



FIT TESTING PROCEDURE SWP 018

- A. General Requirements.** These fit test procedures are mandatory and apply to Qualitative Fit Tests (QLFT)
- B.**
- (1)** Provide enough respirators so the employee can choose an acceptable model that fits correctly. Be sure they understand that they must select a respirator that gives the best fit.
 - (2)** Before the employee selects their respirator you must show them how to put on a respirator, how to position it on their face, how to set the strap tension and how to make sure the fit is acceptable. There must be a mirror for them to use when evaluating the position and fit. This instruction does not replace the required formal training.
 - (3)** They must hold each face piece they choose up to their face to find the one with the best fit.
 - (4)** Once they choose a mask, have them wear it for at least 5 minutes to evaluate the comfort level. Discuss the points in the following paragraph to assure the worker makes a good evaluation. If they are not familiar with using a particular respirator, have them put it on and take it off several times to assure they make the needed adjustments for a good fit.
 - (5)** Assessment of comfort must include a review of the following points with the test subject and allowing the test subject enough time to determine the comfort of the respirator:
 - (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
 - (6)** Use the following criteria to help determine the adequacy of the respirator fit:
 - (a)** Chin properly placed;
 - (b)** Adequate strap tension, not too tight;
 - (c)** Fit across nose bridge;
 - (d)** Respirator of proper size to span distance from nose to chin;



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- (e)** Tendency of respirator to slip;
 - (f)** Self-observation in mirror to evaluate fit and respirator position.
- (7)** Have the employee do a user seal check. Before they do the check have them seat the mask by moving their head from side to side and up and down slowly while taking a few deep breaths. If the test fails, have them select another mask.
- (8)** Do not do the test if the employee has any hair (including beard stubble) between the skin and sealing surface. They must alter or remove any clothing or items that interfere with the fit.
- (9)** If the testing employee shows signs of difficult breathing during the test discontinue the test.
- (10)** If the employee finds the fit unacceptable, you must allow them to select another respirator and retest.
- (11)** Exercises. Before beginning the fit test, give the worker a description of the test and advise them of their responsibilities during the test. The description must include the exercises. They must wear the respirator for 5 minutes before the start of the test.
- (12)** During the test the employee must wear any other safety equipment normally required for their work, if it could interfere with the respirator fit.
- (13)** Test Exercises.
- (a)** The worker must do these in the test environment as follows:
 - (1)** Normal breathing. In a normal standing position, without talking, the subject must breathe normally.
 - (2)** Deep breathing. In a normal standing position, the subject must breathe slowly and deeply, taking caution so as not to hyperventilate.
 - (3)** Turning head side to side. Standing in place, the subject must slowly turn their head from side to side between the extreme positions on each side. The head must 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 must slowly move their head up and down. Instruct the subject to inhale in the up position (i.e., when looking toward the ceiling).



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(5) Talking. The subject must talk out loud slowly and loud enough 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 must grimace by smiling or frowning.

(7) Bending over. The test subject must bend at the waist as if they were to touch their toes.

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

(b) Do each test exercise for 1-minute except for the grimace exercise which is only for 15 seconds. Ask the test subject about the comfort of the respirator upon completion of the procedure. If there are problems, try another respirator. Do not adjust the respirator after the fit test exercises begin. Any adjustment voids the test.

(14) Irritant Smoke (Stannic Chloride) Procedure

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

(a) General Requirements and Precautions

(1) The test respirator must have high efficiency particulate air (HEPA) or P100 series filter(s).

(2) Use only stannic chloride smoke tubes for this procedure.

(3) Do not use any form of test enclosure or hood for the test subject.



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(4) The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor must take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Use only the smallest amount of smoke necessary to get a response when doing the sensitivity screening checks that determine if the test subject can detect irritant.

(5) Do the fit test in an area with adequate ventilation to prevent exposure of the person doing the fit test or the build-up of irritant smoke in the general area.

(b) Sensitivity Screening Check

The person taking the test must demonstrate their ability to detect a weak concentration of the irritant smoke.

(1) The test operator must break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator must cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.

(2) The test operator must advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep their eyes closed during the test.

(3) Allow the test subject to smell a weak concentration of the irritant smoke before putting the respirator on to become familiar with its irritating properties and to determine if they can detect the irritating properties of the smoke. Carefully direct a small amount of the irritant smoke in the test subject's direction to determine that they can detect it.

(c) Irritant Smoke Fit Test Procedure

(1) The person fit tested must put on the respirator without assistance, and do the required user seal check(s).

(2) Tell the test subject to keep their eyes closed.

(3) The test operator must direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator must begin at least 12 inches from the face piece and move the smoke stream around the whole perimeter of the mask. The operator must gradually make two more passes around the perimeter of the mask, moving to within 6 inches of the respirator.

(4) If the test subject has no involuntary response and/or does not detect the irritant smoke, proceed with the test exercises.



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- (5) The test subject must do the exercises in section I.A.13. while the respirator seal is continually challenged by the smoke, directed around the perimeter of the respirator at a distance of 6 inches.
- (6) If the person detects the irritant smoke, the test fails. The person re-testing must repeat the entire sensitivity check and fit test procedure.
- (7) Give a second sensitivity screening check to each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation), with the smoke from the same smoke tube used during the fit test, with the respirator off, to determine if they still reacts to the smoke. Failure to evoke a response voids the fit test.
- (8) If there is a response during this second sensitivity check, then the fit test passes.

References

CSA Z94.4.11

Worksafe Bc guideline Part 8 sec 8.32 Personal Protective Equipment - Respirators

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Appendix 1 – Fit Test Record



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Appendix 2 – Rainbow Passage