head up and down: Standing in place, the WFM must slowly move his/her head up and down. The WFM must be instructed to inhale in the up position (i.e., when looking toward the ceiling).
 - e) Talking: The WFM must speak slowly and loud enough so as to be heard clearly by the test conductor. The WFM 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 WFM must bend at the waist as if he/she were to touch his/her toes. Jogging in place must be substituted for this exercise in those test environments such as a shroud type QLFT unit that does not permit bending over at the waist.
 - g) Normal breathing: Same as exercise (1) above.
2. Each test exercise must be performed for one minute except for the grimace exercise which must be performed for 15 seconds. The WFM must 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 must be tried. The respirator must not be adjusted once the fit test exercises



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begin. Any adjustment voids the test, and the fit test must be repeated.

C. QUALITATIVE FIT TEST (QLFT) PROTOCOLS

1. General

- a) The Program Administrator must ensure that persons administering the QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.
- b) The Program Administrator must ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

D. SACCHARIN / BITREX SOLUTION AEROSOL PROTOCOL

1. The entire screening and testing procedure must be explained to the WFM prior to conducting the screening test.
2. Taste threshold screening: The Saccharin / Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin or bitrex.
3. During threshold screening as well as during fit testing, the WFM must wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn.
4. The test enclosure must have a 3/4-inch (1.9 cm) hole in front of the WFM's nose and mouth area to accommodate the nebulizer nozzle.
5. The WFM must put on the test enclosure. Throughout the threshold screening test, the WFM must breathe through his or her slightly opened mouth with tongue extended. The WFM is instructed to report when he/she detects a sweet taste.
6. Using a nebulizer or equivalent, the test conductor must spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the WFM. This nebulizer must be clearly marked to distinguish it from the fit test solution nebulizer.
7. **SACCHARIN:** The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 milliliters of warm water. It can be prepared by putting 1 milliliter of the fit test solution in 100 milliliters of distilled water.
BITREX: The threshold check solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.
8. To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.
9. Ten squeezes are repeated rapidly and then the WFM is asked whether the saccharin or Bitrex can be tasted. If the WFM reports tasting the sweet or 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.



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10. If the first response is negative, ten more squeezes are repeated rapidly and the WFM is again asked whether the saccharin or Bitrex is tasted. If the WFM reports tasting the sweet or 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.
11. If the second response is negative, ten more squeezes are repeated rapidly and the WFM is again asked whether the saccharin or Bitrex is tasted. If the WFM reports tasting the sweet or 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.
12. The test conductor will take note of the number of squeezes required to solicit a taste response.
13. If the saccharin or Bitrex is not tasted after 30 squeezes (step 12), the WFM is unable to taste saccharin or Bitrex and may not perform the saccharin or Bitrex fit test.
 - a) **Note:** If the WFM eats or drinks something sweet before the screening test, he or she may be unable to taste the weak saccharin solution.
 - b) If a taste response is elicited, the WFM must be asked to take note of the taste for reference in the fit test.
14. Correct use of the nebulizer means that approximately one milliliter of liquid is used at a time in the nebulizer body.
15. The nebulizer must be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

E. SACCHARIN / BITREX SOLUTION AEROSOL FIT TEST

1. The WFM may not eat, drink (except for plain water), smoke, or chew gum for 15 minutes before the test.
2. The fit test uses the same enclosure described above.
3. The WFM must wear the enclosure while wearing the selected respirator. The respirator must be properly adjusted and equipped with a particulate filter(s).
4. A second nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer must be clearly marked to distinguish it from the screening test solution nebulizer.
5. **SACCHARIN:** The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 milliliters of warm water.
BITREX: The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of 5% salt (NaCl) solution in warm water.
6. As before, the WFM must breathe through the slightly opened mouth with the tongue extended, and report if he or she tastes the sweet taste of saccharin or Bitrex.



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7. The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin 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. A minimum of 10 squeezes is required.
8. After generating the aerosol, the WFM must be instructed to perform the exercises in Section B, Test Exercises, above.
9. Every 30 seconds the aerosol concentration must be replenished using one-half the original number of squeezes used initially (e.g., 5, 10, or 15).
10. The WFM must indicate to the test conductor if at any time during the fit test the taste of saccharin or Bitrex is detected. If the WFM does not report tasting the saccharin or Bitrex, the test is passed.
11. If the taste of saccharin or Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator must be tried and the entire test procedure is repeated (taste threshold screening and fit testing).
12. Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

F. QUANTITATIVE FIT TEST (QNFT) PROTOCOLS

1. The modified quantitative fit testing method can be used in accordance with the federal standard by OSHA.
2. All manufacture guidelines must be followed when using a Porta Count machine.

AUTHORITY:

Title 8, California Code of Regulations, Sections 5144 and 5199
Title 29, Code of Federal Regulations, Sections 1910.134

CROSS REFERENCES:

Department of Health Services Policies:

- 925.400 Respiratory Protection Program
- 925.405 Respiratory Protection Fit Testing

Harbor-UCLA Medical Center Policies:

- 406B Aerosol Transmissible Disease Exposure Control Plan
- 479A Respiratory Protection Program