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From: L67 Health & Safety [safety@local67.com]
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To: NIOSH Docket Office (CDC)
Subject: 063-A - Draft Strategic Plan for the NIOSH FFFIPP
Attachments: Docket 063A Comments BERNZWEIG.pdf

Docket 063A Comments

I have several comments on the draft strategic plan for the NIOSH FFFIPP, and several specific program enhancement recommendations that will benefit the fire service and the research community.

Strategic and Intermediate Goals

Intermediate Goal 2.3: "Standard setting agencies will modify standards that apply to the design, maintenance, operation, and training regarding fire fighter personal protective technology based on investigation findings."

The FFFIPP has shown that it can be very effective in facilitating changes to Standards that have proven to be deficient (i.e. addressing the deficiencies of the last generation of PASS devices). While the FFFIPP investigations recognize many unsafe practices and offer recommendations to reduce the likelihood of future occurrence, situations exist where technological changes can reduce or eliminate unsafe practices or human error (the goal of *Intermediate Goal 2.3*). Prime examples of this are recommendations that call for improved 'Air Management' or 'Situational Awareness'. While these are admirable recommendations, they are subject to the reality of a dynamic environment, incomplete information, human error, and other known limitations of naturalistic decision making.

There are currently two dangerous technologies that continue to take firefighters lives due to asphyxia; these are the 1200L SCBA cylinder and the 25% End-Of Service-Life Indicator (EOSTI). While the limitations of the firefighters SCBA air supply are only one link in the chain of events that ultimately leads to some firefighter fatalities, it is a link that can be controlled if addressed properly by Standards.

1200L SCBA Cylinder

The 1200 liter SCBA cylinder is the most widely used SCBA cylinder volume in the fire service today. Coupled with the 25% EOSTI, firefighters are left with a mere 300 liters of air following activation of the EOSTI. Taking into consideration that firefighters engaged in heavy work breathe an average minute volume of 100 lpm, the 25% EOSTI only leaves approximately 3 minutes of air for exit. While the case for better 'air management' calls for exiting the hazard area prior to the activation of the EOSTI, there are many incidents, due to there size and complexity, that this is not a realistic alternative when only 1200L of air is given to start with. The result is that we end up placing blame on the victim for not doing a better job of managing

his/her air. The actual problem is a cylinder volume that is incompatible with incidents occurring in commercial buildings or where catastrophic events occur (structural failure, firefighter disorientation, etc.).

25% End-of-Service-Life Indicator

The 25% ESOTI addresses when an SCBA may alert the user that he/she is nearing the end of the air supply. The problem is, since cylinder volumes and the working environment vary, 25% is rarely and adequate amount of reserve air if anything does go wrong. Real life experience, as well as empirical data, indicates that the reflex time necessary to get help to a down firefighter averages approximately eight minutes. Add to this the fact that many instances of firefighter disorientation is recognized only after the firefighter makes the decision to exit (we're disoriented when we cross the threshold to a strange smoke filled environment, we just don't call it that until it is time to leave and we don't know the way).

Much of today's air management philosophy is an outgrowth of the inability of fire service SCBA to alert the user early enough for a safe exit. The deficiency of the tactical air management solution is that here again, the responsibility is put on the end user working in a dynamic environment with incomplete information to figure out when is the best time to exit the environment. What are needed are more objective criteria and adequate safeguards to prevent firefighter asphyxiation resulting from a dynamic environment, incomplete information, human error, etc.

The 25% EOSTI is called for by 42 CFR 84, an industrial standard. The 25% EOSTI has been a federal requirement since at least 1960. This industrial standard does not take into account the specific needs of the fire service, nor does it permit the AHJ or NFPA 1981 (Open-Circuit SCBA) to specify a more appropriate set point. NIOSH currently has a Docket open on the EOSTI set point and is accepting comments until January 16, 2009 (Docket 034A). The change being sought to the CFR would simply remove the upper limit to the EOSTI, and allow a greater margin of safety to be engineered into the SCBA alarm time.

The FFFIPP should act as it did after recognizing the deficiencies of the deficiencies of the last generation of PASS devices, and communicate the need for change to the NFPA and NIOSH NPPTL.

Further, the FFIPP should recognize the limitations of tactical air management, and while it may prove to be an effective solution for some jurisdictions, the FFFIPP should be sensitive to the fact that it may not be the appropriate solution for all responders. Future recommendations should call for fire departments to take appropriate measures to ensure that enough air is reserved for normal egress and in the event that a firefighter may require outside assistance. Simply put, the recommendations should address the problem of poor air allocation rather that a singular solution.

Program Enhancements

The NIOSH FFFIPP is in the unique position to have an investigator on the ground collecting information for all fireground fatalities at structural firefighting operations. This position allows the FFFIPP to collect accurate and consistent data regarding this type of fatality incident.

Current data collection and dissemination can and should be enhanced by expanding the type of data that is collected and making it more readily available to the fire service and the research community.

Data should be collected from all fireground fatalities at structural firefighting operations and entered to a searchable database. Data should include strategic, tactical, and task level information such as:

- Mode of Command
- Tactics employed and results
- Crew Size
- Was there a promoted officer in-charge of the crew, or was someone 'acting up'
- Various benchmarks (response time, time from dispatch until a first alarm assignment is on the scene, time until first sign of trouble).
- Maydays or urgent messages
- Strategy changes

Information about specific equipment (SCBA cylinder duration, NFPA compliance of PPE and RPE- what edition?), detailed structure information (building construction, presence of trusses, etc.), and other detailed fields should also be collected.

Most of this information is already being collected by the investigators, and much of it makes its way into the investigative reports. However, little of it is readily available or entered into a searchable database.

With the collection of the above data, the FFFIPP can become a clearinghouse for fireground fatality data that is otherwise unavailable, and help the fire service, research community, and other stakeholders to identify trends that may be reversed if identified.

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