Miller, Diane M. (CDC/NIOSH/EID)

From: Mike Kay [mikekay@ocenco.com]
Sent: Friday, December 01, 2006 12:45 AM
To: NIOSH Docket Office (CDC)
Subject: Ocenco comments on CCER concept paper - docket 05
Attachments: Ocenco response to CCER paper.pdf

To Whom it may concern,

Please see our comments attached.

Thank you,

Mike Kay
Ocenco Inc.

November 30, 2006

NIOSH Docket 05 – CCER Concept Paper
niocindocket@cdc.gov

Ocenco Incorporated welcomes the opportunity to offer our comments regarding the "NIOSH Closed Circuit Escape Respirator (CCER) Concept Paper".

Comment Summary: With Ocenco's more than twenty-five years experience in the design and development and manufacture of escape self rescuers, we conclude that this "CCER concept Paper" lacks proper research, reduces rather than increases safety, is arbitrary in many aspects, ignores known human physiological limits, provides no supporting data, is prejudiced against proven competent self rescuers and, most importantly does not produce a better self rescuer. Therefore, Ocenco recommends that the agencies stop promulgating this concept.

1. Opening comment: The Phase Eight and Nine Long Term Field Evaluations confirm that there are chronic reliability problems with 60-minute belt-wearable SCSRs in mining applications. Performance degradation of these devices due to the mining environment has been reported by NIOSH since 1996. This degradation includes high carbon dioxide, high breathing resistance, low oxygen, and failed oxygen starters. Unfortunately, this concept paper not only fails to mitigate these risks, it allows for an increase in these stressor levels. As stakeholders, our efforts need to be toward solving the known problems specific to SCSRs, and not in developing a lower performance standard. The agencies failure to take action on known SCSR deficiencies has resulted in the manufacturers and users of competent self rescuers, including those in applications other than mining, being penalized with this concept paper. The vast majority of self rescuers in service today are used in non-mining applications where they have a demonstrated history of safety and reliability.
2. Section 2: If the devices are safe, they should remain in service for the approved service life; if they are not safe, approval should be rescinded immediately. This arbitrary six and three year periods have no basis in fact and imposes a huge and unnecessary economical burden on the end user.
3. Section 3: This concept paper ignores the significance of critical defects shown in the field evaluation reports. Firstly, SCSRs, equipped with an oxygen starter and no pressure gage, have resulted in inoperable SCSRs with no indication to the user. This is especially critical when transitioning from one SCSR to another; if the starter fails on the second device, there will not be enough air in the first device to initiate a cold start on the second. Secondly, information available on the MSHA website confirms that there are known cases in which SCSRs routinely have exterior surface temperatures up to 160 degrees centigrade. In accordance with 30CFR 18.23, it should be required that exposed surfaces of the SCSR not exceed 150°C. NIOSH publication IC9486 has reported spontaneous ignition of coal dust at 160°C.

4. Section 4: Rating self rescuers by capacity is in direct conflict with other NIOSH, MSHA, OSHA, international standards and established training practices that rate and select respirators by duration. In addition, many CFR sections and international standards are based on the requirement of a stated duration. An oxygen capacity rating is meaningless to the end user because it is not easily translated to duration.

5. Section 4, Table 1: There is no physiological data that supports increasing the average inhaled carbon dioxide 4%, decreasing the average inhaled oxygen to 15%, and allowing 500 mm H_2O peak to peak breathing resistance. No self rescuer standards in the world allow these extreme stressor levels. In contrast, Masayoshi et al reported in the Journal of Occupational Health that breathing 3% carbon dioxide at resistances lower than the proposed acceptable range (ΔP <200 mm H_2O) caused strong distress in the test subjects. Allowing an aging mining population to be exposed to higher stressor levels is irresponsible.

6. Section 5, Table 1: There is no logic in testing a "capacity 1" device at almost twice the metabolic load as a "capacity 3" device. The explanation given at the concept paper meetings, that a user can work at the "capacity 1" metabolic rate for only a short period of time therefore a "capacity 1" device must be qualified at that rate, is illogical; the user will not adjust the speed of his escape based on the NIOSH capacity rating of his SCSR. This requirement is biased against closed-circuit short duration escape devices with foundation. If the same capacity test were applied to open circuit escape devices, all of the devices would fail because their flows are fixed at 40 LPM. Further, the University of Maryland report presented at the concept paper meetings demonstrated that a certain 60 minute (capacity 3) SCSR would last only 6 minutes at the "capacity 1" work rate, and provide only 15 liters of oxygen. No self rescuer standard in the world tests devices in this manner.

7. Section 6 (d): Exhaling twice into an SCSR to determine its susceptibility to hypoxia is not only an unnatural act but also violates the NIOSH approved donning procedure. Ocenco is not aware of any other certification agency that has created a test scenario that intentionally violates the approved manufactures instructions as part of the certification process.

8. Section 8: By their own admission, the agency has not measured the temperature, humidity, shock, and vibration exposure of in-service self rescuers; therefore there is no basis that the proposed conditioning protocol represents actual conditions of use.

9. Section 9 (b): The concept paper is biased against compressed oxygen self rescuers in that it requires special safety testing that is not required for chemical self rescuers. There have been no field reports of fires or explosions caused by compressed oxygen self rescuers. The same cannot be said of chemical oxygen self rescuers. The most recent SCSR User Notice issued by NIOSH in November 2002 concerned the potential of chlorate candles to overheat and catch fire. The manufacturer revised this notice in November 2006 to broaden the range of affected devices.

10. Section 10: The Long Term Field Evaluations have shown that it is unrealistic to expect an SCSR that is approaching the end of its service life to perform as new - some performance degradation will occur, that is one reason why SCSRs are assigned a maximum service life. This concept paper approach is out of step with all international self rescuer standards

The subject concept paper would result in significant unnecessary economic burden and is so poorly prepared that Ocenco reserves the right to submit additional comments.

Michael B. Kay
Engineering Manager
Ocenco Incorporated