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From: Columbus Firefighters Health & Safety [safety@local67.com]
Sent: Friday, January 16, 2009 2:37 PM
To: NIOSH Docket Office (CDC)
Subject: 034-A - Revision of Open-Circuit, Self Contained Breathing Apparatus (SCBA) End of Service Time Indicator (EOSTI) Performance Requirement
Attachments: Docket 034 Submission.pdf

Docket Comments**Revision of Open-Circuit, Self Contained Breathing Apparatus (SCBA) End of Service Time Indicator (EOSTI) Performance Requirement**

Docket Number: NIOSH-034-A
Submitted By: David Bernzweig
 Health & safety Chairperson
 The Columbus Firefighters Union, IAFF Local #67

1. Opinions on the current EOSTI performance requirement.

The current performance requirement is an outdated industrial standard that does not serve the needs or interests of today's fire service. This is evidenced by the long and continued trend of firefighter asphyxia and exposure fatalities. The regulation should be reinterpreted or rewritten to allow for an earlier EOSTI warning.

The current requirement hinders the ability of the fire service to monitor air consumption through a reliable passive control method (the EOSTI), and instead forces the fire service to rely on less effective and error prone methods of air management (human monitoring from within the hazard zone) while engaged in heavy work. There is no safety purpose served by not allowing an earlier set point for the EOSTI. An earlier set point would allow for a greater margin of safety for the end user. Not having an earlier set point would continue to place firefighters at risk by not having an adequate air reserve when the ESOTI activates.

Furthermore, it is questionable whether the performance requirement in 42 CFR 84 was ever intended to prohibit an earlier warning, or if it was merely intended as a 'range of tolerance' for an industrial standard EOSTI set point. The EOSTI performance requirement should be changed or formally interpreted to allow for earlier activation if specified by the Authority Having Jurisdiction (AHJ). The EOSTI set point shall not be capable of being adjusted in the field, rather it should be factory to set to a specified level above the NIOSH minimum of 20%.

2. Opinions on modifying the current EOSTI performance requirement from a range to a minimum value.**a. Should NIOSH continue to interpret the provision to require the alarm to continue uninterrupted until the minimum value (20%) is reached?**

No. The alarm should continue to alert the user until the cylinder is depleted. The alarm is not just a personal notification that the end of the cylinder volume is fast approaching, but a notification to others working in the hazard zone. This approach may only be appropriate for the fire service users; if so, it can be addressed in fire service specific standards (NFPA).

b. If the petitioned change is adopted, what tolerance should NIOSH use to evaluate

acceptable EOSTI performance at a specified setting rather than within a range?

A minimum EOSTI activation level above the established NIOSH minimum should be left for the fire service consensus standards to address (i.e. NFPA).

The ESOTI should be capable of being specified at a set point at or above the 20% NIOSH minimum, as determined by the authority having jurisdiction (AHJ). The set point shall be factory set, and shall not be capable of being field adjusted by the end user.

c. If the petitioned change is adopted, should NIOSH evaluate EOSTI performance at settings other than the 20% minimum? If so, at what additional values?

The EOSTI may have to be evaluated at the 20% NIOSH minimum value, as well as other values above the NIOSH minimum, as specified by the manufacturer. Alternatively, a much higher upper limit (50%) could be considered (a range again) and the EOSTI could be evaluate for performance from that higher set point until exhaustion of the cylinder. I am not sure the best solution to this 'certification' problem, but I imagine that a relatively simple solution could be devised by an engineer.

Consideration should be given to adopting an evaluation method which allows for EOSTI set points that can be specified by the AHJ (at purchase). The EOSTI set point should also be capable of being defined as a fixed volume of air rather than a percentage. This would help to take into account variations in cylinder capacity.

d. Is there a rationale to distinguish Fire Service SCBA from those used for industrial applications for the evaluation of the EOSTI?

The Fire service would certainly stand to benefit if there was a separate process and specific consideration for its needs. As for the appropriate EOSTI set point for industrial users, that question is a question best addressed by industrial users of SCBA.

3. Identification of alternative approaches to address EOSTI performance.

Alternative approaches to address currently inadequate EOSTI performance include Tactical Air Management, cylinders with high work periods (in order to have longer exit periods), and redundant alarms that have an earlier s set point. Each of these approaches is a reaction to the current performance deficiencies (late alert) of the EOSTI, and each carries its own downside.

- Tactical Air Management – This method of air management relies on firefighters in a highly emotional state who are engaged in heavy work to accurately and consistently monitor their air consumption and somehow make a perfect decision when to leave the hazard zone. Consideration should be given for exit time, unknown hazards, and the time required to get assistance if in trouble. This method relies on a very subjective and inaccurate formula that is very subject to human bias and error.
- Cylinders with high work periods – this method recognizes the realistically high air consumption rates of firefighters and the fact that firefighters by and large, do in fact use the EOSTI as an indicator to leave the hazard zone. The problem with this method is that a much higher work period is given for a very marginal increase in exit time. Higher work periods are likely to result in increase cardiac stress, increased thermal exposure, deeper penetration into the environment (potentially too deep), and extended work periods in structure that is degrading rapidly due the effects of an uncontrolled fire.

- Redundant alarms with an earlier set point – this method goes to the heart of the change that is being requested in this docket. It recognizes that firefighters need a passive control method to monitor air consumption and warn individuals and their crew that they have reached the end of their work cycle. The problem with this method is that (1) it is an unnecessary added expense to the already high cost of an SCBA, and (2) it may lead to confusion due to the presence of multiple alarms on a single SCBA.

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MARCH 27, 1918

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Docket Comments

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