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**Sent:** Monday, January 19, 2004 3:28 PM
**To:** NIOSH Docket Office
**Cc:** JIM BERNHARDT; KEITH FECTEAU
**Subject:** Aearo Comments for Consideration in the NIOSH CBRN PAPRConcept Development

NIOSH Team:

Aearo Company is submitting comments on the September 15, 2003 NIOSH CBRN PAPR Concept Paper. Please see attached.

If you have any questions, please call me.

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**Comments on September 15, 2003 NIOSH CBRN PAPR Concept Paper Submitted by Aearo Company**

**General:** In this concept paper, the NIOSH team has done an excellent job balancing the needs of the various NIOSH CBRN PAPR standard stakeholders. Many of the following comments encourage NIOSH to make the requirements as flexible as possible to enable future innovations to improve the comfort and utility of NIOSH CBRN PAPR's.

- Establishing performance requirements for CBRN canisters for NIOSH CBRN PAPR to be same as requirements for CBRN canisters for NIOSH CBRN APR is good for the following reasons:
    - It simplifies inventory management for the respiratory program manager who may have both NIOSH CBRN APR's and NIOSH CBRN PAPR's from the same manufacturer available for use.
    - It can simplify training when the respirator user has only one canister type to choose from for both NIOSH CBRN APR's and PAPR's, assuming that the APR's and PAPR's are from the same manufacturer.
    - It provides maximum flexibility for First Responders to be able to use the same CBRN canister with NIOSH CBRN APR's and PAPR's, regardless of manufacturers, in an emergency.
    - It will speed up development time for NIOSH CBRN PAPR's for manufacturers who already have developed NIOSH CBRN APR's. It will also save the manufacturer some time and money by NIOSH not needing to separately evaluate the performance of the NIOSH CBRN canister for the PAPR system. Ultimately, this is likely to result in the availability of NIOSH CBRN PAPR's sooner than if special CBRN PAPR canister performance requirements had been established. Also, with lowered barriers to entry, more manufacturers are likely to introduce NIOSH CBRN PAPR's, again giving program managers more choices.
- Establishing breathing resistance, field of view, lens material haze, luminous transmittance, abrasion resistance, carbon dioxide, hydration, low temperature/fogging, and chemical agent permeation and penetration resistance requirements for the facepiece for the NIOSH CBRN PAPR to be the same as the NIOSH CBRN APR is good for the following reasons:
    - It implies that the same facepiece can be used for a NIOSH CBRN APR and NIOSH CBRN PAPR made by the same manufacturer. For the respiratory program manager who may have available for use both the NIOSH CBRN APR and NIOSH CBRN PAPR, both made by the same manufacturers, one facepiece brand for both types of systems means simpler facepiece inventory management, simpler training (care, use and maintenance of facepiece or respiratory inlet covering is nearly the same for APR and PAPR), and simpler fit testing (wearers of both NIOSH CBRN APR and PAPR made by same manufacturer can be fit tested in one facepiece which can be used as APR or PAPR).
    - It provides maximum flexibility for First Responders to be able to use the same facepiece for NIOSH CBRN APR's or PAPR's, providing facepiece is approved for both systems.
    - It will speed up development time for NIOSH CBRN PAPR's for manufacturers who already have developed NIOSH CBRN APR's. It will also save the manufacturer some time and money by NIOSH not needing to separately evaluate the performance of the NIOSH CBRN respiratory inlet covering for the PAPR system. Ultimately, this is likely to result in the availability of NIOSH CBRN PAPR's sooner than if special CBRN PAPR respiratory inlet performance requirements had been established. Also, with lowered barriers to entry, more

manufacturers are likely to introduce NIOSH CBRN PAPR's, again giving program managers more choices.

- We would like to emphasize the importance of continuing to provide flexibility in design. (re: 3.7 Power Air-Purifying Respirators; Required Components):
    - Listed components in NIOSH CBRN concept paper do not seem to support a helmet style PAPR. Interviews with SWAT personnel indicate desire not to have breathing tubes and other hanging items available for hostile personnel to grab. Also, SWAT prefer that the system integrate with equipment already carried by SWAT people. Law enforcement personnel would prefer that the PAPR be integrated into a helmet or at least attach to existing equipment, like load-bearing vest.

## Specific Issues:

- 3.2.1: Inhalation and exhalation resistance: Is it feasible to determine inhalation and exhalation resistance with the blower off? How is this done with a hood system with no nose cup? Requirements of the standard should take into account disposable hood systems without nose cups. Disposable hood systems would be very useful to First Responders in allowing them to share equipment without having to decontaminate respirator inlet coverings. Also, at the completion of the response effort or emergency, the disposable hood can be tossed rather than decontaminated.
- 3.2.3: Canister element uniformity: +/- 2.5 mm water variation in delta P seems overly restrictive. Not sure if current state-of-the-art manufacturing processes can achieve this tight tolerance. A good compromise might be +/- 3.5 mm water variation which is achievable from a manufacturing standpoint, and yet reasonably addresses the canister flow rate uniformity concern.
- 3.4.3: Abrasion resistance: Again, consideration should be given to a second class of tests for disposable hoods which would not likely have nose cups and which would not need to be as resistant as reusable hoods and facepieces. To make disposable systems economical to manufacture and cost effective for program managers to buy, tests which evaluate durability should be less restrictive for one-time use systems than for reusable systems.
- 3.7: Powered air purifying respirators; required components: We would like to encourage NIOSH to minimize the list of required components to avoid restricting design and adding unnecessary cost to the respirator which could result in an unnecessarily higher priced respirator than what the program manager needs for his First Responders. Is the low flow indicator a required component? If so, to develop one will be a significant technical challenge. Regarding breathing tubes, it is appropriate to design them to prevent interference with wearer's activities; however, the manufacturer may not be able to predict all conditions of use. Furthermore, this issue will be resolved in the marketplace; equipment not compatible with a wearer's activities will be rejected. So, not sure that this requirement needs to be in a standard.
- 3.7.5.1: Battery requirements: The language implies that low battery indicators are optional. Is this the intent?
- 3.9: Airflow: Paragraph (c) implies that the supplier can specify a minimum flow rate. Paragraph 3.7.5.2 specifies that the low flow alarm must go off at 90% of the 115 lpm requirement. The implication is that these 2 statements may be a bit inconsistent.
- 4.3: Particulate/Aerosol Canister: Item #4 states 85 lpm test flow rate for a single canister, and 42.5 lpm test flow rate for a dual canister. Previous paragraphs require two canisters, and 64 lpm min flow rate per canister. These 2 sections seems a bit inconsistent.
- Other issues for consideration in the final standard: What is the permitted shelf life for canisters? Are there specific requirements related to decontamination or maintenance? Any issues with rechargeable versus non-rechargeable batteries?