National Personal Protective Technology Laboratory

Industrial PAPR/CBRN Step 2 Concepts

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CDC Workplace Safety and Health | NIOSH | NPPTL Research to Practice through Partnerships

Industrial PAPR Concepts

- The module must be flexible enough to cover a potential wide range of applications while providing the desired respiratory protection to the user
- The module must also have the flexibility to provide for specific tests associated with specific applications (like CBRN or Mining)
- One size fits all approach may be too restrictive for some applications and not protective enough for others

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Industrial PAPR Concepts

Concept for consideration: Develop PAPR performance requirements using categorization techniques

Base Requirements – Performance requirements that all PAPR exhibit

Enhanced User Requirements – Performance requirements based on the type of system being evaluated

Advanced Specific Requirements – Performance requirements based on the workplace use of the system

Industrial PAPR Concepts

Base Requirements – Performance requirements that all PAPR exhibit

Examples:

- Maintain positive pressure in the breathing zone
- Inhalation/Exhalation Resistance
- Low pressure indicator

Industrial PAPR Concepts

Enhanced User Requirements – Performance requirements based on the type of system being evaluated

Examples:

- Field of View
- Lens Abrasion
- Low Temperature

Industrial PAPR Concepts

Advanced Specific Requirements – Performance requirements based on the workplace use of the system

Examples:

- CBRN
- Mining
- Healthcare

Industrial PAPR / CBRN Step 2 Implementation

- Much of the Technical Work developed in the CBRN PAPR project can be applied in the Industrial Standard
- CBRN Step 2 will be an Advanced Specific Requirement in the new Industrial PAPR Standard
- Will use Concept Paper format up to the initiation of Rulemaking
- Next edition of the Concept paper during 2QFY06 will expand on categorization
- Additional public meeting late spring 2006
- Formal Rulemaking Process –
  - Follow administrative procedures and staffing requirements
  - Target date to begin rulemaking process by end of 2006
  - 18 to 21 months to implementation following initiation of rulemaking processes

Current Industrial PAPR Concept

Place all PAPR requirements in one subpart of 42 CFR

(unchanged from 7/05)

- Clarify/update/consolidate requirements
- Incorporate requirements for breath response and constant flow units
- Keep existing general categories (Subparts A-G)
- Provide provisions for positive pressure units

Current Industrial PAPR Concept

Design Consideration Areas
(unchanged from 7/05)

- Accessible switches
- Harness design (unit and head)
- Marked containers
- Lens impact resistance
- Low pressure- real time indicator
- Battery charge indicator
- Noise limitations

Current Industrial PAPR Concept

Specific Performance Consideration Areas
(revised from 7/05)

- All considered Positive pressure
- 3 Flow ratings

  Low: remains positive @ 14.5 res/min @ 10.5 lpm

  Moderate: remains positive @ 24 res/min @ 40 lpm

  High: remains positive @ 30 res/min @ 86 lpm

  & 30 res/min @ 103 lpm for 5 min

Current Industrial PAPR Concept

Filter

(Unchanged from 7/05)

- PAPR95- 95% initial filter efficiency when tested against DOP
- PAPR100- 99.97% efficiency when loaded with DOP as the test challenge
- Test at highest flow rate of system divided by number of filters

Current Industrial PAPR Concept

Canister/Cartridge

(revised from 7/05)

- Cartridges tested same as Part 84 except eliminate the one-half minimum life test times
- Canisters tested same as CBRN
- Flow is highest flow rate specified by manufacturer divided by number of units

Current Industrial PAPR Concept

Other Testing
(Revised from 7/05)

CO2 machine test
- 14.5 res/min 10.5 lpm, 5% CO2 ex., <=0.5% in.

- Breathing gas human subject test
  - Stand then walk at 3.5 mph
  - O2 >= 19.5%
  - CO2 <= 2%
- LRPL
  - PF >= 2,000 or 10,000 for >=95% of trials as requested by applicant

Current Industrial PAPR Concept

Questions?