

CBRN PAPR Standard Development

Docket and Meeting Comments

Public meetings

- October 2003
- May 2004

Docket

- 10 submissions

CBRN PAPR Respirator Concept Docket and Meeting Comments SUMMARY BY TOPIC

- Abrasion resistance
- Airflow
- Battery requirements
- Blower requirements
- Breathing resistance
- Canister interchangeability
- Canister shelf life
- Carbon dioxide
- Container requirement
- Crisis mode
- Decontamination and maintenance
- Environmental conditioning
- Facepiece pressure
- Harness design
- Intrinsic safety
- Labels
- Low flow indicators
- LRPL
- Noise levels
- Operational controls
- Particulate canister
- Required components
- Service life testing

CBRN PAPR Standard Development Docket and Meeting Comments Abrasion Resistance

COMMENTS

- Consider a less restrictive abrasion requirement for a one-time use respirator

HOW ADDRESSED

- Considered; requirements identified are minimum requirements

CBRN PAPR Standard Development Docket and Meeting Comments Air Flow (1 of 2)

COMMENTS

- Consider different flow rate requirements for different work rates of users
- Constant flow PAPRs and pressure-demand PAPRs should have different test criteria due to difference in design

HOW ADDRESSED

- 2 Breathing rate performance categories established (moderate and high)
- Gas life capacity is tested at different flow rates for constant flow and demand responsive units

CBRN PAPR Standard Development Docket and Meeting Comments Air Flow (2 of 2)

COMMENTS

- Consider performing gas life testing at the average flow through each filter with the entire unit mounted on breathing machine
- Clarification needed, is 115 Lpm the minimum flowrate required, or can the manufacturer specify another?

HOW ADDRESSED

- *Gas life capacity is tested at different flow rates for constant flow and demand responsive units*
- *Manufacturer may specify based upon system design*

CBRN PAPR Standard Development Docket and Meeting Comments Battery Requirements (1 of 2)

COMMENTS

- Battery life rating can be difficult to accurately specify due to numerous parameters, e.g., when it was last charged, storage environment, how it was last used. A standardized battery life test should be considered.

HOW ADDRESSED

- *Comment will be considered in test method development*

CBRN PAPR Standard Development Docket and Meeting Comments Battery Requirements (2 of 2)

COMMENTS	HOW ADDRESSED
<ul style="list-style-type: none">• Are low battery indicators optional or required?• ‘Fully charged’ is difficult to define due to differences in charging methods• Battery life may be effected with interchangeability of different manufacturers’ filters• Would a charge indicator be required for a disposable (non-rechargeable) PAPR?	<ul style="list-style-type: none">• Required• Manufacturer will specify• Interoperability no longer required• Yes

CBRN PAPR Standard Development Docket and Meeting Comments Blower Requirements

COMMENTS

- Blower must be able to receive the maximum weight of the canister. How is this verified?

HOW ADDRESSED

- Interoperability no longer required

CBRN PAPR Standard Development Docket and Meeting Comments Breathing Resistance (1 of 2)

COMMENTS

- Equal resistance through each filter may be difficult to achieve due to variants in the filter manufacturing.
- Use maximum resistance rather than an acceptable range
- It will be difficult to consistently manufacture filters within the specified resistance range

HOW ADDRESSED

- Interoperability no longer required
- Interoperability no longer required
- Interoperability no longer required

CBRN PAPR Standard Development Docket and Meeting Comments Breathing Resistance (2 of 2)

COMMENTS

- Consider determining inhalation and exhalation resistance with the blower on to accommodate hoods without nose cups.

HOW ADDRESSED

- Pressure requirement evaluated with blower on

CBRN PAPR Standard Development Docket and Meeting Comments Canister Shelf Life

COMMENTS

- What is the maximum shelf life of canisters?
- Manufacturer specifies

HOW ADDRESSED

CBRN PAPR Standard Development Docket and Meeting Comments Canister Interchangeability

COMMENTS

- Does the standard accommodate a PAPR filter being interchangeable with an APR filter?
- Concept of interchangeability of filters between different manufacturer's PAPRs restricts design
- Interchangeable PAPR and APR filters for the same manufacturer would simplify inventory and training issues for the respirator

HOW ADDRESSED

- Interoperability no longer required
- Interoperability no longer required
- Interoperability no longer required

CBRN PAPR Standard Development Docket and Meeting Comments Carbon Dioxide

COMMENTS	HOW ADDRESSED
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- | | |
|--|---|
| <ul style="list-style-type: none">• Air flow resistance testing is performed in 'power off' condition. Consistency of 'power off' should be applied for CO2 test• Clarify the minimum air flowrate for the CO2 test | <ul style="list-style-type: none">• Tested with blower on• Tested with blower on |
|--|---|

CBRN PAPR Standard Development Docket and Meeting Comments Container Requirement

COMMENTS

- The requirement for the easy removal from the container is subjective. How can it be evaluated?

HOW ADDRESSED

- *May be evaluated as part of practical performance*

CBRN PAPR Standard Development Docket and Meeting Comments Crisis Mode

COMMENTS

- Consider a special class of PAPR for IDLH egress which may have different performance requirements.
- There is a need for panic demand particulate testing

HOW ADDRESSED

- CBRN PAPR may be used to egress from above IDLH conditions
- *Test matrix still under development*

CBRN PAPR Standard Development Docket and Meeting Comments Decontamination / Maintenance

COMMENTS

- Does the standard include specific requirements for decontamination and maintenance?

HOW ADDRESSED

- Storage and Maintenance procedures are required in the manufacturers User Instructions
- Decontamination procedures are not a standard requirement

CBRN PAPR Standard Development Docket and Meeting Comments Environmental Conditioning

COMMENTS

- Proposed temperature ranges can be severe on electronics (pressure sensors and batteries). Temperature storage range should be specified by the manufacturer
- Perform filter drop tests using multiple drops and without outer packaging.
- Consider performing drop test with entire PAPR

HOW ADDRESSED

- Specified temperature ranges for the equipment are within the capabilities of existing technology
- Single Drop test in single canister container
- Drop Test canister only

CBRN PAPR Standard Development Docket and Meeting Comments Facepiece Pressure

COMMENTS

- Consider a requirement that positive pressure always be maintained in the facepiece.

HOW ADDRESSED

- Positive Pressure Requirement identified

CBRN PAPER Standard Development Docket and Meeting Comments Harness Design

COMMENTS

HOW ADDRESSED

- Harness design criteria is design restrictive
- Requirement removed

CBRN PAPER Standard Development Docket and Meeting Comments Intrinsic Safety

COMMENTS

- Consider establishing criteria for intrinsic safety

HOW ADDRESSED

- *Under consideration*

CBRN PAPR Standard Development Docket and Meeting Comments Labels

COMMENTS

- Stating battery life on labels may be inappropriate because battery life is difficult to determine

HOW ADDRESSED

- Manufacturer will specify battery service life in users instructions

CBRN PAPR Standard Development Docket and Meeting Comments Low Flow Indicators

COMMENTS

- Clarify at what flow-rate an alarm would notify the user of low flow.
- If maintaining positive pressure is the requirement, have an alarm for when positive pressure is not maintained.
- Test low-flow indicator under two different conditions: low battery and clogged filter
- Developing a low-flow indicator may be a significant technical challenge.

HOW ADDRESSED

- Manufacturer identifies minimum flow
- Low flow and/or low pressure indicator required
- *Test procedures under development*
- Technologically possible - Currently Available

CBRN PAPR Standard Development Docket and Meeting Comments LRPL

COMMENTS

- Consider that oil from bearings may contribute to failing LRPL results
- Corn-oil penetration through the filter may cause failing LRPL results

HOW ADDRESSED

- *Benchmark testing will be performed and concern will be addressed in the test procedure*
- P100 criteria remains in Standard

CBRN PAPR Standard Development Docket and Meeting Comments Noise Levels

COMMENTS

- 80 dBA may be too lenient, 75 dBA is indicative of existing technology.

HOW ADDRESSED

- 75dBA is criterion, based on EN requirements

CBRN PAPR Standard Development Docket and Meeting Comments Operational Controls

COMMENTS

- How will the operational controls requirement be verified?

HOW ADDRESSED

- *Verified in practical performance during LRPL*

CBRN PAPR Standard Development Docket and Meeting Comments Particulate Canister

COMMENTS

- Consider testing at the manufacturer's maximum specified flow rate divided by the number of filters on the PAPR.
- Clarify test flowrate for particulate test (85 Lpm for single filters, 42.5 for dual configuration)?
- Consider testing at maximum (peak) inhalation flow through the unit.

HOW ADDRESSED

- Flow rate is reduced by the number of canisters
- *Equivalent face velocity may be tested using 85 Lpm flow rate.*
- *Maximum flows criteria in evaluation*

CBRN PAPR Standard Development Docket and Meeting Comments Required Components

COMMENTS

- Consider revising the requirement that the breathing tube requirement not interfere with the wearer's activities - different designs will be used for different user applications.

HOW ADDRESSED

- *Evaluated during practical performance*

CBRN PAPR Standard Development Docket and Meeting Comments Service Life Testing

COMMENTS

- Flow requirements associated with interchangeability limit longer canister service life
- Can different service lives for different chemicals be established on the same canister?
- Consider approving different canisters for specific threats, e.g., a P100 only for a biological threat

HOW ADDRESSED

- Interoperability no longer required
- Stacking of capacity is allowed for all TRA's of a particular family
- For Specific Situations, Specific Canisters exist; Intent of the standard is to have one canister that addresses CBRN threats

CBRN PAPR Standard Development Docket and Meeting Comments Service Life Testing

COMMENTS

- Consider performing gas life testing consistent with human breathing requirements
- Testing should be performed at the highest specified flow divided by the number of filters.
- Consider dropping '15', '30', '45' designations.

HOW ADDRESSED

- *Canister gas life testing currently required under constant flow*
- Identified flow rates are reduced proportionally by the number of canisters
- Using capacity designations

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