

University of Puerto Rico -Medical Sciences Campus
Susan Harwood Grant # SH-05034- SH8
Respiratory Protection

Quantitative Fit Test

Quantitative fit testing (QNFT) uses a machine to measure the filtration efficiency towards the inside of the respirator, and do not depend on the worker's sense of taste, smell or irritation to assess such efficiency as it is the case with qualitative fit testing. All respirators used during QNFT will have a sampling probe inside the respirator and connected to the QNFT machine by means of a hose. There are three OSHA accepted methods for QNFT:

- a) Generated Aerosol
- b) Environmental Aerosol
- c) Controlled Negative Pressure

QNFT can be used to test any type of tight fit respirator. Many workers have to use corrective lenses or other personal protective equipment such as safety glasses or earmuffs while they work. If this is your case, you must use this equipment while the fit testing is conducted to ensure that it does not interfere with the fit between your face and the respirator.

OSHA requires that your employer successfully fit tests you prior you use a respirator in the workplace. Moreover, this test must be repeated at least once every 12 months (1 year) to ensure that the respirator that you use is still properly fitted to your face.

The QNFT contains the same exercises conducted in the qualitative fit test, but since it does not depend on the worker's sense of taste, smell or irritation, the assigned protection factors for full face respirators are higher than if they were fitted using the QLFT.

The fit test exercises are the following:

- 1) Normal breathing. In standing up posture with a straight back and without talking or whispering, workers have to breathe at a normal pace.**
- 2) Deep breathing. In standing up posture with a straight back and without talking or whispering, workers have to breathe slowly and deeply, taking care for no hyperventilating.**
- 3) Turn head side to side. In standing up posture with a straight back and without talking or whispering, workers have to slowly turn their heads side to side to the end of the turn on each side. Heads must be kept turned at the end of each turn momentarily in order to enable workers to inhale in each of the turns.**
- 4) Move head up and down. In standing up posture with a straight back and without talking or whispering, workers have to move their heads down and up, flexing and extending their necks respectively. Workers have to be instructed to inhale in the position that allows them to look at the ceiling.**

5) Talking. In standing up posture with a straight back, workers have to talk out loud and slowly in order to be heard and understood by whomever is conducting the fit test. Workers can read a prepared text such as the Rainbow Passage, count backwards from 100 through 0, or recite a poem or song previously memorized.

6) Grimace. In standing up posture with a straight back, workers have to grimace as if they were smiling and then in a bad mood. (This exercise only applies to quantitative fit testing; it is not conducted in qualitative fit tests)

7) Bend down. Workers have to repetitively bend down as if they were reaching their toes. Jogging in the same place replaces this exercise in those environments where qualitative or quantitative fit tests are conducted with a hood that does not allow for bending down.

8) Normal Breathing. Same as in exercise 1.

Remember that each exercise must be conducted for one minute with the exception of grimace, which has to be conducted for 15 seconds. The person conducting the fit test must ask the worker being fitted about the comfort of the respirator once the fit testing protocol is complete. If the respirator feels quite uncomfortable for the worker, or the respirator does not pass the fit test, the employer must provide another respirator model for the fit test to be conducted. Once the fit test commences, the respirator being fit tested can no longer be adjusted. Any adjustments made to the respirator during fit testing invalids the test which will need to be restarted from the beginning.

As a potential respirator user, you must pass the fit test with the same brand, model, style and size of respirator that you will be using in the workplace. Not everyone can achieve a good fit with a specific respirator. If a particular respirator does not pass the fit test for you, another brand, model, style or size must be tested with you until there is a successful fit test result and the respirator does not present great discomfort to you. For this reason, your employer must provide you with a reasonable selection of sizes and models from which to choose. When you have successfully passed the fit test, it is very important that you know the brand, model, style and size of respirator that properly fits your face, and when you will have to use it to protect your health. Moreover, respirator fit testing must be repeated whenever there is a change in your physical appearance that can impact the respirator fit. These changes may include:

- a) Important changes in your body weight**
- b) Relevant dental work done such as a new set of dentures**
- c) Face surgery that may change the shape of your face, or**
- d) Significant scars in your face around the respirator tight fitting zone**

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Any of the previously mentioned changes can affect the ability of your respirator to adequately fit your face, and that could allow contaminated air to filter into the inside of your respirator. If you or anybody else realizes that your respirator fit is inadequate, your employer must allow you to choose a different type of respirator and then conduct another fit test.

The selection may include a respirator of a new brand, model, style or size. Facial hair such as beards or mustaches can affect the protection ability of your respirator. Anything that is between your face and the respirator seal, or that can get into the respirator inlet or outlet valves, can allow contaminated air into the inside of the respirator decreasing or simply eliminating your protection. For example, if you have long hair, make sure that it doesn't get between your face and the respirator seal since this could allow contaminated air into the inside of your respirator.

Fit testing can be conducted by your employer or another organization such as a union, an apprentice program, contractors association or your former employer. Your current employer can accept fit testing results that you may have from another organization such as your former employer, as long as such fit test had been conducted within the prior 12 months, and the respirator that you'll use in your new job is from the same brand, model, style and size of the respirator that was fitted to you. This is known as fit testing transferability. Although your employer can transfer a recent fit test from a former job to your current one, it is still your current employer's responsibility to ensure that OSHA Respiratory Standard fit testing and documentation requirements are met, before you use a respirator to protect yourself from hazardous exposure in the workplace.

Sometimes workers are the owners of their respirators, and they take them to work when respiratory protection is needed. If your employer allows you to use your respirator for your own protection, he or she still must comply with all OSHA Respiratory Protection requirements. For example, your employer must still ensure that:

Your respirator is the appropriate choice for the hazards to which you are exposed.

All respirator maintenance, fit testing, cleaning and washing, as well as storage are conducted according to the OSHA Respiratory Protection requirements.

And that the appropriate change schedules for cartridges and filters are followed.

Remember nonetheless that although your employer can authorize you to use your own respirator, he or she cannot require you to use your own respirator. If your workplace requires the use of respiratory protection, the responsibility to provide respiratory protection falls on your employer and not you.

Reference

29CFR1910.134