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November 4, 2002

NIOSH Docket Office
M/S C-34
4676 Columbia Parkway
Cincinnati, OH 45226

RE: Standards Development Efforts for Full Facepiece Air-Purifying Respirators.

Dear Sir or Madam:

NIOSH should consider the concept and development of a universal sampling port for quantitative fit testing that is common to all respirators. Such a port would allow a sample to be drawn from the breathing zone of the mask and include a reliable mechanism to assure zero leakage when not in use for fit testing.

OSHA 29CFR1910.134 currently requires full-face negative-pressure APR's to be fit tested with a minimum fit factor of 500. ANSI Z88.2 requires 1000. Since there currently is no qualitative fit test method for fit factors above 100, quantitative fit testing is necessary. A universal sampling port would greatly simplify quantitative fit testing, consequently improving end-user training, safety and regulatory compliance.

Respirator users would benefit because they would have a simple method for connecting a fit test instrument rather than the complicated and error-prone mask sampling adapters currently used that require temporary modification of the mask. Users would also benefit because one adapter would fit all masks, eliminating the need to purchase a unique adapter for each mask model as is now required. If desired, respirator wearers could even use such a port for a fast "fit check" just prior to entering dangerous atmospheres. In addition, generic (not specific to a particular mask) instruments could be developed to utilize the port for continuous in-mask monitoring of particulates and/or gases.

The design of a universal sampling port would not be difficult. Certain military-style masks currently have canteen adapters that employ a spring-loaded quick-connect valve. These proven valve designs could serve as the basis for a universal port. If designed properly, the port could be used for either aerosol or negative-pressure quantitative fit test methods. Some testing would be necessary to minimize particle losses for aerosol fit test systems and ensure adequate air flow for negative-pressure systems.

The inlet (breathing zone) end of the universal sampling port would probably be implemented by the respirator manufacturer, since mask designs vary widely. However, the configuration of the inlet itself (location, size, extension, etc.) could be standardized via NIOSH guideline, and verified as part of the certification process. This would also serve to standardize in-mask sampling during workplace protection factor studies and other respirator research.

The design of the proposed port and mating connector would be in the public domain. It's likely that some manufacturing company would tool-up to make the components and sell them to the respirator manufacturers, thereby eliminating the need for each respirator manufacturer to pay for their own tooling. Respirator manufacturers would further benefit because they would no longer have to design and manufacture a unique fit test adapter for each different mask design.

The respirator manufacturer should have the option of incorporating the universal sampling port into the mask design or not. For example, low-end respirators might not have the port because of cost considerations.

The concept of a universal sampling port should not be limited to APR's used for CBRN. All users of tight-fitting respirators, including those using SCBA would benefit.

Sincerely,

A handwritten signature in black ink that reads "Jeff Weed". The signature is written in a cursive, slightly slanted style.

Jeff Weed
Product Manager, TSI Incorporated, USA