

# Use of Elastomeric Respirators in Health Care Settings: additional healthcare facility experience and the 2019 NAS Report

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**Cal/OSHA webinar**

**Wednesday, August 26, 2020**

**10:00-11:30 AM PT**

# Successful use for more than 20 years by the Texas Center for Infectious Disease (TCID)



**TCID is a 75-bed specialty public hospital in San Antonio, currently the only freestanding inpatient TB treatment facility in the United States**

# The Allegheny Health Network adopting elastomeric respirators, Spring 2020

9 hospital system  
comprising approximately  
2200 licensed beds with  
sites in Pennsylvania and  
Western NY, employing  
21000 staff



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## NEWS

### AHN Partners with MSA Safety to Provide P100 Protective Masks to Clinical Staff on Frontlines of COVID-19 Pandemic

Thursday, April 16, 2020

Industrial grade respirators can be used repeatedly, expected to significantly reduce disposable N95 mask usage across network

PITTSBURGH, PA — Allegheny Health Network (AHN) today announced another significant step in the organization's efforts to assure that frontline caregivers in its hospitals have the personal protective equipment they



PITTSBURGH.CBSLOCAL.COM

**Coronavirus In Pittsburgh: AHN To Equip Caregivers  
With Industrial Grade Protective Masks**

# The Allegheny Health Network article on implementation, May 2020

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## Implementation of an Elastomeric Mask Program as a Strategy to Eliminate Disposable N95 Mask Use and Resterilization: Results from a Large Academic Medical Center



Sricharan Chalikonda, MD, MHA, FACS, Hope Waltenbaugh, MSN, RN, CNOR, NE-BC,  
Sara Angelilli, MSN, RN, CNOR, Tiffany Dumont, DO, Curt Kvasager, MBA, Timothy Sauber, MD,  
Nino Servello, CRNA, Anil Singh, MD, Rafael Diaz-Garcia, MD, FACS

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**BACKGROUND:** The COVID-19 global pandemic has placed a large demand on personal protective equipment for healthcare workers. N-95 respirators, required to perform aerosolizing procedures, are in short supply and have increased significantly in cost. The lack of a clear end to the

<https://doi.org/10.1016/j.jamcollsurg.2020.05.022>

# University of Colorado Hospital adopted Spring 2020



*They Evoke Darth Vader, but These Masks  
May Save Your Doctor's Life*

Kirsten Luce for The New York Times



By Chris Hamby

May 27, 2020



Academic medical center with 700 beds and 6,000 staff.  
Purchased 800 elastomeric respirators in 2010, after H1N1.

# Models of Elastomeric Half Facepiece Respirators

Texas Center for  
Infectious Disease  
(TCID)

University of  
Colorado Hospital –  
North model

- The current Elastomeric Respirator TCID institutes:



North 7700 - S, M, L  
**134 Employees**



Moldex – S, M, L  
**2 Employees**



Powered Air Purifying  
Respirators  
**2 Employees**



The Allegheny Health Network

MSA Advantage 200 Half  
Face, S, M, L

# Models of Elastomeric Half Facepiece Respirators

## VHA Awards Sperian Respiratory Protection USA a 65,000 Reusable Respirator Order

07/12/2010



The U.S. Veterans Health Administration (VHA) has awarded Sperian Respiratory Protection USA a contract to purchase 65,000 special configuration modified Sperian Blue1 half-mask respirators with speaking diaphragm for use in VHA hospitals nationwide. VHA is the largest integrated healthcare system in the United States with over 150 hospitals and 130,000 healthcare workers. This award is a result of Sperian's emphasis on developing



2010

Discontinued by  
Manufacturer

# Models of Elastomeric Half Facepiece Respirators



## Respirator Trusted-Source Information

### Section 1: NIOSH-Approved Respirators

Schedule	Approval #	Manufacturer		
84A	<a href="#">0022</a>	<a href="#">3M Company</a>	6000, 7501, 7502, 7503 with 2091 filter	Half Mask
84A	<a href="#">0071</a>	<a href="#">3M Company</a>	6X00, 7501, 7502, 7503 with 7093 Filter	Half Mask
84A	<a href="#">0078</a>	<a href="#">3M Company</a>	7X00 with 7093 filter	Half Mask
84A	<a href="#">0117</a>	<a href="#">Moldex-Metric, Inc.</a>	8000 facepiece with 8940 filter	Half Mask
84A	<a href="#">0118</a>	<a href="#">MSA Innovation, LLC</a>	Comfo P100	Half Mask
84A	<a href="#">0170</a>	<a href="#">Louis M. Gerson Company, Inc.</a>	9200 halfmask with G70 filter	Half Mask
84A	<a href="#">0236</a>	<a href="#">Willson ® Dalloz Safety Products</a>	6100 halfmask with P100 filter	Half Mask
84A	<a href="#">0248</a>	<a href="#">Willson ® Dalloz Safety Products</a>	Freedom 2000; 2X10 P100	Half Mask
84A	<a href="#">0450</a>	<a href="#">Honeywell Int'l. Inc.</a>	Blue 1, Series 2000/3000, ValuirPlus, Premier, PremierPlus Half masks with 1090 filter	Half Mask
84A	<a href="#">0452</a>	<a href="#">Honeywell Int'l. Inc.</a>	Belt-mounted Halfmask with 1090 filter	Half Mask
84A	<a href="#">0590</a>	<a href="#">Honeywell International Inc.</a>	5500 with 7580P100	Half Mask
84A	<a href="#">0592</a>	<a href="#">Honeywell International Inc.</a>	7700 with 7580P100	Half Mask
84A	<a href="#">0876</a>	<a href="#">MSA Innovation, LLC</a>	Adv. 200 with Comfo P100 filter	Half Mask
84A	<a href="#">0943</a>	<a href="#">Dentec Safety Specialists Corp.</a>	100, 200, 300, 400 with 158TLPO	Half Mask
84A	<a href="#">1033</a>	<a href="#">3M Company</a>	6000, 7501, 7502, 7503 Halfmask with 2096 or 2097	Half Mask
84A	<a href="#">1129</a>	<a href="#">Dräger Safety AG &amp; Co. KGaA</a>	X-Plore 2100 facepieces w/ 6736777 filter	Half Mask
84A	<a href="#">1239</a>	<a href="#">Honeywell Int'l. Inc.</a>	2000, BLUE 1 or Low Maintenance w/ 1050 filte	Half Mask
84A	<a href="#">1241</a>	<a href="#">Honeywell Int'l. Inc.</a>	250050, 260050, 270050 w/ 1050 filter	Half Mask
84A	1443	Moldex-Metric, Inc.	8000 with 8990 filter	Half Mask

[https://www.cdc.gov/niosh/npptl/topics/respirators/disp\\_part/respsource1quest3.html#half](https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/respsource1quest3.html#half)



# Half Facepiece Elastomeric Respirators Filter Selection



Avoid filter with no covers



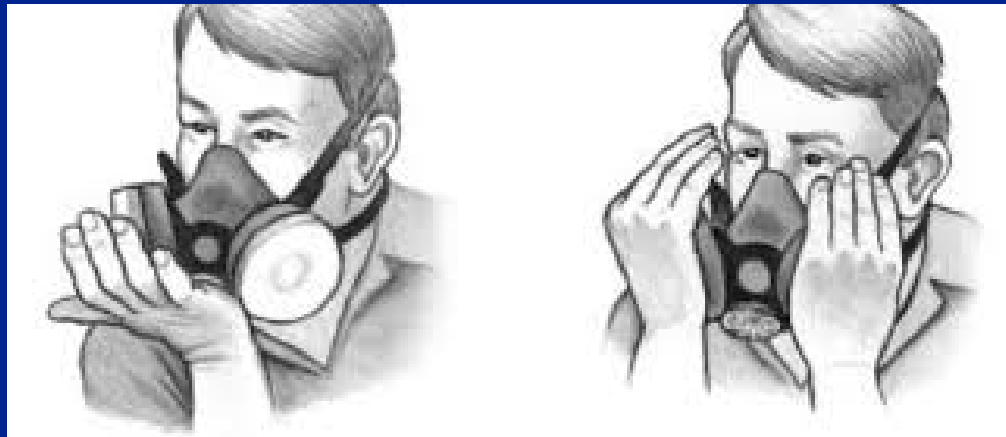
	<b>Elastomeric Respirators</b>	<b>N95s</b>
	<b>Effective respiratory protection program must be in place</b>	<b>Effective respiratory protection program must be in place</b>
<b>Medical Approval</b>	OSHA Respirator Medical Evaluation Questionnaire	OSHA Respirator Medical Evaluation Questionnaire
<b>Fit testing</b>	OSHA approved methods	OSHA approved methods
<b>User Seal Check</b>	User can be reliably trained to do & user can readily perform during work	Can be difficult for user to perform reliably
<b>Assigned Protection Factor</b>	10	10 * *previously 5
<b>Filter</b>	N95, but others available (99 and 100)	N95

# Fit Testing & User Seal Checks

Fit Testing Procedures, for tight fitting models



User Seal Checks, for tight fitting models



# OSHA Respirator Standard – Program Elements

- (a) Permissible practice
- (b) Definitions
- (c) Respirator program
- (d) Selection of respirators
- (e) Medical evaluation
- (f) Fit testing
- (g) Use of respirators
- (h) Maintenance and care**
- (i) Breathing air quality and use
- (j) Identification of filters, cartridges, and canisters

- (k) Training and information
- (l) Program evaluation
- (m) Recordkeeping
- (n) Dates
- (o) Appendices (mandatory)

A: Fit Testing Procedures

B-1: User Seal Checks

**B-2: Cleaning Procedures**

C: Medical Questionnaire

D: Information for Employees Wearing Respirators When Not Required Under the Standard

# Respirator Program Elements

## Training and information

### Training and Fit Testing of Health Care Personnel for Reusable Elastomeric Half-Mask Respirators Compared With Disposable N95 Respirators

The demand for disposable respiratory protective devices needed to protect health care personnel may exceed supply during large outbreaks of respiratory infectious diseases.<sup>1,2</sup> Concerns are growing over global shortages of respiratory protective devices during the novel coronavirus disease 2019 (COVID-19) pandemic.<sup>3</sup>



Supplemental content

A reusable alternative to N95 respirators for which health care personnel can be rapidly assessed for fit (fit testing) and trained for use is needed. Elastomeric half-mask respirators (EHMRs), which provide the same level of respiratory protection as N95 respirators, are one alternative<sup>4</sup> (eFigure in Supplement 1). These reusable respirators are used in construction and manufacturing, but not widely used in health care<sup>4</sup> because of uncertainty about disinfection methods and upfront costs.<sup>5</sup> The goal of this demonstration study was to test the feasibility of rapidly training and fit testing health care workers to EHMRs.

JAMA May 12, 2020 Volume 323, Number 18 1849

Pompeii LA, Kraft CS, Brownsword EA, et al. Training and Fit Testing of Health Care Personnel for Reusable Elastomeric Half-Mask Respirators Compared With Disposable N95 Respirators [published online ahead of print, 2020 Mar 25]. *JAMA*. 2020;323(18):1849-1852. doi:10.1001/jama.2020.4806

Facility	Respirator Care	Filters
Texas Center for Infectious Disease (TCID)	<p style="text-align: center;"><b>Decentralized</b></p> <ul style="list-style-type: none"> <li>• Staff issued respirator for their exclusive use</li> <li>• Wearer cleans/disinfects between patients with wipes</li> <li>• Wearer inspects, deep cleaning and disinfecting at end of shift</li> </ul>	Annual with fit test or if trouble breathing
The Allegheny Health Network (AHN)	<p style="text-align: center;"><b>Decentralized at beginning, but moving to more centralized</b></p> <ul style="list-style-type: none"> <li>• Shared use - respirators from Central Processing</li> <li>• Wearer cleans/disinfects between patients with wipes</li> <li>• Wearer returns respirator at end of shift, Central Processing inspects, cleans, disinfects</li> </ul>	Monthly or if trouble breathing
University of Colorado Hospital (UCH)	<p style="text-align: center;"><b>Hybrid - decentralized at beginning, but moving to more centralized for nonmobile staff</b></p> <ul style="list-style-type: none"> <li>• Shared use - respirators available from department supply</li> <li>• Wearer cleans/disinfects between patients with wipes</li> <li>• Wearer inspects, deep cleaning and disinfecting at end of shift and returns to department supply</li> </ul>	Annual ? or if trouble breathing

# Respirator Storage & Availability



Key to successful implementation

- Involve staff
- Might vary across the facility
- Support for staff and audits

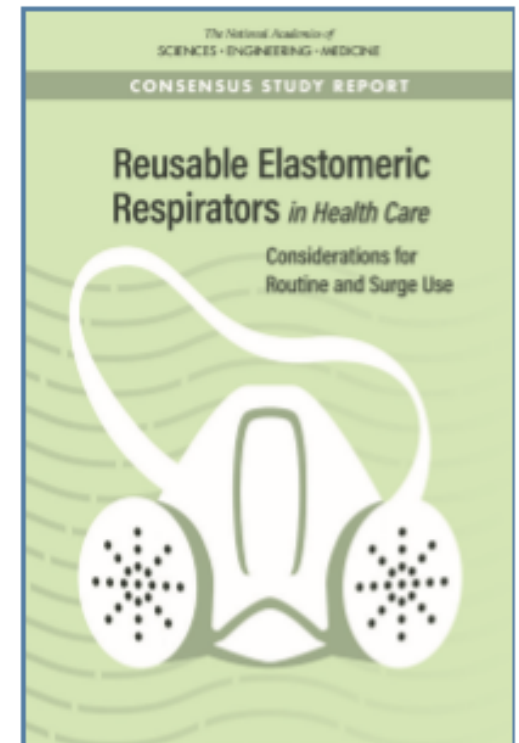
December 2018

## Reusable Elastomeric Respirators in Health Care

### Considerations for Routine and Surge Use

Protecting the health and safety of health care workers is vital to the health of each of us. Preparing for and responding to a future influenza pandemic or to a sustained outbreak of an airborne transmissible disease requires a high-level commitment to respiratory protection for health care workers across a wide range of work settings. Keeping health care workers healthy despite occupational risks is an ethical commitment to the workers. Their good health also provides lifesaving continuity of care to patients and communities.

Reusable respirators (specifically, reusable half-facepiece elastomeric respirators) are the standard respiratory protection device used in many industries. Their durability and reusability make them desirable for stockpiling for emergencies, during which large volumes of respirators can be needed. Until now, options for using reusable half-facepiece elastomeric respirators in routine and surge use in health care have not been fully explored.

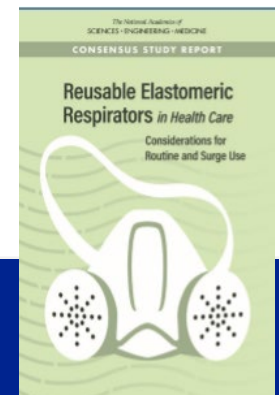


<https://www.nationalacademies.org/our-work/study-on-the-use-of-elastomeric-respirators-in-health-care>



**TABLE S-1** Routine and Surge Use of Reusable Elastomeric Respirators

Definition	Examples	Advantages	Challenges	
Surge use	<ul style="list-style-type: none"> <li>• Facility capacity (beds, staff, supplies) is exceeded</li> <li>• Respiratory illness incidence extends beyond epidemic curve</li> <li>• Atypical illness that requires airborne isolation</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal influenza that persists beyond traditional time-frame</li> <li>• Pandemic influenza</li> <li>• Viral hemorrhagic fever or other airborne-outbreak</li> </ul>	<ul style="list-style-type: none"> <li>• Avert shortage of disposable filtered facepiece respirators</li> <li>• Health care workers' perception that the institution is investing in their safety and well being</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaning and disinfection protocols</li> <li>• Storage issues between uses</li> </ul>



# Resources

## Hospital Respiratory Protection Program Toolkit

Resources for Respirator  
Program Administrators

MAY 2015



**OSHA**  
Occupational Safety  
and Health Administration



**NIOSH**

<https://www.cdc.gov/niosh/docs/2015-117/default.html>

# Resources

## Careers & Training

### HAZMAT Safety & Training

#### About the Worker Training Program (WTP) —

Congressional Appropriation

Contact Us

History and Goals

Clearinghouse

Funding Opportunities +

Meetings & Workshops

National Response & Disaster Recovery

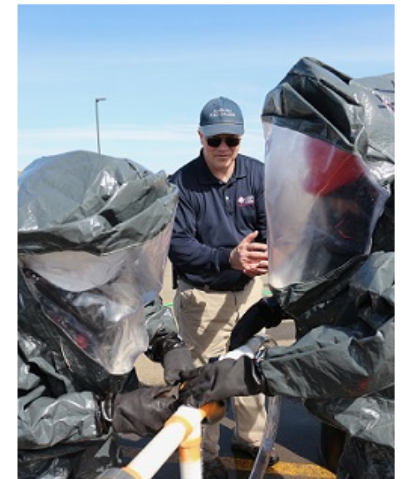
Other Links & Resources

## About the Worker Training Program (WTP)

### Training for Workers in Hazardous Environments

WTP provides grants to nonprofit organizations, including labor-based health and safety organizations and academic institutions, so they can deliver training to a variety of workers who may face a hazardous work environment. Training is provided to workers across many occupational sectors, such as:

- Environmental cleanup workers
- First responders
- Health care employees
- Industrial or construction workers
- Law enforcement officers



[https://www.niehs.nih.gov/careers/hazmat/about\\_wetp/index.cfm](https://www.niehs.nih.gov/careers/hazmat/about_wetp/index.cfm)

Thanks – we look forward to your questions



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