

Miller, Diane M.

From: Rich Stein
Sent: Wednesday, October 30, 2002 1:10 PM
To: niocindocket@cdc.gov
Cc: Monahan, Mike; Metzler, Rich; Cloonan, Terance K; Szalajda, John; Boord, Les
Subject: Comments to Oct. 15 draft of CBRN Escape Respirator Standard

NIOSH Docket Office:

Comments regarding the October 15, 2002 Concept for CBRN Air-Purifying Escape Respirator Standard follow:

1. Section 2(b) Suggest use of IDLH and ERPG values in determining challenge and breakthrough concentrations. Recommend that 3X IDLH be used for "low" category. Note that NIOSH IDLH value for cyclohexane is 10% of lower explosive limit. This is not related to health and should not be used for challenge concentrations. See attachment for suggested levels. Use of multiple of IDLH provides a reliable assurance of safety while allowing manufacturers to provide a small package for carrying by users. This will allow user to maintain escape respirator on or near his person. This is critical for escape. Use of ERPG relates directly to peer reviewed and published values for escape. AEGL values are still under review.
2. Section 2(d) Suggest use of 5X IDLH for all chemicals requested. If not available, suggest use of 10X PEL or TLV value, whichever is higher. This will simplify understanding for end user in determining use of escape respirator from either "low" or "specific" category. Allowing each manufacturer to receive approval for a variety of challenge concentrations results in so many different claims by so many sales persons, that the end user will be mystified by what approval really means. Chemical challenge for "specific" category should always be higher than for the "low" category.
3. Section 4(b) Cost for approval will be high and time to do will be long. Part of this is due to testing in triplicate. This has no statistical significance. There is no technical reason to do this other than to say that it has been done in current standard. NIOSH might compare cost and time to reduce the tests to 2 per chemical vs. the current three.
4. Section 6(d) Use of the ABMS would mean that the cost to duplicate in the field is prohibitive. The ABMS is designed to be used for closed-circuit breathing apparatus. Suggest use of current NIOSH carbon dioxide test equipment. Also suggest use of either 1% at the 80 lpm or use current NIOSH values of 2.5 % at the 10lpm flows. The low flows are actually more difficult to meet and thus suggest NIOSH use this test.
5. Section 6 (e) Mouthbit respirators may offer the best solution for the general work population in terms of respiratory protection. This is the objective of the escape respirator. Speech communication test should not be included.
6. Section 6(h) Fogging test should allow the user to clear the visor of escape hood per manufacturer's instructions. Hoods have flexible visors that can be rubbed against the forehead to clear if needed.
7. Section 6(j) Escape from chemicals as broad as suggested in the testing leads to materials that in many cases are not inflammable. Any test in this regard will severely reduce the number of eligible materials and lead to many disadvantages to the user. Testing in this regard might need to be done with the hood in place as opposed to materials test. This can be very difficult and non-reproducible. I recommend that this not be part of the standard.
8. Section 6(K) 95% protection factor of 500 should be sufficient. Testing by SBCCOM on hoods shows how difficult it is to reach even this level. Please review state of the art and test results. A protection factor of 2000 can result in extremely uncomfortable neck dams (to the point of choking).
9. Section 7(d) Dermal protection is not part of the respirator. Remove this section.
10. Section 7(e) Weight issues should be left to the user to determine. Remove this section.

Chemical	NIOSH	Low-3X IDLH	Specific-5X IDLH	ERPG2	AEGL1
Ammonia	2500	900		150	25
Cyanogen Chloride	300	300**	500**	0.4	not available
Cyclohexane	3900	1000***	1500***	not available	not available
Formaldehyde	500	60		10	not available
Hydrogen Cyanide	940	150	250	10	2
Hydrogen Sulfide	1000	300		30	0.2
Nitrogen Dioxide	200	60		not available	0.5
Phosgene	250	60	100	0.2	not available
Phosphine	300	150		0.5	not available
Sulfur Dioxide	1500	300		3	not available
Carbon Monoxide	?	3600	6000	350	not available

** There is no listed IDLH value

*** IDLH value of 1300 is for explosion; there is no health IDLH.

It does not make sense to use 3X or 5X cyclohexane IDLH for test of cartridges.

AEGL values not yet totally peer reviewed or published. ERPG values are reviewed and published

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Section (7a) There are no design limitations regarding an air-purifying full facepiece with cartridge from being called a hooded escape mask(the facepiece can have a hood attached). I believe this is not the intent of creating this category. Specific design limitation should include a more detailed description of a "hooded" device such that full facepiece respirators are not included in this category. Perhaps hood itself must provide some level of respiratory protection?

Section (9) Suggest that no service and maintenance be permitted on escape hooded respirators. This is a product for use by general working population. The best way to assure product is working is to make sure that users are unable to service product and then place back into packaging. There is risk in allowing packaging to be opened, parts replace or "fixed" and then placing this escape respirator back in service. It is not difficult for hooded escape respirators to be made so that repair and maintenance is unneeded. At least three of these products are on the market now. None need maintainance. Once opened, it must be used or discarded (or sent back to the factory for review and re-testing and re-packaging).