WHY EMERGENCY RESPONDERS SHOULD FIT TEST SCBA WITH QNFT

APPLICATION NOTE RFT-014 (A4)

OSHA requires emergency responders who wear SCBA to be fit tested every year. There are several fit test methods that can be used. Deciding which method is best requires an understanding of the differences. The information below highlights the differences in an attempt to make that decision easier.

Fit Test Method Options

Fit test methods fall into two categories; qualitative fit testing (QLFT) and quantitative fit testing (QNFT). The fundamental difference is that QLFT relies on a person's sensitivity to a chemical stimulant. If the mask leaks significantly, the person will sense the stimulant, indicating an unacceptable fit. QNFT is different in that it utilizes an instrument to actually measure the leaks. OSHA permits both method types for fit testing SCBA facepieces.

Since QLFT methods are subjective, it means that they depend on the person's sensitivity to a chemical stimulant. That sensitivity must be tested to make sure the person is capable of detecting that chemical in small, diluted amounts. All well-designed QLFT methods include a sensitivity threshold test that must be conducted just prior to the fit test. If the person cannot pass the threshold test, then a QLFT cannot be used. Ultimately, the person being fit tested is trusted to say when and if they detect the chemical stimulant during the QLFT, which indicates a leak in the mask and therefore a failed fit test. QLFT methods cannot be fully automated with software for conducting the test, maintaining records, or creating reports.

QNFT methods are objective, as they rely on the instrument's data rather than an individual's sensitivity to chemical stimulants. The mask leakage is measured by the instrument as a numeric fit factor and a pass or fail result is reported. There is no way for anyone to tell how large or small a leak is without reading the instrument display. QNFT methods lend themselves well to automation with computers and software to run the entire fit test, maintain a database of records and create reports.

Why is QNFT Better?

While the obvious advantages of QNFT like objectivity, ease of fit testing and record keeping via software are often compelling enough in their own right, the most important QNFT advantage is the ability to measure high fit factors. SCBA are rated for a protection level of 10,000. Why would anyone be satisfied with a fit factor of 100 when the SCBA facepiece is (easily) capable of so much more?

When any QLFT method is used to fit test a full-facepiece, the inherent fit factor pass level is 100. It's interesting to note that disposable paper respirators (with the fragile rubber bands) used for TB protection are expected to achieve a fit factor of 100 during a fit test.

Most QNFT done in the USA on SCBA facepieces is done with the pass level set at 500, which is the OSHA minimum for non-SCBA full-facepieces. The pass level of 500 is really not a challenge at all for today's high-tech full-face masks. With QNFT, there is the option of using a pass level that is appropriate for the equipment and most importantly, helps ensure that emergency responders learn how to adjust the facepiece such that their SCBA will in-fact provide the very high protection level that it was designed for. Some organizations use a pass level of 1000 or higher.

Conclusion

OSHA permits fit testing of SCBA facepieces with QLFT methods having an inherent pass level fit factor of only 100; the same pass level used for disposable TB masks. Using such a low pass level is arguably irresponsible, given that modern SCBA facepieces are capable of so much more. Because of the high hazard levels that our emergency responders are trained to anticipate, they deserve nothing less than the training necessary to achieve maximum protection from their SCBA. Using QNFT with a pass level of at least 500 is the best way to provide that level of competence.

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RFT-014 Rev. B (A4) Printed in U.S.A.