

**National Personal Protective
Technology Laboratory**

**Proposed Concepts of Draft
Subpart Q; Closed-Circuit Self-
Contained Breathing Apparatus**

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Past Efforts That Contributed to Current Draft

- Concept Standard Versions First Developed for Chemical, Biological, Radiological, and Nuclear (CBRN), Full Facepiece, CC-SCBA:
 - **October 30, 2004; June 20, 2005 and November 4, 2005**
- Past NIOSH Public Meeting Dates:
 - **December 15, 2004; July 19, 2005 and December 13, 2005**
- Technical Meeting that evaluated Integration of Draft NFPA 1984 Requirements: **November 16 and 17, 2005**
- Bench Mark Testing:
 - **GB/HD Permeation Resistance, Dust, Vibration, Flame, Salt Fog, and Environmental with the Automated Breathing and Metabolic Simulator**
- Concept Standards progressively evolved from Public Meetings, Docket Comments and knowledge gained from Testing
- Informal Rulemaking Method:
 - **After the NIOSH CBRN Powered Air-Purifying Respirator Standard was approved in Oct 2006, it was determined that all future standards shall be adopted by Informal Rulemaking**

Overview of Technical Differences specific to Proposed Subpart Q for CC-SCBA

- Requirements removed from Subpart H
- Closed-Circuit Self-Contained Breathing Apparatus (CC-SCBA) will become its own subpart (Subpart Q)
- **Optional protections:**
 - CBRN criteria
 - High Heat and Flame Resistance performance (also requires CBRN)

Highlights of proposed technical updates for Subpart Q (a)

- Facepiece: All sections (including Required Components) shall require Full Facepiece type only
- Eyepiece: Proposed requirements are quantitative and use the CBRN APR Field of View, Haze, Luminous Transmittance and Abrasion requirements and use the updated Impact and Penetration resistance requirements of ANSI Z87.1-2003
- Breathing gas: Updated to reference United States Pharmacopoeia requirements
- Breathing bag: Kept the gasoline vapor resistant test but added kerosene and toluene vapor resistance requirements

Highlights of proposed technical updates for Subpart Q (b)

- **Tests - Present : The following old (present) tests are to be updated/replaced:**
 - Breathing resistance
 - Valve leakage
 - Gas flow
 - Capacity Rating (Expected Duration Time)
 - CO₂
 - Low temperature operation
 - Man tests

Highlights of proposed technical updates for Subpart Q (c)

- **Proposed testing includes the Automated Breathing and Metabolic Simulator (ABMS) as well as Human Subject testing**
 - More encompassing complete-system testing
 - Tests will be performed at varying work rate
- **Additional Proposed Tests for Subpart Q:**
 - Capacity testing
 - Performance testing
 - Wearability testing

Highlights of proposed technical updates for Subpart Q (d)

- **Optional CBRN requirements**
 - Must meet base performance requirements before gaining CBRN protection approval
- **CBRN testing includes**
 - Operational performance testing (different criteria than base operational performance)
 - Temperature extreme operational performance testing (cold temperature is minimum specified by manufacturer)
 - Environmental Test Requirements
 - Vibration/shock
 - Accelerated corrosion
 - Blowing dust
 - Communications
 - Facepiece lens haze, luminous transmittance, and abrasion resistance
 - Agent testing (HD Vapor, HD liquid, GB vapor)

Highlights of proposed technical updates for Subpart Q (e)

Optional Fire Resistant / CBRN protection criteria:

- CBRN Criteria
- Heat and Flame Resistance Performance Requirements as in NFPA 1981-2007 (para XXX),
 - Peak exhalation and inhalation pressure
 - Components after-flame
 - Integrity of unit to be worn or used as specified in UI
 - Lens vision obscuration
 - Fabric heat and flame resistance

Projected Schedule

- **Oct 08: Revise CC-SCBA Concept Standard based on stakeholder feedback**
- **Dec 08: Initiate Informal Rulemaking Processes**

Refer to Posters

1. Base Performance Requirements – Timothy R. Rehak
2. Development of Capacity, Performance and Wearability Requirements – Nicholas Kyriazi
3. Chemical, Biological, Radiological and Nuclear (CBRN) Optional Requirements – Jonathan V. Szalajda
4. CBRN (continued) and Firefighter Protection Optional Requirements – Timothy R. Rehak
5. NIOSH O₂ Prohibition – Timothy R. Rehak
6. Standard Test Procedures – William P. King