

Prevalence of Respirators in Healthcare Facilities

Survey Results

N95 day talk by Kerri Wizner, MPH, CPH

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Outline

- Rationale
- Research design
- Results
- Discussion



Photo courtesy of Bullard (left) 3M (right)

Rationale for study

- There are 5x more respirator users in healthcare than any other service industry (Doney, 2005)
- Respirator challenges during epidemics
 - Accessibility, product shortages, just-in-time fit testing
- A projected 1.7-7.3 billion respirators would be needed in a respiratory pandemic
- No national data available to describe what type/model of respirators used in healthcare
- Studies suggest that stockpiling multiple types of respirators could be a valuable strategy in terms of cost, use, and quality



Photo courtesy of Bullard (middle), 3M (top & bottom)

Research Aims

- American Association of Occupational Health Nurses (AAOHN) conducted an exploratory study to determine the prevalence of respirators in healthcare
 - Has the prevalence of respirator types changed due to Ebola preparations?
 - Are there regional differences in respirator types?
 - What are the most common respirator models?
 - How much awareness was there about the types and models at facilities?

- This project was deemed non-research by the NIOSH Human Subjects Review Board as responses were anonymous



Photo courtesy of Kimberley Clark

Research design

- In 2014, an anonymous, 11 item, online survey was developed and implemented asking professional nursing society members about workplace use of:
 - N95 Filtering facepiece respirators (N95s)
 - Powered air-purifying respirators (PAPRs)
 - Elastomeric half facepiece respirators (EHFRs)
- AAOHN email blasted members, plus healthcare members of:
 - Association of Occupational Health Professionals in Healthcare (AOHP)
 - American Nurses Association (ANA)
 - American Board of Occupational Health Nurses (ABOHN)
- In 2015, AAOHN repeated survey dissemination
 - Included an updated list of respirator models



Survey questions

- Demographics
- Each respirator type (N95, PAPR, EHFR) had its own section to answer:
 - Have you/your employees used a respirator (in past year)?
 - › Yes/No
 - How many people use this type of respirator in your facility?
 - › 10 or less
 - › 11 to 100
 - › 101 to 500
 - › More than 500
 - Common types
 - › Provided a list
 - › Also provided an ‘other’ option with space to write

Snapshot of survey questions about N95 respirators

Prevalence of Respiratory Protective Devices in U.S. Healthcare Facilities

Filtering Facepiece Respirators (N95s)

Below is an example of an N95 (courtesy of the Occupational Safety and Health Administration (OSHA)).



*2. Have any of your employees used an N95 at least once in the past year, including training exercises?

- Yes
- No

3. Approximately how many of your employees have used an N95 in the past year, including training exercises?

- 10 or less
- 11 to 100
- 101 to 500
- More than 500

Results

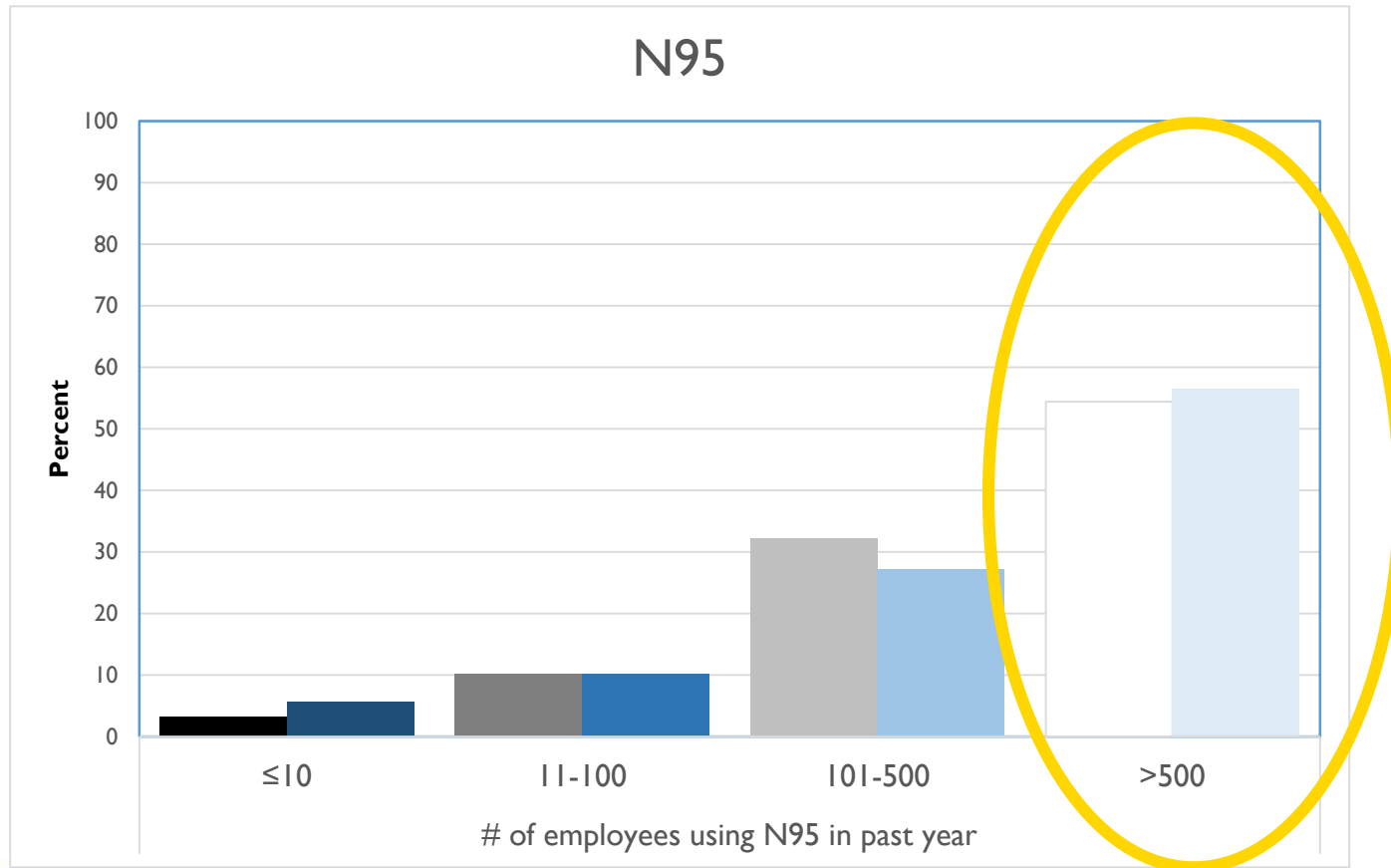
- 554 survey responses
 - 322 from 47 states in 2014
 - 232 from 45 states in 2015

	2014 n/N (%) ^a	2015 n/N (%) ^a
Used an N95 in past year	296/314 (94.3)	221/232 (95.3)
Used a PAPR in past year	234/299 (78.3)	173/225 (76.9)
Used an EHFR in past year	89/290 (30.7)	57/220 (25.8)
^a n = the number of respondents for that question, participants responded for each respirator type separately		

- ~75% in each sample used two types of respirators in the workplace
~25% in each sample used all three types of respirators
- Exclusive use of EHFR was not reported by any participant

Number of employees using respirators, by type

- Majority of N95 users reported over 500 employees used the respirator in the past year



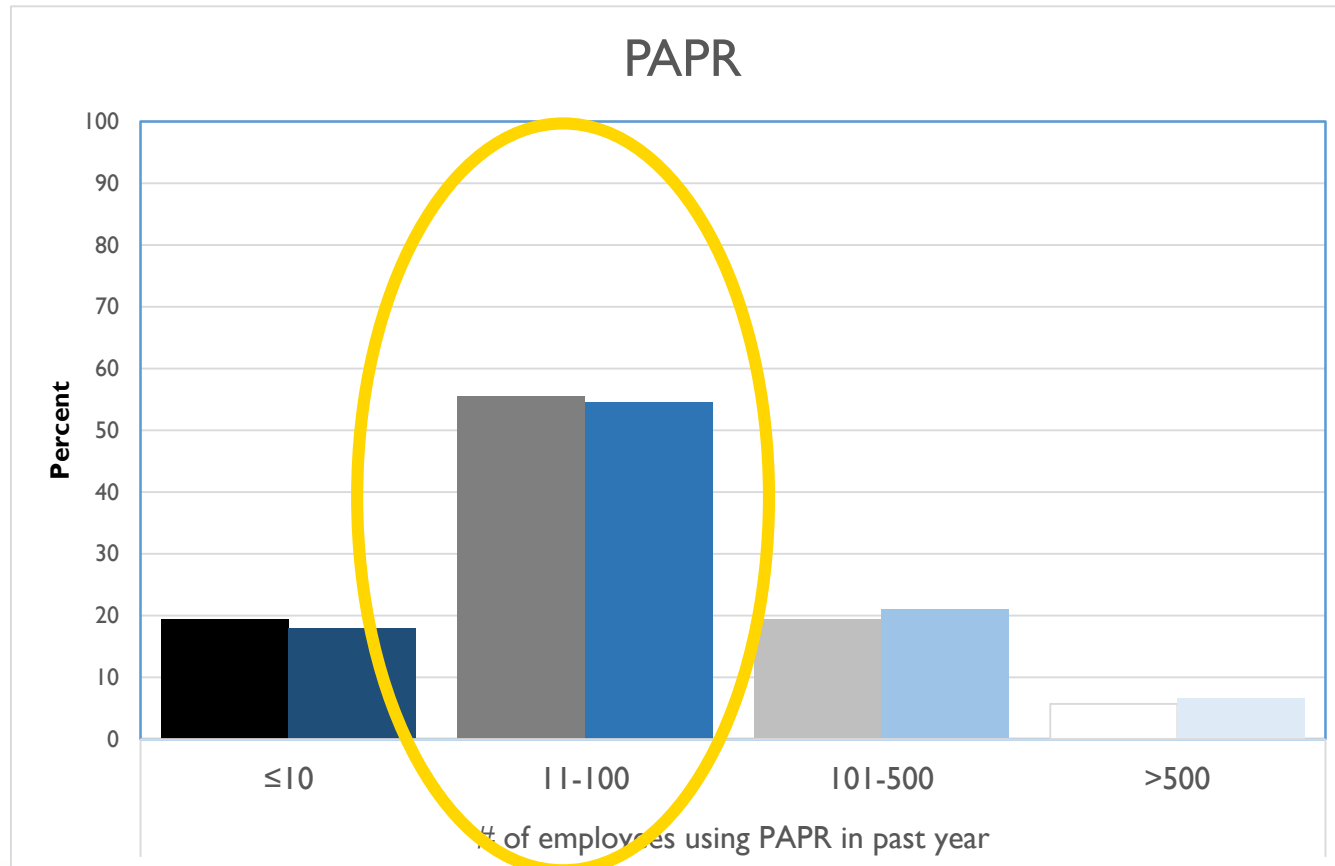
Black to white series = 2014

Blue series = 2015



Number of employees using respirators, by type

- Majority of PAPR users reported 11-100 employees used the respirator in the past year



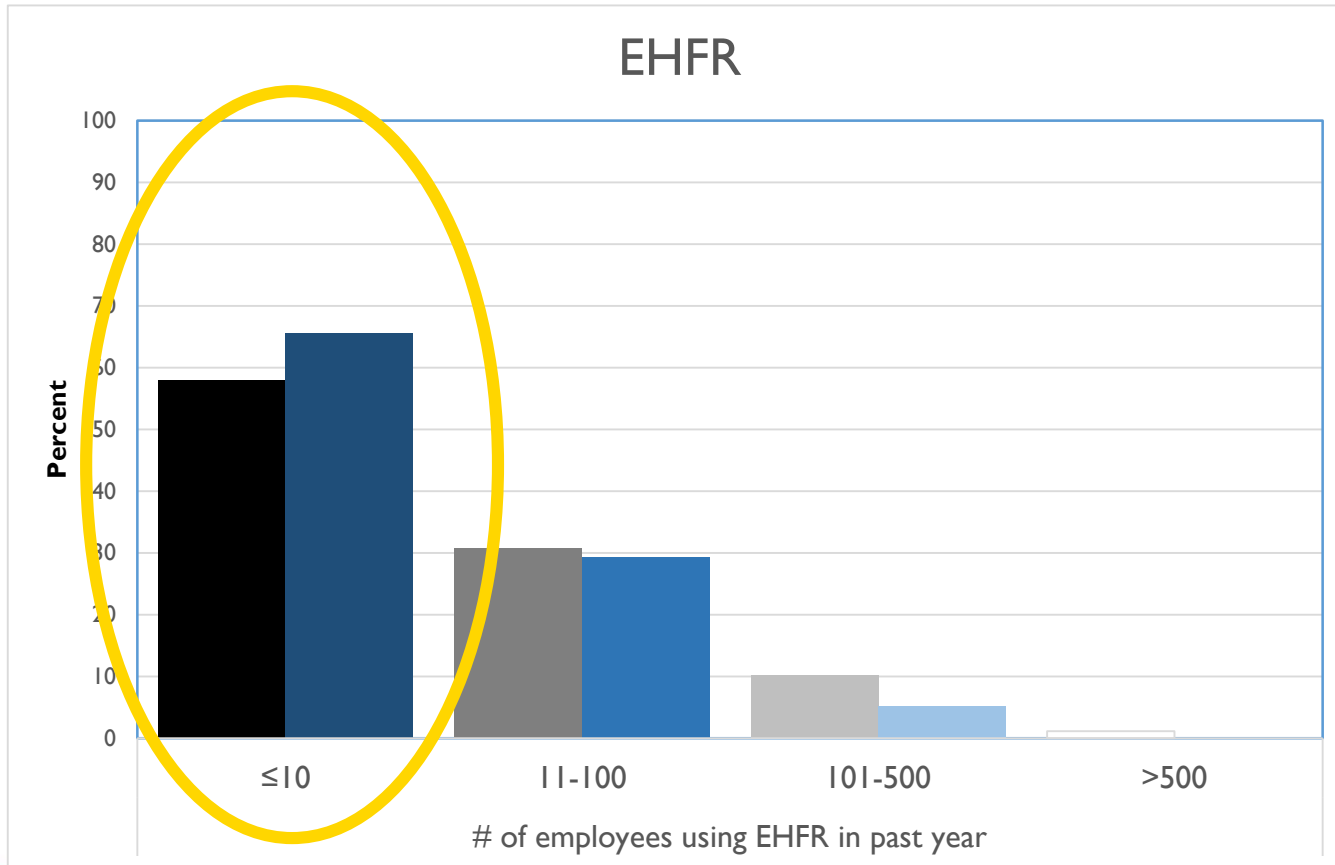
Black to white series = 2014

Blue series = 2015



Number of employees using respirators, by type

- Majority of EHFR users reported less than 10 employees used the respirator in the past year



Black to white series = 2014

Blue series = 2015



Regional trends

- Range of use was compared across the four U.S. Census regions
- PAPR use was the only one with significantly regional trends
 - Ranging from 65%–88%
 - Highest in West and Midwest
- N95 use ranged from 92%–100%
- EHFR use ranged from 21%–35%

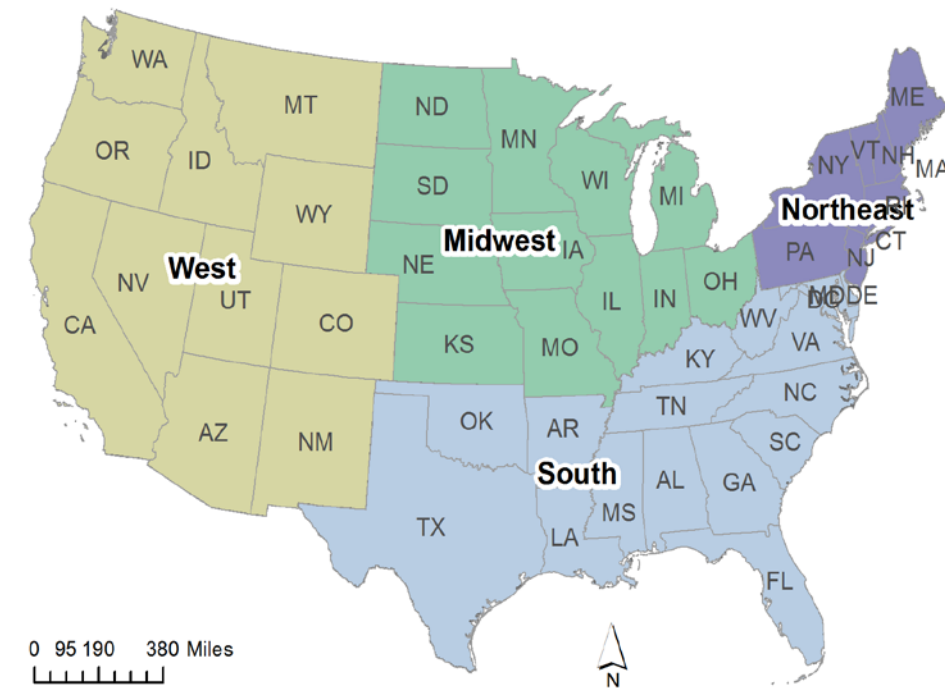
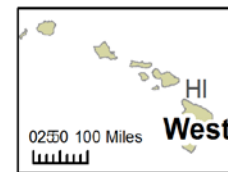


Photo from census.gov

Most commonly reported models

N95 models	2014 n (%)	2015 n (%)
3M™ 1860/1860S	202 (71.9)	147 (70.7)
3M™ 1870/3M™ Aura™ 1870+	133 (47.3)	83 (39.9)
Kimberly-Clark™ 46727/46827	77 (27.4)	46 (22.1)
Kimberly-Clark™ 62355/62126	67 (23.8)	48 (23.1)
PAPR models		
3M™ Air-Mate™	107 (51.2)	80 (50.6)
3M™ Breathe Easy™	34 (16.3)	30 (19.0)
Syntech International MAXAIR	46 (22.1)	44 (27.9)
EHFR models		
3M™ 6000 series	38 (48.7)	20 (41.7)
3M™ 7500 series	24 (30.8)	17 (35.4)
North® by Honeywell 5500 series Half-Mask	N/A	4 (8.3)

Limitations & Challenges

- Long-term trends
 - Surveys were administered only one year apart, possibly not enough time
- Respirator identification & nomenclature
 - Limited recognition about types of respirators, added pictures
 - “I’m not sure” comments (18 comments in 2014, 7 in 2015)
- Response numbers: N95>PAPR>EHFR
 - N95 & yes/no questions received the most responses
 - EHFRs and specific model type questions the least responses
 - Data availability

Discussion

- Healthcare workers (HCWs) must be knowledgeable about the differences between types and models, and intended uses of respirators
 - Applicable for daily tasks & pandemics
 - Ability to identify the respirator they were fit tested for
- Regional planning
 - Targeted education and training so that HCWs are best prepared to use the devices available to them
 - Pandemic planning agencies must work closely with healthcare to understand types of respirators used in the field
- Stockpiling
 - Emergency planners can provide respirators that match HCW training to limit expensive and time intensive just-in-time fit testing

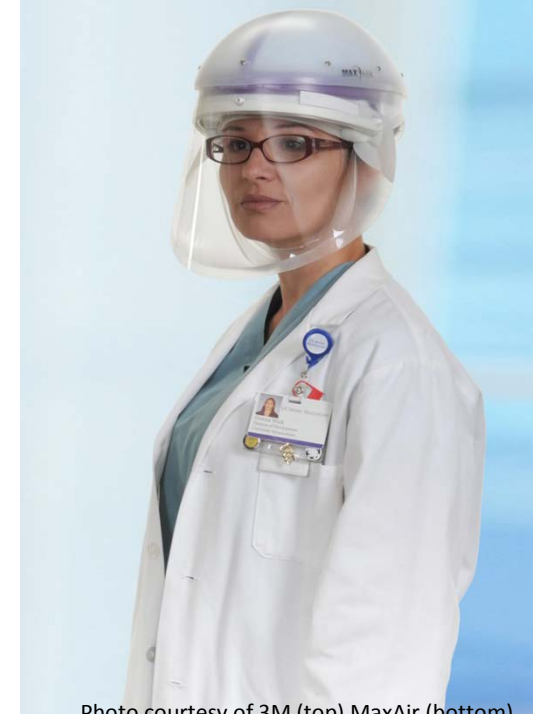


Photo courtesy of 3M (top) MaxAir (bottom)

Applying research to practice

- HCWs are best prepared to use the devices and models available to them
- Important to ensure that HCWs receive respirators that match their training
 - targeted education based on regional trends tailored to the types of respirators



Photos courtesy of Kimberly Clark

Additional Resources



Respiratory Protection Education & Resources Web Kit Available for Occupational and Environmental Health Nurses **FREE**

An Overview of OSHA's Respiratory Protection Program:
The Role of the Occupational Health Nurse



Earn 3.0 CNE with this self-paced, 10-module online program designed to help occupational health nurses polish their respiratory protection competencies and have the highest performance as their organization's Respiratory Protection Administrator.

Developed with a NIOSH grant, a team from The University of Texas, AAOHN, AOHP, ANA and ABOHN designed the program to help OHNs and their employers ensure they are meeting the Federal OSHA Respiratory Protection Standard (1910.134 CFR). In addition, on this site, they'll find every respiratory protection reference and resource they'll ever needed in one convenient location - available at:

<http://aaohn.org/page/online-learning>.

Contact AAOHN National Office

330 N. Wabash Ave, Suite 2000, Chicago, IL 60611

Phone: (312) 321-5173; Fax: (312) 673-6719

Email: info@aaohn.org www.aaohn.org



Case Studies in Respiratory Protection

Available for Occupational and Environmental Health Nurses
FREE



Earn 3.5 CNE with these 3 self-paced, interactive, online case studies that are designed to reinforce concepts covered in OSHA's Respiratory Protection Standard, and AAOHN training, "An Overview of OSHA's Respiratory Protection Program: The Role of the Occupational Health Nurse."



Developed with a NIOSH grant, a team from The University of Texas, AAOHN, AOHP, ANA and ABOHN designed the program to help OHNs and their employers ensure they are meeting the Federal OSHA Respiratory Protection Standard (1910.134 CFR).

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Frontline and Ancillary Healthcare Workers' Respiratory Protection Training

Available for All Hospitals and Healthcare Settings for Their Workers

FREE

Healthcare employees can take this short, self-paced, online training program to prepare them for using respiratory protection in the workplace and/or the healthcare setting can provide the training to employees to satisfy Federal OSHA Respiratory Protection Standard's (1910.134 CFR) annual training requirements.

Developed with a NIOSH grant, a team from The University of Texas, AAOHN, AOHP, and ANA designed the program to help hospitals and healthcare settings ensure that they are meeting the employee training requirements of the Federal OSHA Respiratory Protection Standard (1910.134 CFR). Reports of an organization's employees who have successfully completed the training can be available. *Nurses will earn 1 CNE (free).*

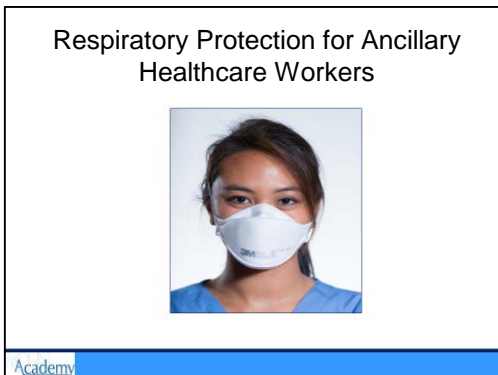
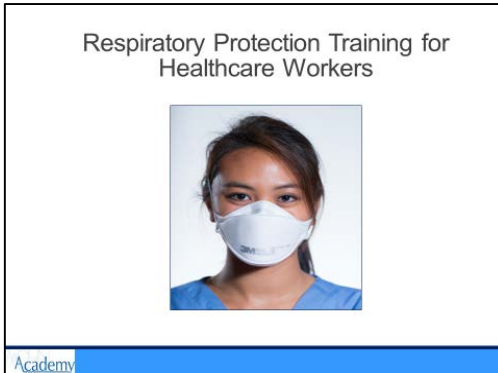
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New Website

**Respiratory Protection Program Training and Resources
Available for OHNs and All Safety and Health Professionals**
<http://aaohn.org/respiratory-protection>

Program components include:

I. Respiratory Protection Course: OSHA's Respiratory Protection Standard: The Role of the Occupational Health Nurse (3 CNEs)

NEW

II. Case Studies in Respiratory Protection (for the occupational health professional)

- Respiratory protection in healthcare: An interactive case study for the occupational health professional (1.5 CNEs)
- Respiratory protection in emergency and immediately dangerous to life and health (IDLH) working conditions: An interactive case study for the occupational health professional (1 CNE)
- Elastomeric respirator use in autobody repair and painting: An interactive case study for the occupational health professional (1 CNE)

III. Respiratory Protection for Frontline Healthcare Workers (1 CNE)

(meets OSHA's Respiratory Protection Standard annual training requirements. It's free for healthcare organizations to use)

NEW

IV. Respiratory Protection for Ancillary Healthcare Workers (Certificate of Completion)

(meets OSHA's Respiratory Protection Standard annual training requirements. It's free for healthcare organizations to use)

You do NOT need to be an AAOHN member to participate in this free training or access the training resources.

Healthcare Respiratory Protection Resource Page

<https://www.cdc.gov/niosh/npptl/hospresptoolkit/default.html>



- Policies and Procedures
- Program Administration
- Evaluation and Selection
- Medical Evaluation
- Fit Testing
- Proper Respirator Use
- Training
- Program Evaluation
- Recordkeeping

- NIOSH Documents
- Infographics
- Blogs
- Videos
- Journal Articles

Thank you

Contact Information

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Manuscript & citations available at:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4976391/>



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