

Continuidad del negocio ante el COVID-19: ¿Mascarilla o respirador?



3M Science.
Applied to Life.™



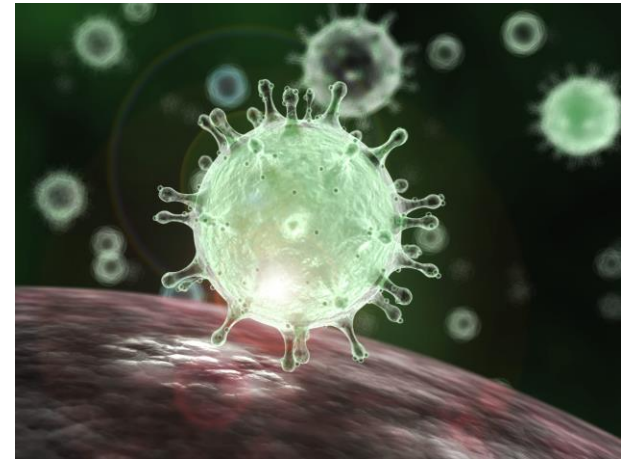
AGC
CAPÍTULO DE PUERTO RICO
LA ASOCIACIÓN DE LA CONSTRUCCIÓN



Martes 28 de abril
9:50 AM

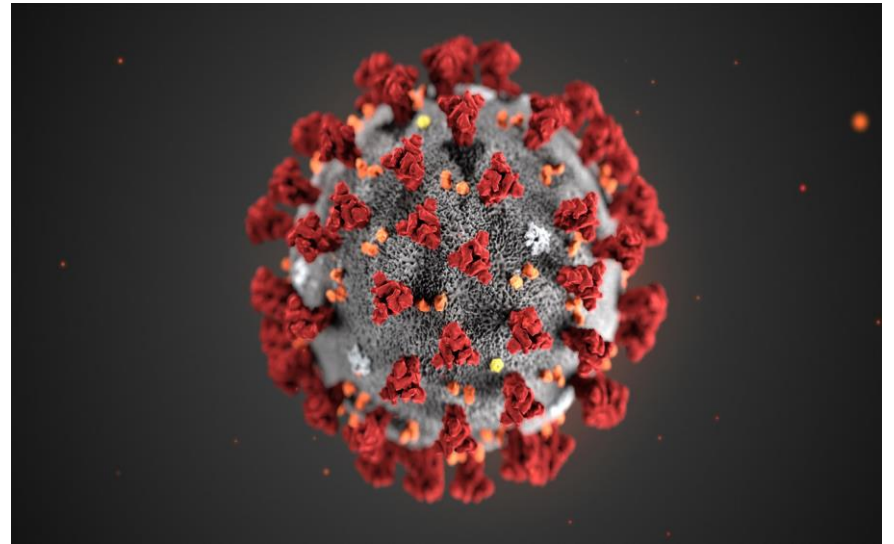
2019 Novel Coronavirus

- Coronaviruses are a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats and bats.
- The now identified novel coronavirus, first reported on December 31, that is causing an outbreak in Wuhan. Following lab tests that ruled out SARS-CoV, MERS-CoV, avian influenza, adenovirus, and influenza, Chinese authorities announced that they had isolated a novel coronavirus on January 7.



COVID-19

- **On February 11, 2020 the World Health Organization announced an official name for the disease that is causing the 2019 novel coronavirus outbreak (SARS-CoV-2), COVID-19.**

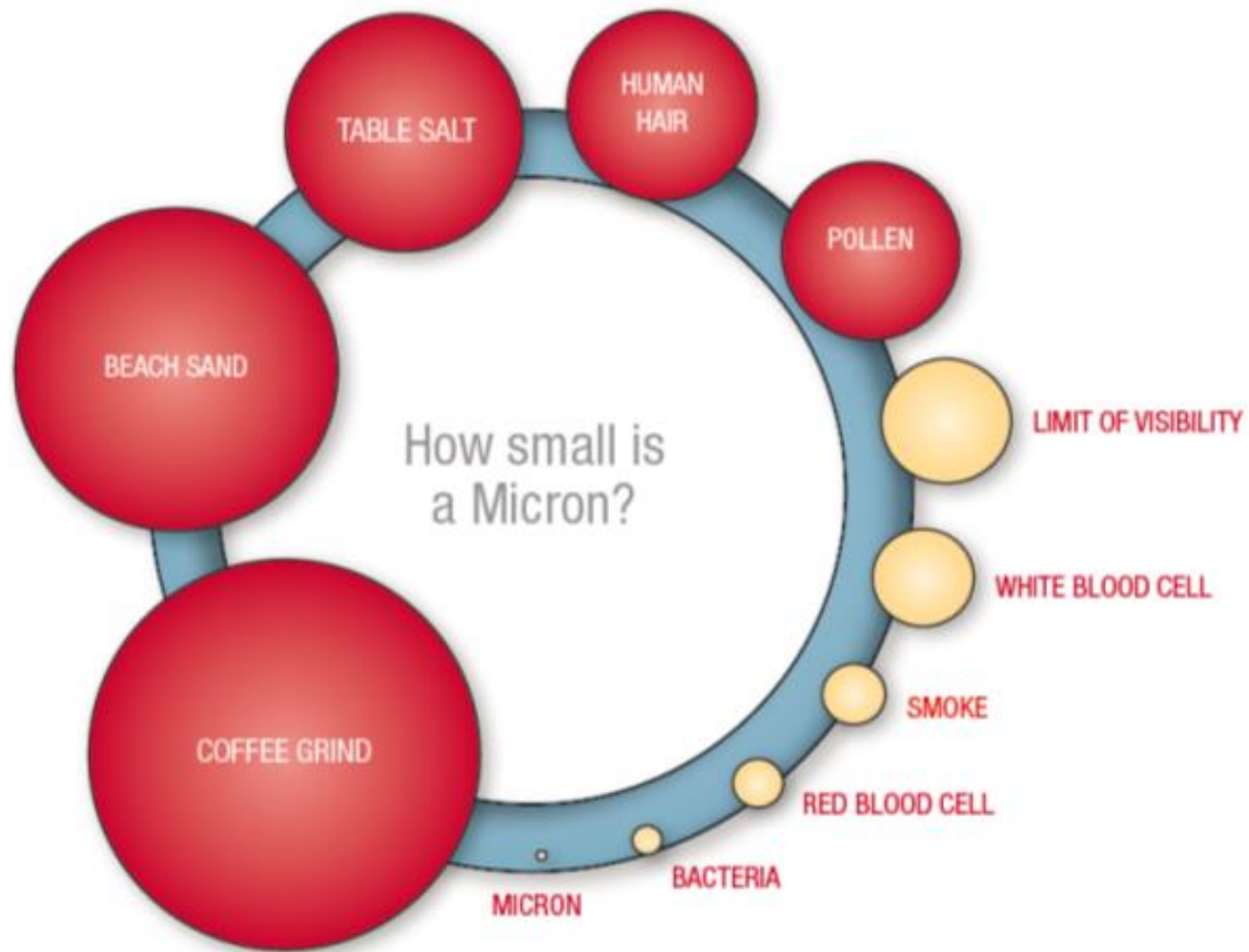


Bioaerosols

- Microorganisms or particles, gases, vapors or fragments of biological origin that are in the air.
- Bioaerosols are everywhere in the environment.
- Some bioaerosols, when breathed in, can cause diseases including pneumonia, asthma, rhinitis and respiratory infection.
- Some bioaerosols can also infect the eyes and via ingestion.

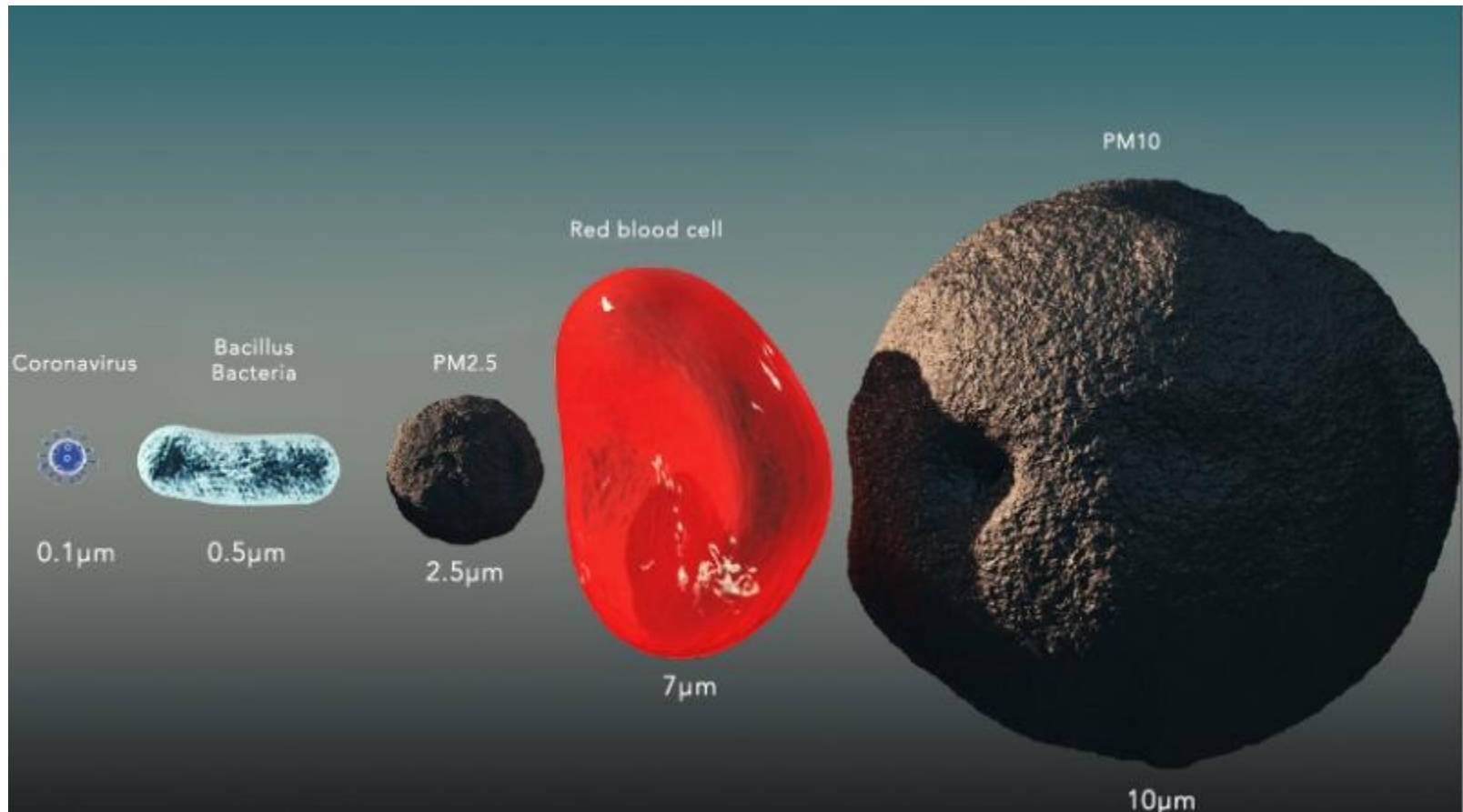


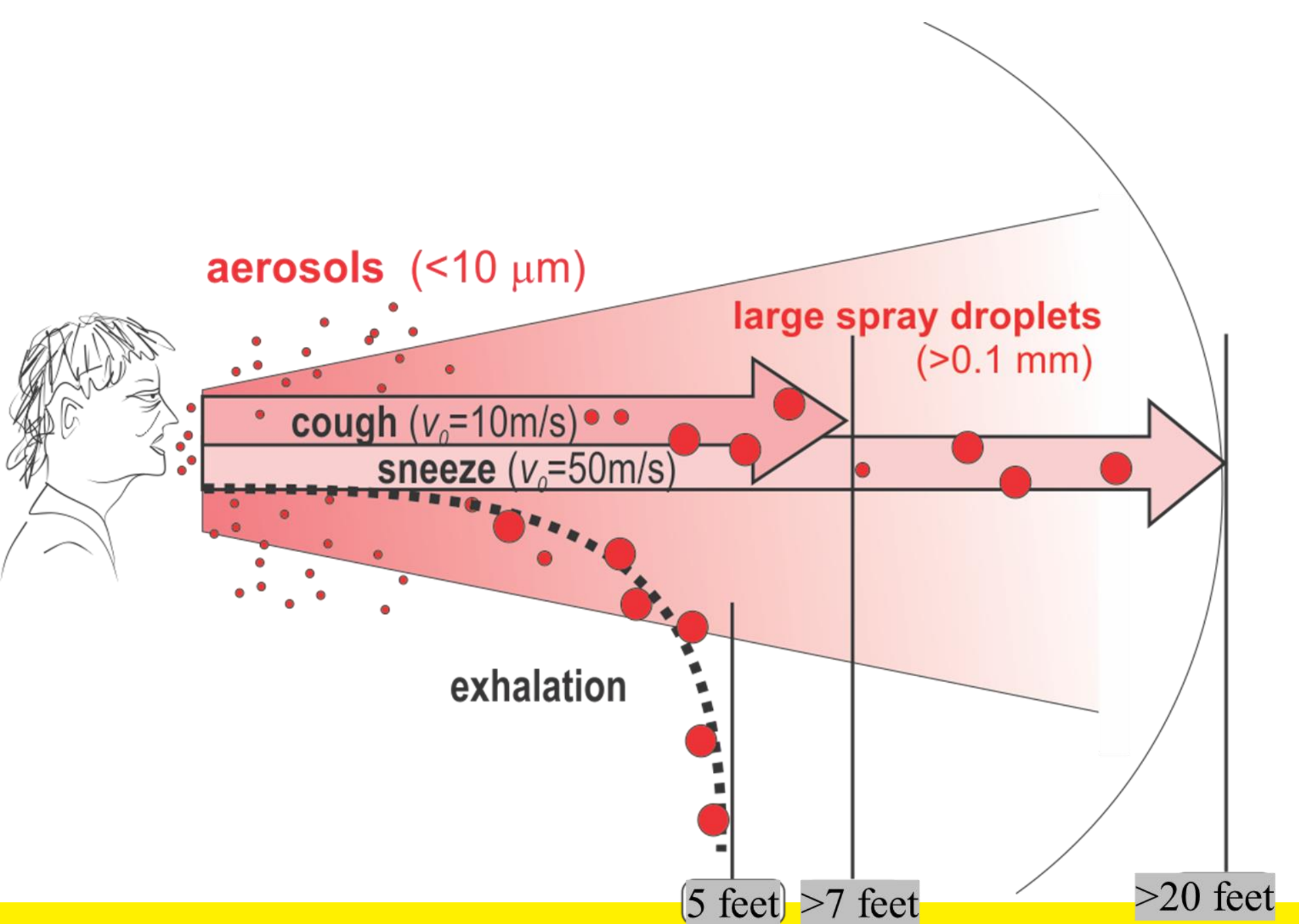
Particle Size Comparison

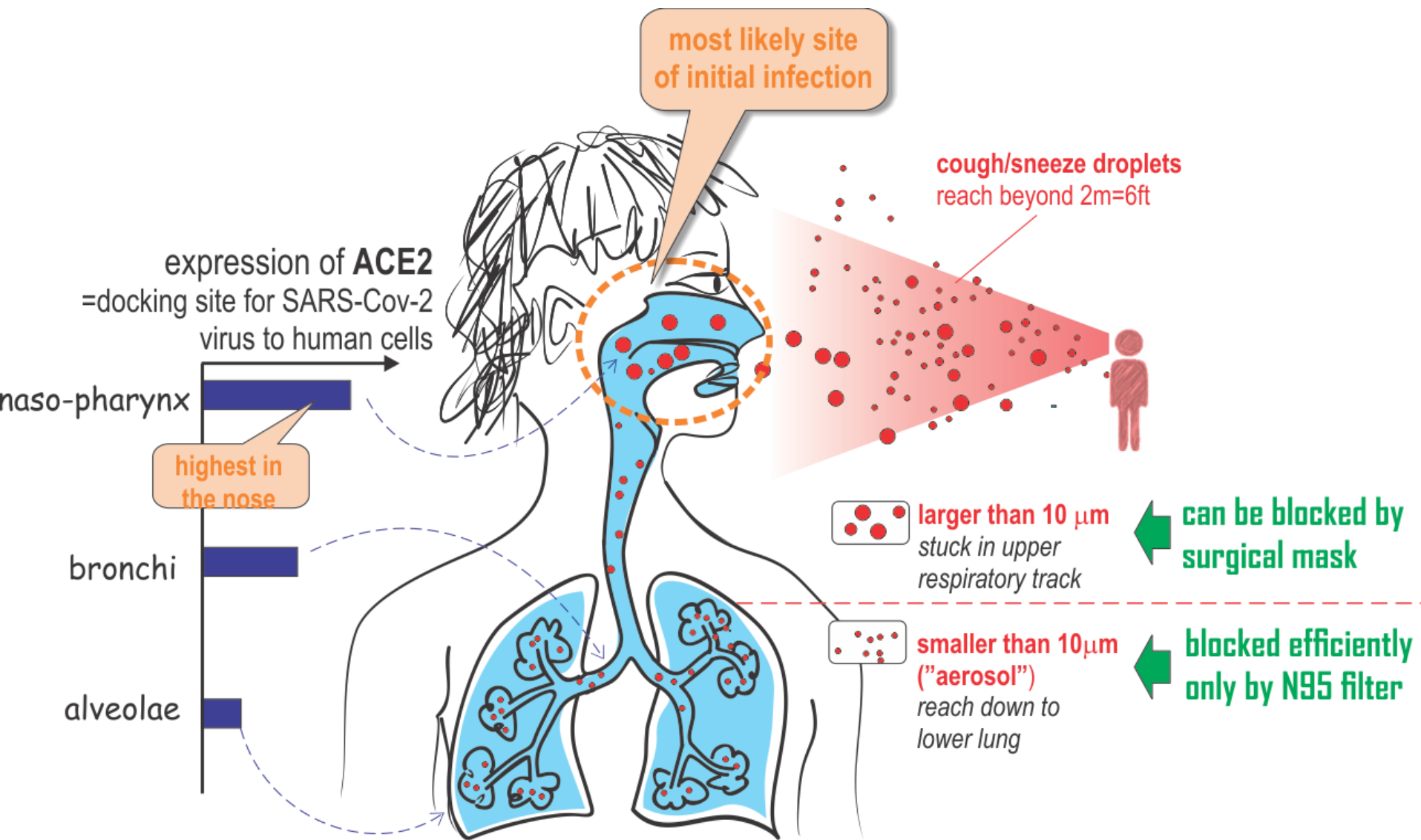


* Relative size of an item as compared to other items.
Size and scale are approximate.

Particle Size Comparison (cont.)









**Mask vs.
respirator**

US Regulating Bodies



NIOSH

- The National Institute of Occupational Safety and Health (NIOSH) tests and approves respirators in the US
- Testing/certification is based on the respirators physical and performance characteristics



FDA

- Surgical masks and respirators are cleared for use as medical devices by the U.S. Food and Drug Administration (FDA), or equivalent agencies



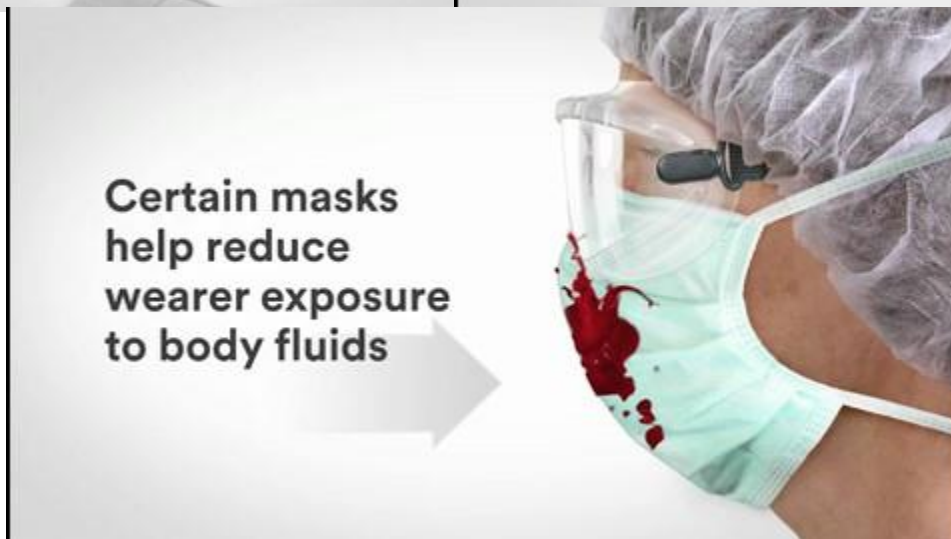
NIOSH Certified

N95 Respirators

*Surgical N95
Respirators*

Surgical Masks

FDA Cleared



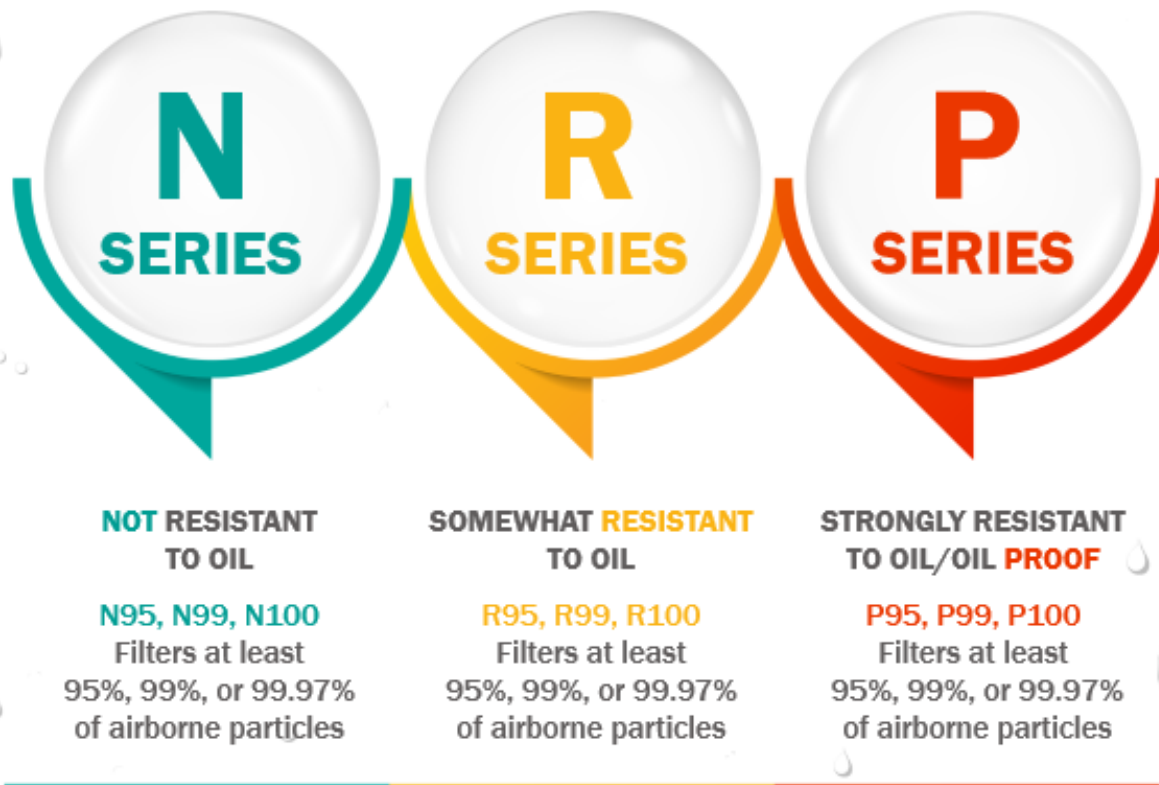


Properly fitted particulate respirators fit tightly

Creating a seal
between the face
and the respirator

NIOSH RESPIRATOR FILTER CLASSES

NIOSH classifies the filtering media in respirators based on its resistance to oil and its particle filtering efficiency. The resistance to oil is designated as “N”, “R”, or “P”. Particle filtering efficiency is designated “95”, “99”, or “99.97”.



Required Labeling of NIOSH-Approved N95 Filtering Facepiece Respirators

Depiction of N95 Respirator and the Important Labeling

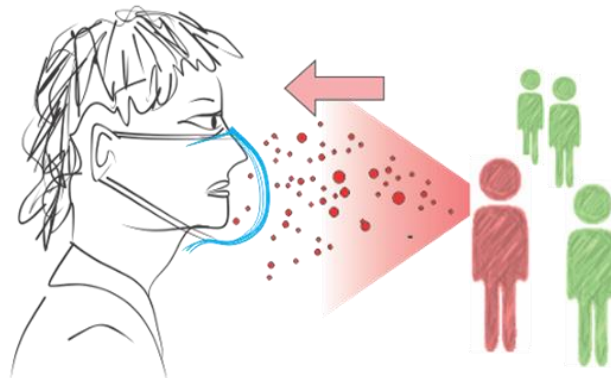
For more information about NIOSH-Approved respirators, go to: <http://knowits.NIOSH.gov>



Exterior View



protecting yourself
(inward protection)



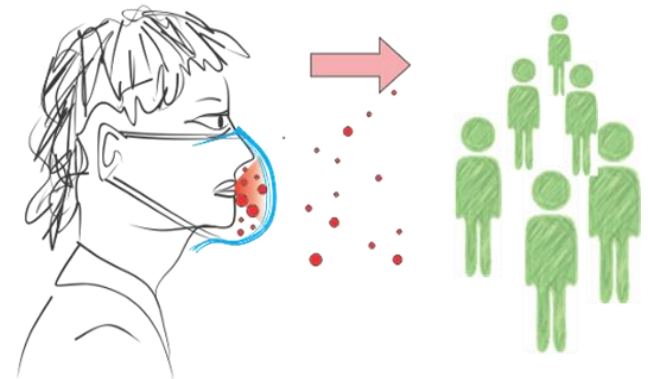
particles leaked through mask	particles produced in environment
33	100 (reference value)
25	
1	

TEA CLOTH (home made)

SURGICAL MASK

N95 or equivalent

protecting others
(outward protection)



particles produced by coughing	particles leaked into environment
100 (reference value)	90
	50
	30

Three Key Factors Required for a Respirator to be Effective



Correct*

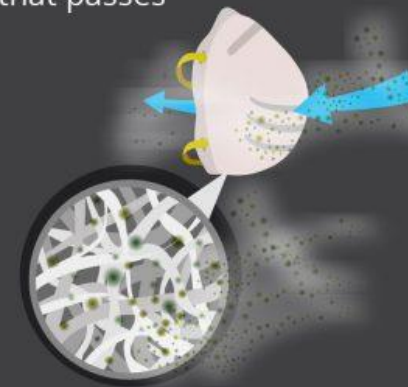


Incorrect

- ① The respirator must be put on correctly and worn during the exposure.
- ② The respirator must fit snugly against the user's face to ensure that there are no gaps between the user's skin and respirator seal.



- ③ The respirator filter must capture more than 95% of the particles from the air that passes through it.



*If your respirator has a metal bar or a molded nose cushion, it should rest over the nose and not the chin area.

Disposable Respirators Decon



3M is collaborating with several sterilization companies and institutions that are investigating ways for hospitals to safely decontaminate 3M's N95 FFRs in line with the CDC guidance on Decontamination and Reuse of Filtering Facepiece Respirators.



Four key aspects of successful decontamination reprocessing:

- inactivate the target organism, such as the virus that causes COVID-19;
- not damage the respirator's filtration;
- not affect the respirator's fit;
- and be safe for the person wearing the respirator.

COVID-19 EMERGENCY USE AUTHORIZATIONS

Emergency Use Authorization (EUA)

- Allow unapproved medical products or unapproved uses of approved medical products to help strengthen the nation's public health
- When no other adequate, approved, and available alternatives exist

EUAs for Personal Protective Equipment with regard to COVID-19

- Decontamination/Sterilization systems
- Face Shields
- Non-NIOSH-Approved Disposable FFRs Manufactured in China
- NIOSH-Approved Air Purifying Respirators for use in Health Care Settings
- Imported, Non-NIOSH-Approved Disposable FFRs

"On April 3, 2020, in response to this evolving public health emergency and continued concerns about filtering facepiece respirator (FFR or respirator) availability, FDA concluded based on the totality of scientific evidence available that **certain product classifications for imported disposable FFRs that are manufactured in China and not NIOSH-approved** and for which data exists that supports the respirators' authenticity, **are appropriate to protect the public health or safety...**"

Table 1. Respirators Approved Under Standards Used in Other Countries That Are Similar to NIOSH-Approved N95 Filtering Facepiece Respirators

Country	Performance Standard	Acceptable Product Classification	May Be Used in Lieu of NIOSH-Certified Products Classified as
Australia	AS/NZS 1716:2012	P2	N95
		P3	N99 or lower
Brazil	ABNT/NBR 13698:2011	PFF2	N95
		PFF3	N99 or lower
People's Republic of China	GB 2626-2006 GB 2626-2019	KN/KP95	N95
		KN/KP100	N95
Europe	EN 149-2001	P2	N95
		P3	N99 or lower

Table 1. Respirators Approved Under Standards Used in Other Countries That Are Similar to NIOSH-Approved N95 Filtering Facepiece Respirators

Country	Performance Standard	Acceptable Product Classification	May Be Used in Lieu of NIOSH-Certified Products Classified as
Japan	JMHLW-2000	DS/DL2	N95
		DS/DL3	N99 or lower
Korea	KMOEL-2017-64	Special 1st	N95
Mexico	NOM-116-2009	N95	N95
		R95	R95 or lower
		P95	P95 or lower
		N99	N99 or lower
		R99	R99 or lower
		P99	P99 or lower
		N100	N100 or lower
		R100	R100 or lower
		P100	P100 or lower

Shelf life – Disposable Respirators



Storage Temperature Range



Storage Maximum Relative Humidity



Use by Date



Date of Manufacture



Manufacturer's Lot Number relevant to the device bearing the symbol



Manufacturer

Reusable Respirators

3M 6100 (Small)
3M 6200 (Medium)
3M 6300 (Large)



3M 6501 (Small)
3M 6502 (Medium)
3M 6503 (Large)



3M 7501 (Small)
3M 7502 (Medium)
3M 7503 (Large)



Filters



3M 2071
P95 Particulate Filter



3M 2091
P100 Particulate Filter



3M 7093
P100 Particulate Filter

Filters (cont.)

3M™ Particulate Filters 2000 Series



- Lightweight and easy to breathe through
- Assortment of filters available for a wide range of applications
- Easier breathing through new 3-layer advanced Electret Filter Media in 2200 Series Filters

Part Number	Description
2071	Particulate Filter, P95
2076HF	Particulate Filter, Hydrogen Fluoride/P95, with Nuisance Level Acid Gas Relief*
2078	Particulate Filter, P95, with Nuisance Level Organic Vapor/Acid Gas Relief*
2091	Particulate Filter, P100
2096	Particulate Filter, P100, with Nuisance Level Acid Gas Relief*
2097	Particulate Filter, P100, with Nuisance Level Organic Vapor Relief*
2291	Advanced Particulate Filter, P100
2296	Advanced Particulate Filter, P100, with Nuisance Level Acid Gas Relief*
2297	Advanced Particulate Filter, P100, with Nuisance Level Organic Vapor Relief*

3M™ Particulate Filter 7093, P100

- Unique, spring-loaded filter cover design simplifies negative pressure user seal checks
- Swept-back design provides enhanced field of view and greater comfort
- 7093C offers a lightweight, low profile design that combines P100 filtration with carbon-loaded features found in heavier combination cartridge products




7093	Particulate Filter, P100
7093B	Particulate Filter, P100, Bulk
7093C	Cartridge/Filter, Hydrogen Fluoride, P100 with Nuisance Level Organic Vapor and Acid Gas Relief*

Cartridges

3M™ Combination Cartridges/P100 Particulate Filters 6000 Series



- Particulate filter is permanently attached to cartridge for easy, one-step assembly
- Unique design for enhanced comfort and visibility

60921		Cartridge/Filter, Organic Vapor/P100
60922		Cartridge/Filter, Acid Gas/P100**
60923		Cartridge/Filter, Organic Vapor/Acid Gas/P100**
60924		Cartridge/Filter, Ammonia/Methylamine/P100
60925		Cartridge/Filter, Formaldehyde/Organic Vapor/P100
60926		Cartridge/Filter, Multi-Gas/Vapor/P100**
60928		Cartridge/Filter, Organic Vapor/Acid Gas/P100**†
60929		Cartridge/Filter, Mercury Vapor/Chlorine Gas/P100

Cleaning & Disinfecting – Reusable Face Pieces

Possible disinfection methods:

- Sodium hypochlorite solution (at a free chlorine concentration of 5,000 ppm) with 1-minute contact time
- 70% Isopropanol solution with 5-minute contact time

Note: Soaking in IPA solution resulted in degradation of inhalation valves after ~ 20 cycles, for some 3M facepieces. Pay close attention to this area during inspection, for all facepieces.

If an EPA-registered disinfectant is required please consider the following:

- 3M™ Neutral Quat Disinfectant Cleaner Concentrate 23A (EPA Reg. No. 47371-129-10350)

Cleaning & Disinfecting – Filters & Cartridges

Image				
Name	Disc Filters	Pre-Filter Pads	7093/7093C/603X	6092X/609X Cartridges
Wipe outside surface as indicated in disinfecting product user instructions with damp cloth and disinfecting solution				

Image					
Name	603	501	Pre-Filter Pad	603/501/Pre-filter Assembly	501/Pre-filter pad/cartridge Assembly
Cleaning Method	Wipe, spray or soak	Wipe, spray or soak		Wipe outside surfaces as indicated in disinfecting product user instructions with damp cloth and disinfecting solution. Do not allow disinfecting solution to reach the pre-filter.	

OSHA GUIDANCE



Worker Exposure Risk to COVID-19

Classifying Worker Exposure to SARS-CoV-2

Worker risk of occupational exposure to SARS-CoV-2, the virus that causes COVID-19, during an outbreak may depend in part on the industry type and need for contact within 6 feet of people known to have, or suspected of having, COVID-19.

OSHA has divided job tasks into four risk exposure levels, as shown below. Most American workers will likely fall in the lower exposure risk (caution) or medium exposure risk levels.

Occupational Risk Pyramid for COVID-19

VERY HIGH EXPOSURE RISK

Jobs with a high potential for exposure to known or suspected sources of COVID-19 during specific medical, postmortem, or laboratory procedures. Workers include:

- Healthcare and morgue workers performing aerosol-generating procedures on or collecting/handling specimens from potentially infectious patients or bodies of people known to have, or suspected of having, COVID-19 at the time of death.



The four exposure risk levels represent probable distribution of risk.

HIGH EXPOSURE RISK

Jobs with a high potential for exposure to known or suspected sources of COVID-19. Workers in this category include:

- Healthcare delivery, healthcare support, medical transport, and mortuary workers exposed to known or suspected COVID-19 patients or bodies of people known to have, or suspected of having, COVID-19 at the time of death.

MEDIUM EXPOSURE RISK

Jobs that require frequent/close contact with people who may be infected, but who are not known or suspected patients. Workers in this category include:

- Those who may have contact with the general public (e.g., schools, high-population-density work environments, some high-volume retail settings), including individuals returning from locations with widespread COVID-19 transmission.

LOWER EXPOSURE RISK (CAUTION)

Jobs that do not require contact with people known to be, or suspected of being, infected.

- Workers in this category have minimal occupational contact with the public and other coworkers.

For more information, see the [Guidance on Preparing Workplaces for COVID-19](#).

Guidance on Preparing Workplaces for COVID-19

OSHA 3990-03 2020

OSHA Enforcement Guidance

Interim Enforcement Response
Plan for Coronavirus Disease
2019 (COVID-19)

Enforcement Guidance for
Recording Cases of Coronavirus
Disease 2019 (COVID-19)

Expanded Temporary
Enforcement Guidance on
Respiratory Protection Fit-
Testing for N95 Filtering
Facepieces in All Industries
During the Coronavirus Disease
2019 (COVID-19) Pandemic

Temporary Enforcement
Guidance - Healthcare
Respiratory Protection Annual
Fit-Testing for N95 Filtering
Facepieces During the COVID-19
Outbreak

Enforcement Guidance for
Respiratory Protection and the
N95 Shortage Due to the
Coronavirus Disease 2019
(COVID-19) Pandemic

Enforcement Guidance for Use of
Respiratory Protection
Equipment Certified under
Standards of Other Countries or
Jurisdictions During the
Coronavirus Disease 2019
(COVID-19) Pandemic

Enforcement Guidance on
Decontamination of Filtering
Facepiece Respirators in
Healthcare During the
Coronavirus Disease 2019
(COVID-19) Pandemic

Discretion in Enforcement when
Considering an Employer's Good
Faith Efforts During the
Coronavirus Disease 2019
(COVID-19) Pandemic

<https://www.osha.gov/SLTC/covid-19/>

Expanded Temporary Enforcement Guidance on Respiratory Protection Fit-Testing for N95 Filtering Facepieces in All Industries During the Coronavirus Disease 2019 (COVID-19) Pandemic

OSHA enforcement memo:

If a user's respirator model (e.g., model x) is out of stock, employers should consult the manufacturer to see if it recommends a different model (e.g., model y or z) that fits similarly to the model (x) used previously by employees.”

A good faith effort to comply with 29 CFR 1910.134 includes stressing the importance of visual inspection, user seal checks and proper training as part of an overall respiratory protection program.

Enforcement Guidance for Use of Respiratory Protection Equipment Certified under Standards of Other Countries or Jurisdictions During the Coronavirus Disease 2019 (COVID-19) Pandemic

OSHA enforcement memo:

If respiratory protection must be used, and either acceptable NIOSH-certified alternatives or alternatives that were NIOSH-certified except for having exceeded their manufacturer's shelf life are not available for use in accordance with OSHA's April 3, 2020 memorandum, employers may consider using respirators and filters certified under standards of other countries or jurisdictions, as described in Tables 1 and 2 of Appendix A.

Enforcement Guidance for Respiratory Protection and the N95 Shortage Due to the Coronavirus Disease 2019 (COVID-19) Pandemic

OSHA enforcement memo:

If respiratory protection must be used, employers may consider use of alternative classes of respirators that provide equal or greater protection compared to an N95 FFR, such as NIOSH-approved, non-disposable, elastomeric respirators or powered, air-purifying respirators (PAPRs). Other filtering facepiece respirators, such as [N99, N100, R95, R99, R100, P95, P99, and P100](#), are also permissible alternatives for those who are unable to obtain N95 FFRs. However, per 29 CFR § 1910.134(d)(1)(ii), when considering N95 alternatives, check to ensure that they are NIOSH-approved, at www.cdc.gov/niosh/npptl/topics/respirators/disp_part/default.html. When these alternatives are not available, or where their use creates additional safety or health hazards, employers may consider the extended use or reuse of N95 FFRs or use of N95 FFRs that were NIOSH-approved but have since passed the manufacturer's recommended shelf life.

[HTTPS://WWW.3M.COM/3M/EN_US/WORKER-HEALTH-SAFETY-US/COVID19/](https://www.3m.com/3m/en_us/worker-health-safety-us/covid19/)



[General Respiratory Protection Information](#)



[Respirator Selection and Use Considerations](#)



[Respirator Shelf Life Conditions](#)



[Cleaning and Disinfecting Respirators](#)



[Other PPE](#)



[Respirator Demonstration and Training Videos](#)



[Fit Testing Resources](#)

[Emergency Use Authorization for Products Imported from Other Countries Information](#)

[Respiratory Protection in Healthcare](#)

Quiz

1. N95 is the minimum filter class and efficiency recommended for bioaerosols.
 - a. TRUE
2. Masks can be classified as surgical or procedure masks.
 - a. TRUE
3. The official name for the disease that is causing the 2019 novel coronavirus outbreak is named SARS-CoV-2.
 - a. FALSE
4. In the absence of N95 filters any filter class and efficiency can be used for bioaerosols.
 - a. TRUE
5. Under CDC guidelines, respirators similar to NIOSH N95 approved in other countries can be use as part of crisis measures.
 - a. TRUE

Quiz (cont.)

6. Disposable respirators can be disinfected with 70% Isopropanol or Sodium hypochlorite solution.
 - a. FALSE
7. Disposable respirators correct use includes straps placement and nose clip adjustment.
 - a. TRUE
8. OSHA guidance 3990 established the occupational risk pyramid for COVID-19.
 - a. TRUE
9. Reusable respirators can be disinfected with Isopropanol 70% or Sodium hypochlorite solution.
 - a. TRUE
10. Surgical masks are designed to protect the wearer.
 - a. FALSE

Q&A Session

THANK YOU!