



American College
of Medical Toxicology

Medical and Public Health Considerations of COVID-19

Web-based Series Addressing Emerging Topics of Importance



MASKS & COVID 19: N95, SURGICAL MASKS & SCARVES UPDATES FROM THE FRONT LINES

APRIL 8, 2020

WEBINAR SERIES PARTNERS

American Academy of Clinical Toxicology (AACT)

American Academy of Emergency Medicine (AAEM)

American Association of Poison Control Centers (AAPCC)

American College of Medical Toxicology (ACMT)

Asia Pacific Association of Medical Toxicologists (APAMT)

European Association of Poison Centers and Clinical Toxicologists (EAPCCT)

Middle East & North Africa Clinical Toxicology Association (MENATOX)

TELECONFERENCE | APRIL 9, 2020 VIRUSES AND OTHER KILLERS

8 – 9 a.m. *People are Dying; Move Fast and God Bless Everyone: Chloroquine in the Age of Coronavirus*

Sarah Watkins, D.O., Assistant Medical Director, West Texas Regional Poison Center, University Medical Center of El Paso; Assistant Professor, Department of Emergency Medicine, Assistant Director of Clinical Services, Medical Toxicology, Texas Tech University Health Sciences Center El Paso

9 – 10 a.m. *COVID-19 Personal Protective Equipment (PPE): When is Enough, Enough? Will There be Enough?*

Stephen W. Borron, M.D., M.S., FAACT, FACEP, FACMT, Professor, Department of Emergency Medicine, Medical Toxicology, Texas Tech University Health Sciences Center El Paso; Medical Director, West Texas Regional Poison Center, University Medical Center of El Paso; Medical Director, Southwest Center for Pediatric Environmental Health

10 – 11 a.m. *Pesticides: Pest Pillagers, Plagues and Poisons*

Kim Aldy, D.O., M.S., M.B.A., Medical Toxicology Fellow Physician, University of Texas Southwestern Medical Center, Dallas, Texas



Registration Required: <https://ttuhscep.webex.com/ttuhscep/k2/j.php?MTID=t3cc59fec9a217a277c38ac7671a0fdbb>

MEDICAL AND PUBLIC HEALTH CONSIDERATIONS OF COVID-19 WEBINAR SERIES

April 8, 2020

**Masks and Virus: N95s, Surgical Masks and PAPRs;
Updates From the Front Lines: Tehran, New
Orleans & New York**

April 1, 2020

**ACEs/ARBs, NSAIDS, Remdesivir & Updates from
the Front Lines**

March 25, 2020

**Medical Experts Explain the Use and Potential
Adverse Effects of Chloroquine &
Hydroxychloroquine for COVID-19**

www.acmt.net/COVID-19_Webinars.html

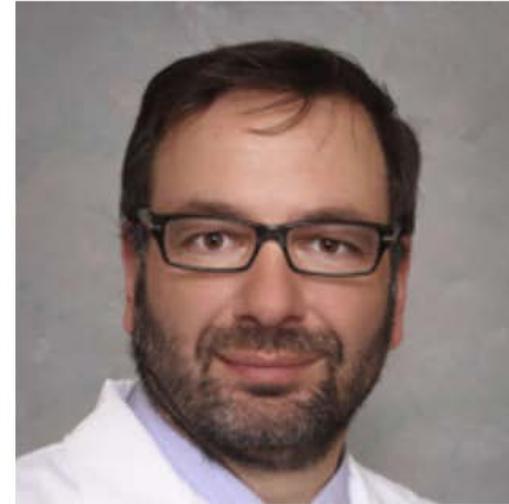
Moderators



Paul Wax, MD, FACMT
Executive Director,
American College of Medical
Toxicology (ACMT)



Ziad Kazzi, MD, FACMT
President, Middle East &
North Africa Clinical
Toxicology Association
(MENATOX),
Board Member, ACMT



Mark Kostic, MD, FAACT
President, American
Academy of Clinical
Toxicology (AACT)

CONFLICT OF INTEREST

NONE OF OUR SPEAKERS HAVE ANY CONFLICTS OF
INTEREST TO DISCLOSE

MASKS AND COVID19

N95, SURGICAL MASKS AND SCARVES

Joseph A. Cocciardi, PhD MS

CIH, CSP, RS/REHS

jcocciardi@cocciardi.com



The current COVID-19 pandemic is a fluid situation. As new information about the virus becomes available, guidance for protecting healthcare workers changes.

Does an N-95 really work?



Can you reuse N-95?

Are PAPR better than N-95?

PPE AND RESPIRATORS

Proper use of PPE and Respirators is **critical** for healthcare workers.

95% of airborne particles are prevented from getting through an N95 Respirator
→ *Another 10-15% of particles can penetrate the mask around breaches in the seal**

Even if PPE is used correctly, you are still at risk of exposure if removed incorrectly*

A respirator is only as good as the seal- Fit Testing is a critical part of use

Are gowns/caps needed?

REGULATIONS AND GUIDANCE



“How to Use Respirators Safely”



“When to Use Respirators Relative to Infectious Diseases”



“What is a Respirator?”



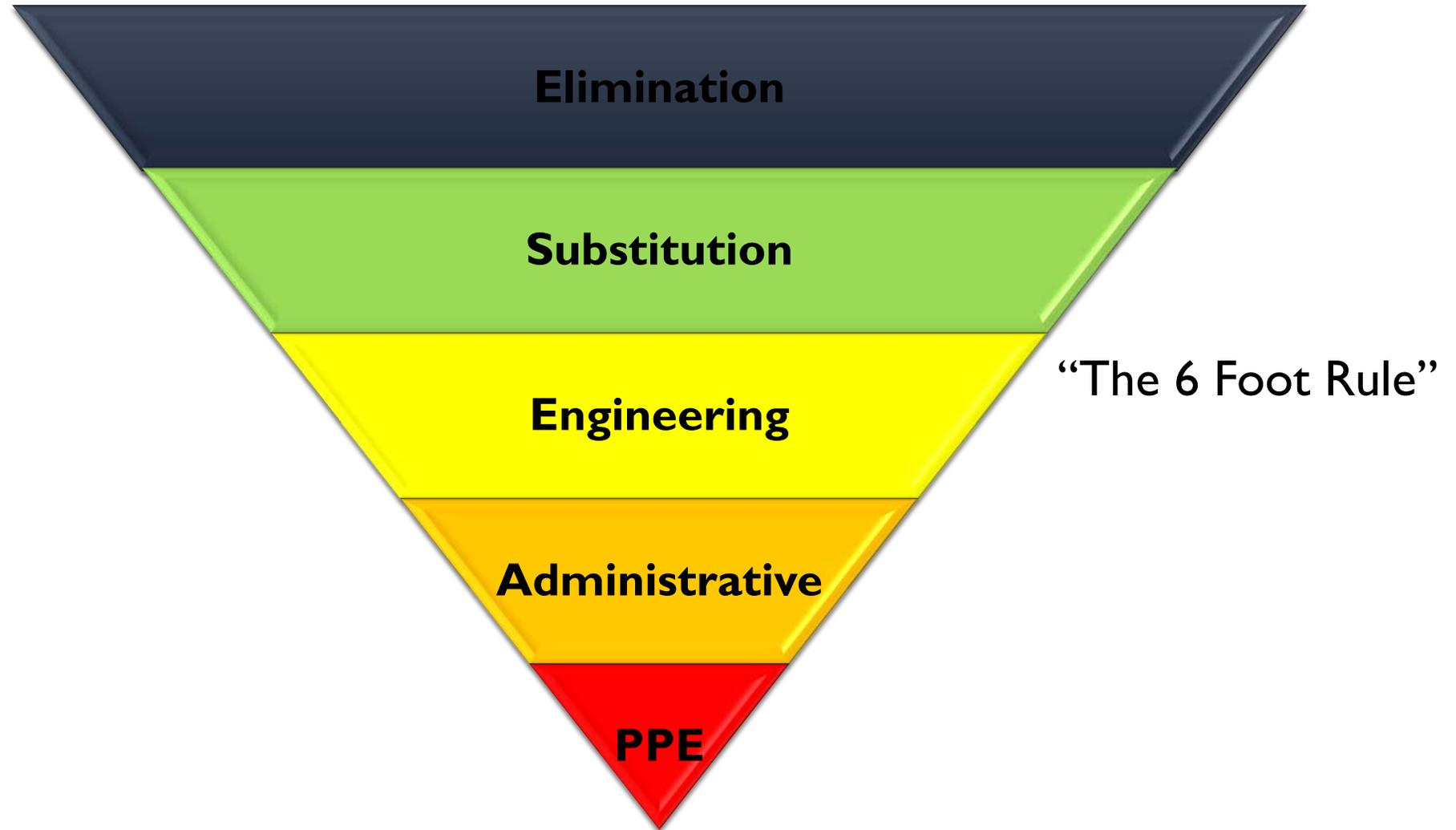
“What is a Surgical Mask?”

HIERARCHY OF HAZARD CONTROLS

Most Effective



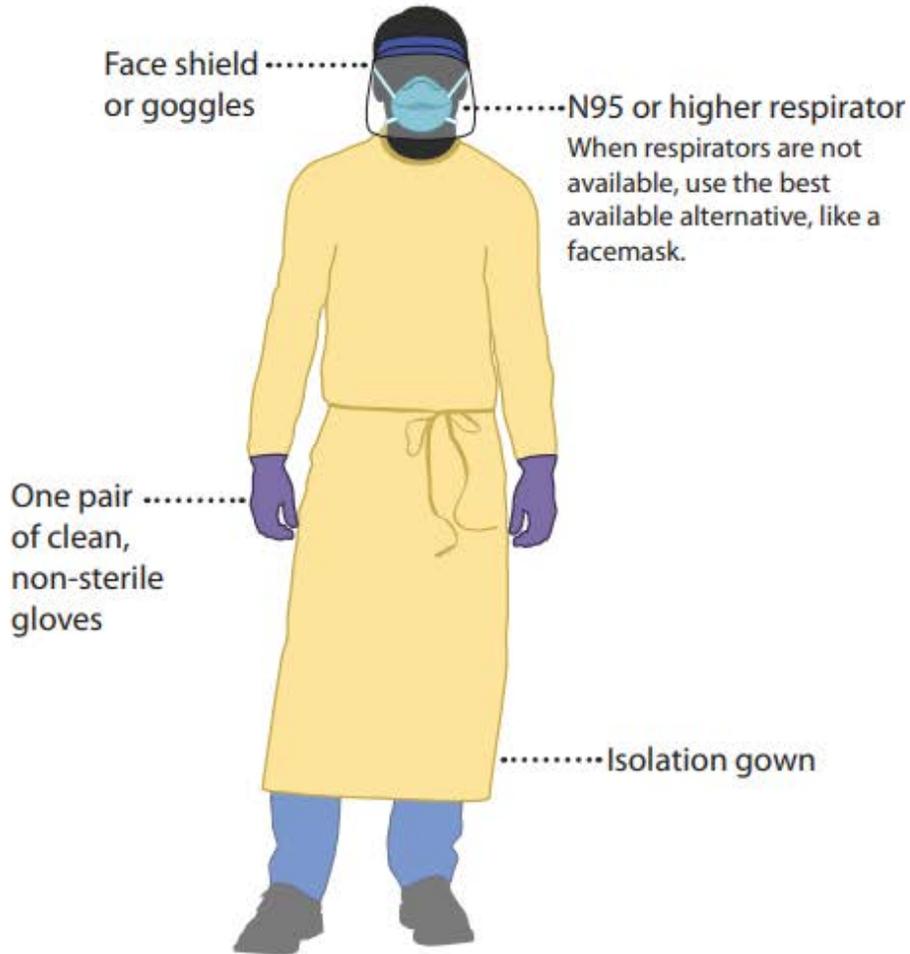
Least Effective



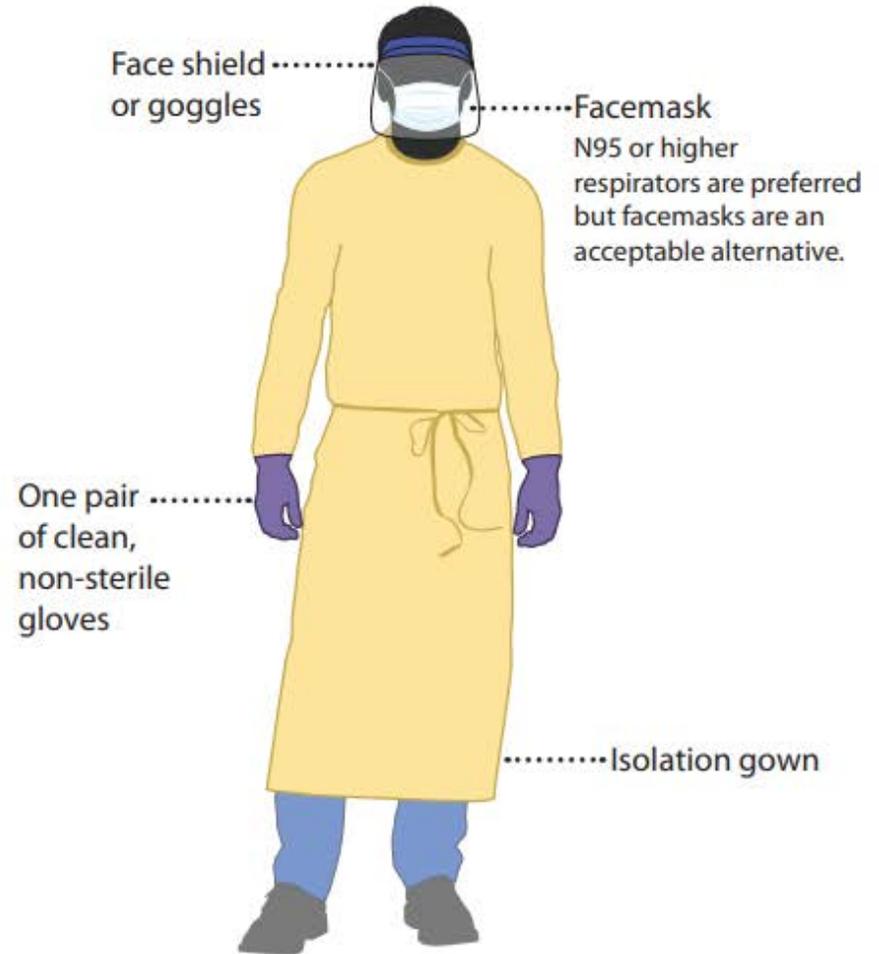
PPE HAZARD ASSESSMENT - CDC



Preferred PPE – Use N95 or Higher Respirator



Acceptable Alternative PPE – Use Facemask



Do facemasks protect me?

BODY PROTECTION

Selection

- Exposure type (spray/splash vs. touch), durability, comfort

Other Standards
*European Union
*Australia

Fluid Resistance

- Synthetic Blood Penetration (ASTM F-1670)
- Viral Penetration (ASTM F-1671)

Performance (ASTM F2407)

- Tensile Strength
- Tear Resistance
- Seam Strength
- Breathability

Liquid Barrier Performance (ANSI/AAMU PB70-03)

- Level 1 (minimal risk) to Level 4 (high risk)

FACE AND EYE PROTECTION



- Faceshields protect face, nose, mouth and eyes
- Should cover forehead and extend below chin



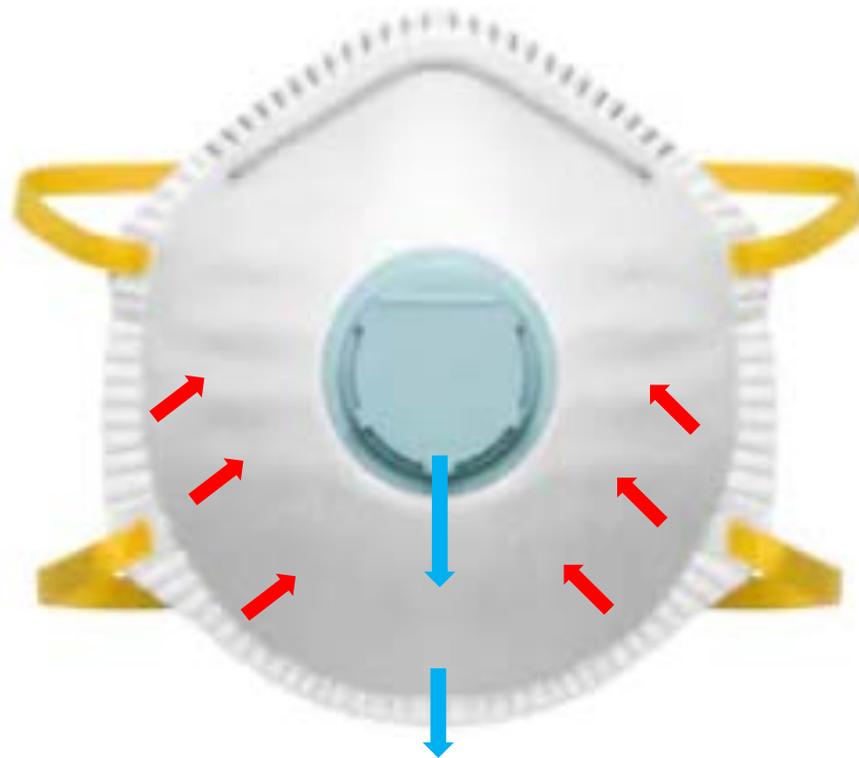
- Masks cover nose and mouth
- Prevent fluid contact
- **NOT CONSIDERED RESPIRATORS**



- Protect eyes
- Glasses are not a suitable replacement for goggles

AIR PURIFYING RESPIRATOR: HOW THEY WORK

- A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element. It can be negative (N-95) or positive (PAPR) pressure.



Disadvantages:

- *Filter change-out*
- *Not for O₂ deficient areas*

AIR PURIFYING RESPIRATORS

Tight Fitting Respirators



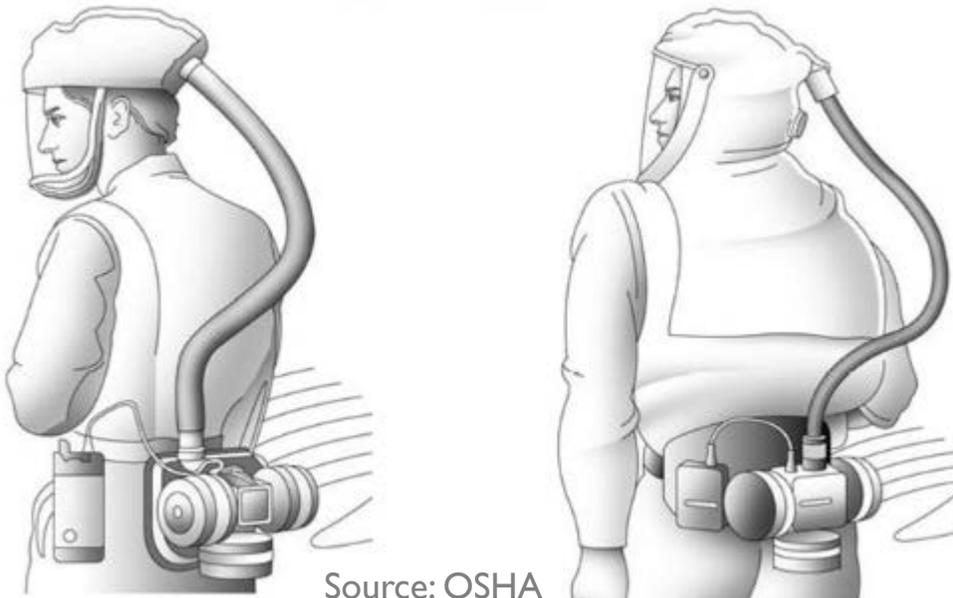
Loose Fitting Respirators



Does a loose respirator work?
Only if positive pressure.

POWERED AIR PURIFYING RESPIRATOR

- An air-purifying respirator that uses a battery-powered fan to force the ambient air through air-purifying elements to the inlet covering.
- Tight fitting mask, or loose-fitting hoods/helmets are available
- Purified air is provided under positive pressure



Source: OSHA

Advantages:

- Higher protection
- Comfort
- Fit testing not always required
- Facial hair acceptable (loose)

Disadvantages:

- Cumbersome
- Battery charging
- Noise
- Not for O₂ deficient areas
- Filter change-out

APR FILTERS AND CARTRIDGES

- Must be contaminant-specific
- Combination filter/cartridges are available
- Color coded
- Respirator brand/model-specific
- NIOSH-certified
- Changeout schedule

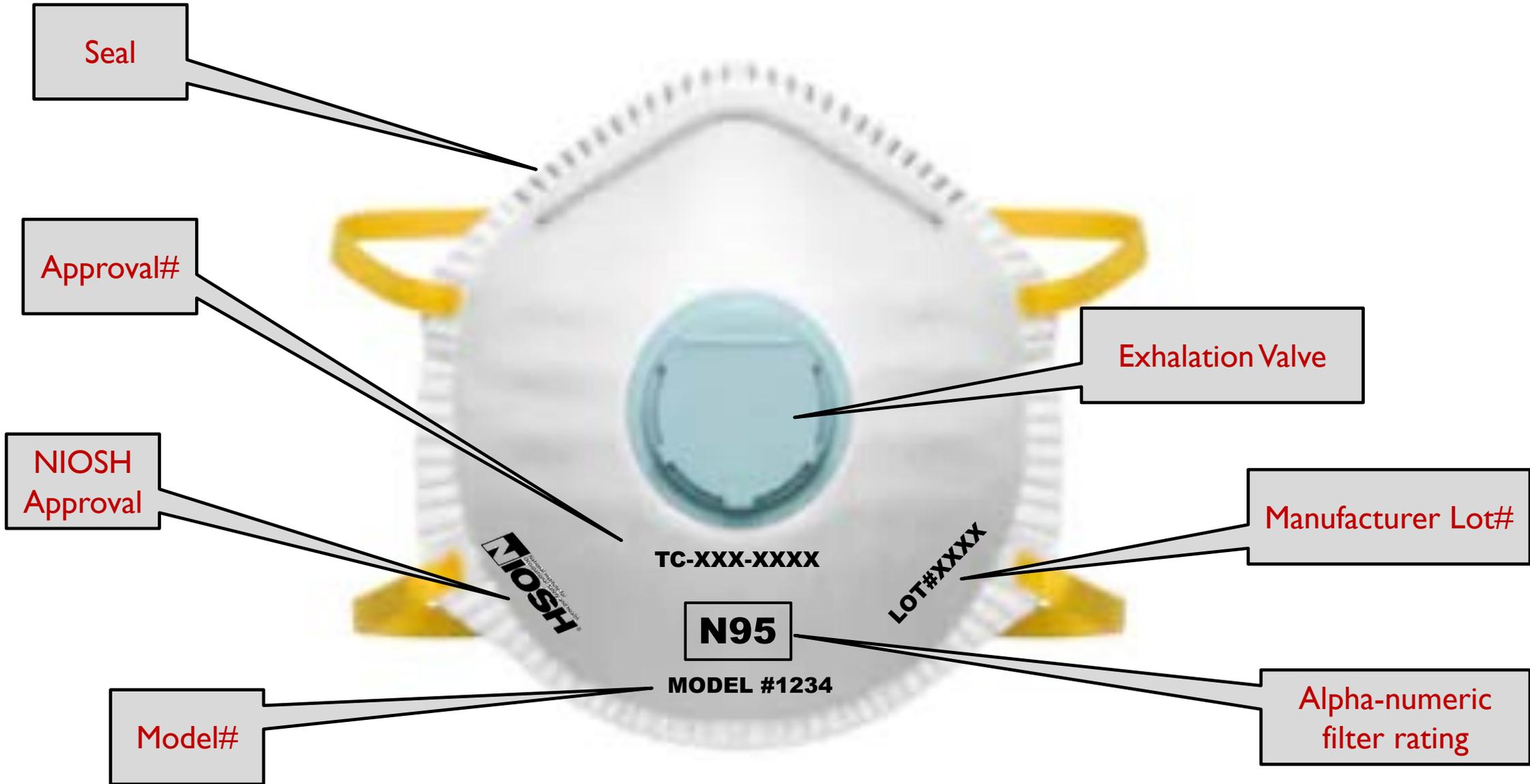




FILTERING FACEPIECE / DUST MASKS / N95

- NIOSH Certified
- Tight-Fitting, Air-Purifying
- Limitations:
 - Not for use in Oxygen deficient areas
 - Disposable, limited use





Filter Degradation



Not Resistant to Oil



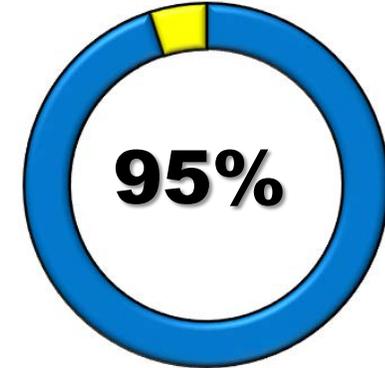
Resistant to Oil



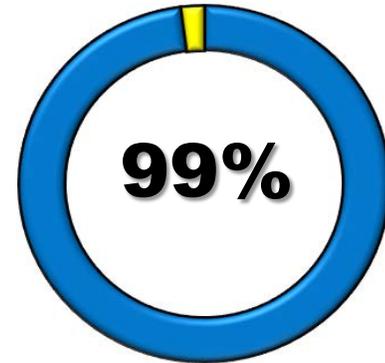
Oil Proof



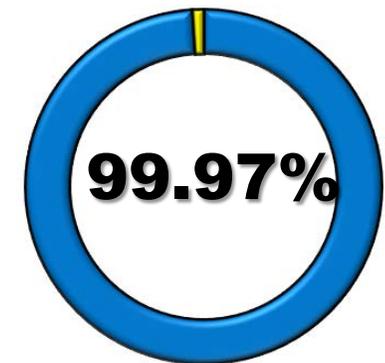
Particulate filter efficiency



95 Series



99 Series



100 Series

Surgical masks are not Respirators however they are “Engineering Controls



RESPIRATOR TYPE	ASSIGNED PROTECTION FACTOR
Half Face APR	10:1
Loose Fitting PAPR	25:1
Full Face APR	50:1
Supplied Air Respirator w/ Full Facepiece	1,000:1 (Continuous Flow)
Supplied Air Respirator w/ Full Facepiece	10,000:1 (Pressure-Demand)

**RESPIRATOR
SELECTION:
PROTECTION
FACTORS**

PRIOR TO USING A RESPIRATOR, EMPLOYEES MUST BE:

1. Medically Cleared



NOT REQUIRED FOR
VOLUNTARY USE

2. Trained



ANNUALLY

3. Fit Tested

QLFT ↔ QNFT



ANNUALLY*

*CURRENT OSHA EXEMPTION

N95 USE: SEAL CHECK

- User seal check each time equipment is donned
 - Positive pressure
 - Negative pressure

(MUST HAVE LESS THAN 24 HOURS OF FACIAL HAIR GROWTH!)

↓ Negative Pressure ↓



↓ Positive Pressure ↓



Jurisdiction¹	Performance Standard	Acceptable product classifications	Standards/ Guidance Documents	Protection Factor \geq 10
Australia	AS/NZS 1716:2012	P3, P2	AS/NZS 1715:2009	YES
Brazil	ABNT/NBR 13698:2011	PFF3, PFF2	Fundacentro CDU 614.894	YES
Europe	EN 149-2001	FFP3, FFP2	EN 529:2005	YES
Japan	JMHLW-2000	DS/DL3 DS/DL2	JIS T8150: 2006	YES
Korea	KMOEL-2017-64	Special 1st	KOSHA GUIDE H-82-2015	YES
Mexico	NOM-116-2009	NI00, PI00, RI00, N99, P99, R99, N95, P95, R95	NOM-116	YES

¹Canada is not listed because it allows self-declaration to NIOSH or equivalent standards.

NIOSH: OPTIMIZATION STRATEGIES (PRIORITIZED)

- Annual Fit Testing Suspended (OSHA)
- Extended Use of Expired Respirators
- Use of Respirators Approved in Other Countries
- Limited Re-Use of N-95 Respirators
- Use of Expired Respirators (Other Countries)
- Use of Community Face Covering

WHEN NO RESPIRATORS ARE LEFT?

- Administrative Controls:
 - Exclude Those at Risk
 - Utilize Those with Immunities
- Engineering Controls:
 - Ventilation



“HOW TO MAKE YOUR OWN FACE COVERING”

- For Difficult Social Distancing Situations
- The “Jenny Cocciardi” Science Fair Project

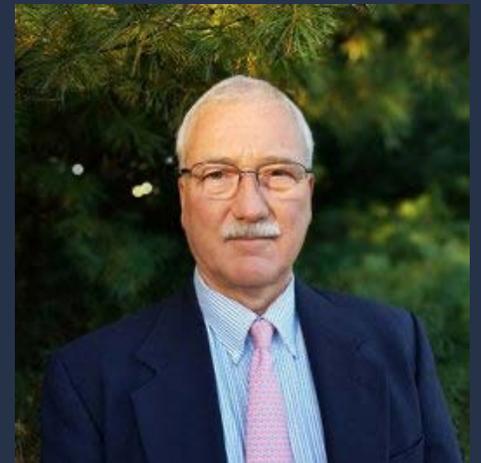
THANK YOU

PLEASE REACH OUT WITH ANY QUESTIONS

Joseph A. Cocciardi, PhD MS

CIH, CSP, RS/REHS

jcocciardi@cocciardi.com



UPDATES FROM THE FRONT LINE



Hossein Hassanian-Moghaddam, MD FACMT

- Clinical Toxicologist, Shahid Beheshti University of Medical Sciences
- Tehran, Iran

Lisa Moreno, MD MS MSCR FAAEM FIFEM

- President-Elect, American Academy of Emergency Medicine (AAEM)
- Professor of Emergency Medicine, Director of Research and Director of Diversity, Section of Emergency Medicine, Louisiana State University Health Sciences
- New Orleans, LA

UPDATES FROM THE FRONT LINE



Hossein Hassanian-Moghaddam, MD FACMT

- Clinical Toxicologist, Shahid Beheshti University of Medical Sciences
- Tehran, Iran

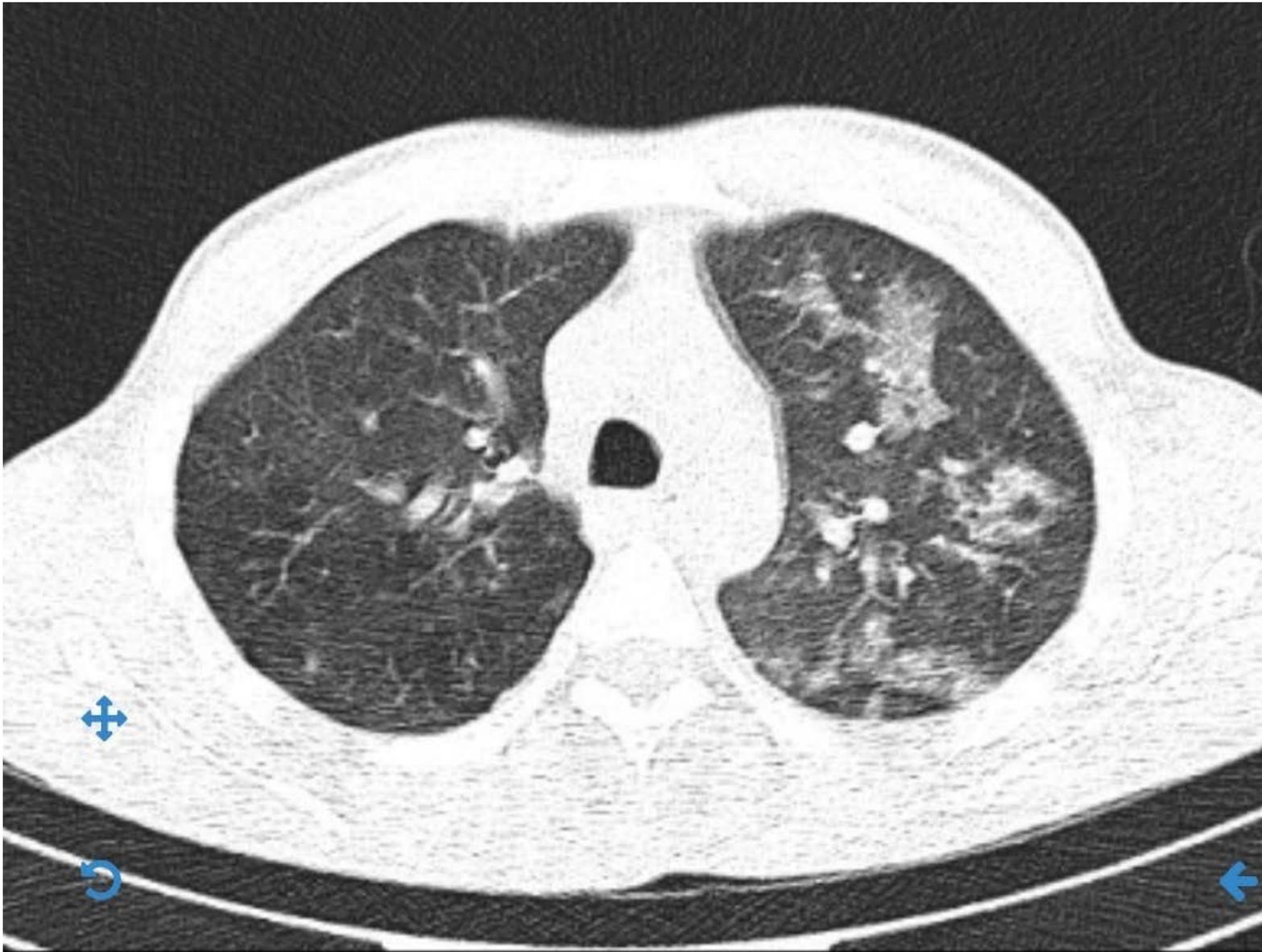
VIDEO SHOWING
ILLICIT
PRODUCTION OF
ALCOHOL USING
INDUSTRIAL
ALCOHOL THAT
CONTAIN
METHANOL

https://www.aparat.com/v/hZYHT/%D9%86%D8%AD%D9%88%D9%87_%D8%B3%D8%A7%D8%AE%D8%AA_%D8%A7%D9%84%DA%A9%D9%84_%D8%B3%D9%81%DB%8C%D8%AF_%D8%B7%D8%A8%DB%8C_%D8%AA%D9%82%D9%84%D8%A8%DB%8C_%D8%AF%D8%BI_%D8%A2%D8%B0%D8%BI%D8%A8%D8%A7%DB%8C%D8%AC%D8%A7%D9%86

برند تریتاسپت
وجود متانول



HAND SANITIZERS CONTAIN
METHANOL



CT SCAN OF
COVID-19
PATIENT
POISONED WITH
METHANOL

UPDATES FROM THE FRONT LINE



Lisa Moreno, MD MS MSCR FAAEM FIFEM

- President-Elect, American Academy of Emergency Medicine (AAEM)
- Professor of Emergency Medicine, Director of Research and Director of Diversity, Section of Emergency Medicine, Louisiana State University Health Sciences
- New Orleans, LA



Q&A

ON-DEMAND RESOURCES

- All webinars are recorded and posted to the ACMT website
- PDFs of webinar slides are also available on the website
- Questions? Email: info@acmt.net

www.acmt.net/COVID-19_Webinars

NEXT WEBINAR



Topic To Be Announced
on Monday 4/13



Wednesday, April 15, 2020
@ 3:00 PM EDT