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August 3, 2010

NIOSH Fire Fighter SCBA Evaluation Program

The National Institute for Occupational Safety and Health (NIOSH) has established programs to investigate fire fighter fatalities and injuries in the United States. One component of this program, located in the NIOSH National Personal Protective Technology Laboratory, is the testing of self-contained breathing apparatus (SCBA) worn by fire fighters who are injured or killed. This service is provided free of charge.

Our evaluation begins with an inspection of the SCBA. The first objective of the inspection is to determine if the SCBA is in a NIOSH-approved configuration. Secondly, we evaluate the unit to see if it can be safely pressurized and tested. The condition of each major component is evaluated and photographed. If any air remains in the cylinder, a sample is taken and analyzed.

If the SCBA is determined to be in suitable condition, we conduct a series of performance tests. The purpose of the testing is to determine the SCBA's conformance to the NIOSH certification performance requirements of Title 42, *Code of Federal Regulations* (CFR), Part 84. Further testing is usually conducted to determine conformance to the National Fire Protection Association (NFPA) Air Flow Performance requirements of NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service*.

We strive to structure our evaluation and testing to allow us to provide the most meaningful information to everyone involved with the investigation. In a typical investigation, the following performance tests are conducted:

NIOSH SCBA Certification Tests (in accordance with the requirements of 42 CFR 84 and the written NPPTL Standard Test Procedures (STP)):

1. Positive Pressure Test [§ 84.70(a)(2)(ii)], STP-0120
2. Rated Service Time (duration) [§ 84.95], STP-0121
3. Gas Flow Test [§ 84.93], STP-0123
4. Exhalation Breathing Resistance Test [§ 84.91(c)], STP-0122
5. Static Facepiece Pressure Test [§ 84.91(d)], STP-0122
6. Remaining Service Life Indicator Test (alarm) [§ 84.83(f)], STP-0124

National Fire Protection Association Tests (in accordance with the current version of NFPA 1981):

7. Air Flow Performance Test.

This set of tests provides a good indication of the SCBA's overall performance. Occasionally, the condition of the SCBA or special circumstances surrounding the incident will warrant the addition or subtraction of certain performance tests. For example, a special inward leakage test can be performed if there is reason to believe that there is the possibility of ambient air infiltration into the SCBA facepiece.

The requestor will be provided with a detailed report of all findings. Performance test failures will be noted, but the SCBA will not be disassembled in an attempt to determine the cause of any test failure.

Once the NIOSH evaluation is completed, the SCBA will be stored under lock until we receive further instructions from the requestor or a designated authority. NIOSH will maintain all chain-of-custody documentation per the requestor's requirements, if applicable. Note that the results of testing are part of the public record and cannot be kept confidential.

To submit an SCBA to NIOSH for evaluation, please call Tom Pouchot at (412) 386-4036 to coordinate the shipping of the unit. Carefully package the unit and ship it to the address below. If the cylinder is pressurized, it must be shipped as hazardous materials. Please include a cover letter requesting NIOSH evaluation of the SCBA. In addition please mark the outside of the package with instructions to NIOSH warehouse personnel that it is only to be opened in the fire fighter SCBA lab. The shipping address is:

Tom Pouchot, ext. 4036
NIOSH, NPPTL
626 Cochran's Mill Road
Pittsburgh, PA 15236

If you have any questions or would like additional information, please call or e-mail me at [<clq0@cdc.gov>](mailto:clq0@cdc.gov).

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