

National Personal Protective Technology Laboratory

Webinar

Identifying research needed to validate conceptualized performance requirements for NIOSH approval of Combination Unit Respirators

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Welcome to the Combination Unit Respirator Webinar

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PPT Program at NIOSH/NPPTL

The **MISSION** of the NPPTL is to prevent work-related injury, illness and death by advancing the state of knowledge and application of personal protective technologies (PPT).



An estimated 20 million workers use personal protective equipment on a regular basis to protect themselves from job hazards.

NPPTL is revisiting the Combination Unit Respirator (CUR) Concept (*previously Combination Respirator Unit*) in response to FY15 Omnibus

A combination respirator is a multi-functional unit that employs the technology of two or more different types of respiratory protective devices.



Report due to Congress December 2015

NIOSH Respiratory Protective Device Regulatory Priorities from 2010-2014.

- **Conformity assessment activities focused on identifying approaches to comply with the National Technology Transfer and Advancement Act (NTTAA) and OMB 119A with an emphasis on ISO RPD standards**
- **Regulatory timeline 2010-2015**
 - Closed-circuit escape respirator (CCER)
 - End-of-service time indicator (EOSTI)
 - Certification Fees
 - Certification fit test requirement for half facepiece air-purifying respirators
 - Powered air-purifying respirator (PAPR)

The objective of today's webinar is to summarize the history of the combination unit respirator and solicit input from stakeholders.

To engage the stakeholder community to better use our IOM resources to conduct a workshop identifying the needs of this stakeholder community and the resources required to address

- Research needs
- Regulatory considerations
- Training needs

NIOSH Historical Perspective

Frank Palya
Project Officer

Outline: NIOSH Historical Perspective

- Overview of current NIOSH regulations regarding combination respirators
- Summary of previous public meetings

Combination respirator unit = Combination unit respirator

CRU = CUR

Current Requirements in 42 CFR Part 84 related to Combination Unit Respirators

- **42 CFR §84.63(b) Test requirements; general.**
 - *Combination respirators will be classified by the type of respirator in the combination which provides the least protection to the user.*

Note: In June 1995, this subclause was carried over from 30 CFR Part 11 (1972)

- **42 CFR §84.70(c) Self-contained breathing apparatus; description.**

Current Requirements in 29 CFR Part 1910 related to Combination Unit Respirators

- **OSHA Regulations (29 CFR 1910.134(d)(2)(i)) - (2) Respirators for IDLH atmospheres**

(i) The employer shall provide the following respirators for employee use in IDLH atmospheres:

(A) A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or

(B) A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air

Current Requirements in 29 CFR Part 1910 related to Combination Unit Respirators

- **OSHA Regulations (29 CFR 1910.134(d)(3)(i)(A))**
 - *(A) Assigned Protection Factors (APFs). Employers must use the assigned protection factors listed in Table 1 to select a respirator that meets or exceeds the required level of employee protection.*
 - *When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.*

2006 CUR Public meeting summary

- **NIOSH October 2006 Public Meeting to introduce the**

“Concept for Open Circuit CBRN SCBA in combination with Non-Powered CBRN Air-Purifying Tight-Fitting respirators and/or Powered Air-Purifying Tight-Fitting respirators”

- **Established: NIOSH Docket #82; Combination Units - SCBA/PAPR/APR**

<http://www.cdc.gov/niosh/docket/archive/docket082.html>

- NIOSH received one set of comments from one manufacturing stakeholder

2006 CUR Concept – Technical Input

- Concept outlined General Requirements, Combination Unit Specific Requirements, and CBRN Performance Requirements

Focus: combination of SCBA, PAPR and APR CBRN requirements which included LRPL and chemical agent testing



Photograph courtesy of Avon Protection. Representation or mention of a product does not constitute endorsement.

2006 CUR Concept - Operational Input

- **Methods to determine operational mode were not addressed**



Photograph courtesy of MSA Safety. Representation or mention of a product does not constitute endorsement.

2006 CUR Concept – Regulatory Input

- Docket comments and proposed edits to the concept standard were reviewed and considered
- Regulatory agenda adjusted and CUR became a lower priority

2010 Public Meeting Summary

- **NIOSH December 2010 Public Meeting as request for information forum to solicit information from stakeholders on combination unit respirators**
 - Well-attended meeting, two users and one manufacturer presented at the meeting
- **Established: NIOSH Docket #82A; Chemical Biological Radiological and Nuclear (CBRN) Combination Respirator Unit (CRU)**

<http://www.cdc.gov/niosh/docket/archive/docket082A.html>

- NIOSH received four sets of comments from stakeholders
 - One manufacturing stakeholder
 - Three others including one user group and two private citizens

2010 CUR Technical Input

- Transitioning respiratory protection modes (air-supplied to or from air-purifying) without exposure to the wearer
- Integration of sensor/detection technology into the CUR for detecting the hazard level to change modes
- Heads-up display
- Communication and field of view
- Limit filter contamination when CUR is in the air-supplied mode
- Filter performance after being exposed to high heat
- Durability of the RPD system, storage conditions

2010 CUR Operational Input

- Training for switching between modes
- Mode of operation, need for stealth
- Operate in both firefighter operations and CBRN environment
- Tactical law enforcement mission utility
- Interoperability of equipment, sighting weapons, communication

2010 CUR Regulatory Input

- NIOSH consideration whether to change 42 CFR 84.63(b) provision: combination unit respirator will be classified by the type of respirator in the combination which provides the least protection to the user

NIOSH activities that could impact future CUR standards development

- **NFPA Consensus Standard Development**

- NFPA 1981, 2013 Edition: Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services
- NFPA 1986: Standard on Respiratory Protection Equipment for Technical and Tactical Operations (Proposed Release 2017)

- **ISO Consensus Standard Development**

- ISO 16900 1:2014: Test method for Inward Leakage, state-of-the-art laboratory constructed in Morgantown
- ISO 17420 1-4: Performance standards development – filtering devices and supplied breathable gas devices, standardized connector, special application CBRN requirements

NIOSH activities that could impact future CUR standards development cont'd

- NIOSH research focused on sensor technologies to support air-purifying end of service life indicators
- Conducted reviews of the CBRN respirator hazards to address non-traditional threats
- Initiated research effort to address respiratory protection requirements for fire overhaul operations and air-purifying canister testing (ongoing)

Concludes NIOSH Historical Perspective

NIOSH/NPPTL 2015 Plan - CUR

Chris Coffey

Acting Deputy Director

Associate Director for Science

Overview NIOSH Path Forward

- **NPPTL is currently revisiting this priority to determine the path forward and address the congressional language included in the FY15 appropriation**
 - NIOSH Respirator Policy Group, March 3, 2015
 - Webinar to re-engage stakeholder community
 - IOM workshop April 30, 2015
 - Suggested topics of interest discussed today
 - Queries to solicit input from webinar participants

NIOSH/NPPTL and the Institute of Medicine (IOM), National Academies of Science activities

- **Standing Committee on Personal Protective Equipment for Workplace Safety and Health established in 2004**
- **Workshop in August 2014 to discuss the respiratory needs of healthcare workers related to PAPR use and regulations**
- **CUR Workshop planned for April 30, 2015 to examine the technical, operational and regulatory needs from an objective perspective**
 - **Workshop-in-brief report provided by June 30, 2015 as input to NIOSH report to Congress**

Webinar Query (1)

- **Identify your primary affiliation as one of the following:**
 - Civilian respirator user
 - Military respirator user
 - Respirator manufacturer
 - Regulator
 - Trade association member
 - Other

Webinar Query (2)

- In your opinion, what user groups are most interested the CUR's?
 - Law enforcement
 - Fire services
 - Military
 - Mining
 - Industrial
 - Pharmaceutical
 - HAZMAT
 - Other
 - Unsure

Webinar Query (3)

- **What are the needs of law enforcement CUR users?**
 - Stealth operations
 - Switchover from SCBA to APR/PAPR mode
 - Heads-up display
 - Interoperability with other PPE
 - Weapon sighting
 - Unsure

Webinar Query (4)

- **What are the needs of fire service?**
 - Sensor technology
 - Heads-up display
 - Switchover from SCBA to APR/PAPR mode
 - CRBN approval
 - Heat tolerance of RPD system
 - Durability
 - Unsure

Webinar Query (5)

- **What are the needs in mining?**
 - Air source
 - Duration
 - Combination CC-SCBA and APR/PAPR
 - Combination OC-SCBA and APR/PAPR
 - Intrinsic Safety
 - Dockability (transient mode)
 - Switchover from SCBA to APR/PAPR mode
 - Durability
 - Unsure

Webinar Query (6)

- **What are the needs in general industry?**
 - Sensor technology
 - Duration
 - Unsure

Webinar Query (7)

- **What are the needs in pharmaceutical industry?**
 - Sensor technology
 - Duration
 - Switchover from SCBA to APR/PAPR mode
 - Unsure

Webinar Query (8)

- **What are the needs in HAZMAT remediation?**
 - CBRN approval
 - Combination SCBA/APR/PAPR
 - Combination SCBA/SAR
 - Service life
 - Sensor technology for known contaminants
 - Sensor technology for atmosphere supplying
 - Unsure

Webinar Query (9)

- **Other than the NIOSH and OSHA regulations reviewed today, do other current regulations limit the use of CUR by the identified user groups?**
 - Yes
 - No

Webinar Query (9a)

- For those answering yes, if possible, please identify the regulatory agency
 - DoD
 - DOE
 - MSHA
 - NRC
 - Other

Webinar Query (10)

- **What regulatory options should NIOSH consider related to developing and adopting a NIOSH CUR certification performance standard?**
 - Federal Rulemaking
 - National Consensus standard
 - ANSI/ISEA
 - ANSI/NFPA
 - Other
 - International Consensus standard
 - ISO
 - No preference

End of Queries

- **Thank you for participating in our webinar queries**
- **Information gathered**
 - Refine workshop discussion questions/topics
 - Refine agenda
 - Invite presenters and attendees

Now we will discuss proposed questions and topics to be included in the IOM workshop and the report to Congress.

Submit Your Questions and Comments (Q&C) By:

- 1. Typing your Q&C into the Q&A Box (Bottom Right)**
- 2. Your Q&C will only be seen by you and the presenters**
- 3. Presenters will choose pertinent Q&C to verbally discuss**
- 4. Presenters may not be able to address every Q&C during the webinar**
- 5. All Q&C will be taken into consideration for the upcoming IOM meeting**

Proposed IOM Workshop Questions/Topics

- What combination unit respirator technology is currently available in the U.S.?
- Describe the unique features of the manufactured devices and according to the RPD types included in the combination(s).

Proposed IOM Workshop Questions/Topics (Cont'd)

- What are the primary user groups interested in using NIOSH-certified CURs?
- What are the anticipated hazardous atmospheres/conditions that each user group is expected to encounter and how are they assessed?

Proposed IOM Workshop Questions/Topics (Cont'd)

- Identify new features not currently available in combination unit respirators and the user group needing the new features.
- Identify potential performance standards or requirements to be used or developed to include the identified (new and existing) features in certified CUR.

Proposed IOM Workshop Questions/Topics (Cont'd)

- Liability issue if a CUR is used in the wrong mode in the given dangerous atmosphere.
- Should a regulation be established to regulate the liability?
- Will the deployment of CUR improve workplace or worker safety and health?
- Could CUR use detrimentally impact worker safety and health? Would there be no change?

Proposed IOM Workshop Questions/Topics (Cont'd)

- Should user switch modes while in hazardous atmosphere or before entering?
- Is a unit desired so the wearer can have a SCBA for firefighting and switch to AP for fire overhaul
 - How will this potentially impact the user?
- How rapidly could conditions change (for better or worse?)
 - How fast do you have to switch over?
- What information do users need to have on hand to make the switch over?

Proposed IOM Workshop Questions/Topics (Cont'd)

- Identify potential research including (sensor technology) needed to validate or develop the performance standard for use by NIOSH.
- Estimate timelines and resources needed to complete the required research.

Proposed IOM Workshop Questions/Topics (Cont'd)

- Are there current regulations limiting the use of CUR by the identified user groups?
- How do they limit use?
- What regulatory options should NIOSH consider related to developing and adopting a NIOSH CUR certification performance standard.

Proposed IOM Workshop Questions/Topics (Cont'd)

- Are there other questions that should be presented at the workshop? From the following perspectives:
 - Manufacturer
 - User
 - Regulator
 - Industrial Hygienist and Occupational Safety Specialist
 - Researcher
 - Other

Action Item for Webinar Attendees

- Provide suggestions for IOM Workshop Structure to:

– Chris Coffey

ccoffey@cdc.gov 304 285 5958

OR

– Colleen Miller

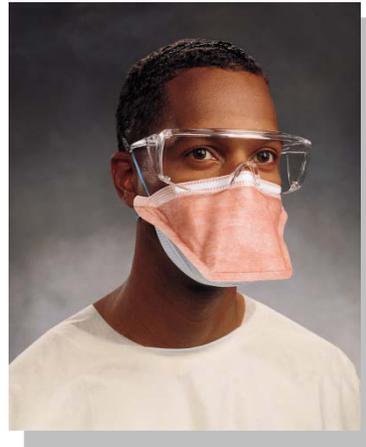
csmiller1@cdc.gov 412 386 4956

No later than COB April 6, 2015

IOM CUR Workshop Information

- **Date - April 30, 2015**
- **Keck Center, 500 Fifth ST NW, Washington, DC 20001**
- **Information at:**
 - <http://iom.edu/Activities/PublicHealth/PPEinWorkplace/2015-APR-30.aspx>

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Disclaimer:

The findings and conclusions in this presentation have not been formally disseminated by the National Institute for Occupational Safety and Health and should not be construed to represent any agency determination or policy.

Thank you