

July 23, 2003



NIOSH Docket Office  
Robert A. Taft Laboratories, M/S C 34  
4676 Columbia Parkway  
Cincinnati, OH 45226  
E-mail [niocindocket@cdc.gov](mailto:niocindocket@cdc.gov).

Subject: Docket number : NIOSH-002  
CBRN Escape Respirator Concept June 30, 2003

To Whom It May Concern:

Enclosed please find Dräger Safety's comments/questions regarding the "Draft concepts for CBRN Air-Purifying Escape Respirator Standard" dated June 30, 2003, concerning the rulemaking for CBRN escape units.

- How will the upper-torso manikin for the Chemical Agent Permeation (6a) testing be adapted to the different possible connections of the respirator, i.e.: half mask or mouth piece?  
For a half mask worn under a hood it is essential, that it is tight fitting to the test head. Currently no dummy head is known, on which half masks/ inner masks will provide a tight seal to the test head.

To our actual knowledge the Smartman and the necessary test equipment is export restricted.

How can we buy these necessary parts ?

- The breathing machine for the performance requirements needs to be described in more detail. Is it a sinusoidal curve ?  
Under Part 2 §5.2 Live Agent Test  
"...breathing machine operating at an air flow rate of 19.5 liters per minute (L/min), 1.3 liters tidal volume", means 15 strokes. Is that the meant way to handle it ? 19.5 L/min are unusual.
- The CO2 build-up for a 45min unit is missing
- The minimum oxygen concentration of 19,5 % is too high. Several other (European) Standards are using a minimum concentration of 17 %, without any discomfort for the user (scientifically proved ). To become international, NIOSH should follow.

- Section 2(a). Category vs. Hazard vs. Escape Respirator Type. Within the table, under the category Specific in the first column are the words Hot and Warm zones. Reading this assumes that an individual can escape a hot zone situation with a SPECIFIC category product. This is not consistent with the introductory paragraph defining hot and warm zones concentrations, which the SPECIFIC category does not meet. Hot should be removed, especially since the CWA test concentrations for the SPECIFIC category are the same as GENERAL, and not the same as HIGH.
- Section 3(a). Escape Only. Since the testing also includes Toxic Industrial Materials, the intended use should also include escape from industrial facility catastrophes or catastrophic process failure events and not only terrorist events.
- Section 6(a). Sarin gas (GB) was removed from section title, but included in following paragraph. Should Sarin be included, or should an introduction paragraph similar to 6(a) be placed after 6(b) to describe Sarin testing?
- When comparing the flow rates of the GENERAL and SPECIFIC to the HIGH category, there are differences. The GENERAL and SPECIFIC flow rate parameters should be consistently less than that of the HIGH category due to potential usage/exposure.
- Sections 6(d) of Part 1, and Section 4.8 of Part 2. The allowable CO<sub>2</sub> concentration for the 30 min and less category should be increased to 3.5% to allow more flexibility in regards to product design/size, and the fact that there is no physiological constraints for the set duration. Additionally, there is no CO<sub>2</sub> concentration determined for a 45-min unit in either section.
- Part 1 - Section 6(i), and Part 2 - Section 5.1. LRPL. These should not be the same based on their intended use and potential exposure. The Part 1 should be reduced to 500 in the breathing zone, being consistent with the SBCCOMM protocol. Additionally, grimacing is designed to break a facial seal which can bias LRPL's. Based on the intent of grimacing, it should be removed from the nine exercises.

On the other hand a corn oil test is for particulate testing only and not really valid for measuring gas tightness of a system.

A LRPL of 150 inside the hood would never pass the GB testing because it is aggressive to the eyes!

- Part 2 – section Table 2  
The dimensions for the CT are wrong. They should be [ mg min/m<sup>3</sup> ]  
For the evaluation a curve must be used. Please provide us with it.

- Part 2 – Section 4.5  
"The pressure reducer shall be adjusted to 2.1 bar  $\pm$  .05" psi. is a very unusual tolerance. It should be mbar.
- Cyanogen Chloride is a restricted material and cannot be bought by normal manufacturers.  
Please advise either a source to buy it or a simulant for testing.
- It would be very helpful, if the relevant Standard Test Procedure number would be mentioned IAW the required tests.
- Normally the manufacturer tries to submit the same number of tests as presubmission datas as required for the approval testing. But in case of HD and GB this would be very expensive R&D testing. How many tests are necessary for presubmission datas ?
- Part 1 – section 6g  
The dimensions of temperature should be consistant in the document in °C and °F in brackets.
- It has to be stated, what happens with the continuously outtaken air/oxygen for measuring CO<sub>2</sub>. Either it should be limited to x L/min or given back to the system. This can be relevant for chemical oxygen units.

Please consider our comments concerning the pending changes to the certification and testing requirements.

If there should be any questions concerning this matter, please do not hesitate to contact me at 011 49 451 882 2678.

Sincerely,

*Bodo Heins*

Draeger Safety AG & Co KGaA  
 Personal Protection Technology  
 Quality Management  
 Technical Management  
 Revalstrasse 1  
 D - 23560 Luebeck  
 Phone: (+49) 451 882 2678  
 Fax: (+49) 451 882 3607  
 E-Mail : Bodo.Heins@draeger.com