AMERICAN SOCIETY OF SAFETY PROFESSIONALS
Three Rivers Chapter

An Occupational Risk Based Approached to Maintaining Your Respiratory Protection Programs in a COVID-19 Environment.

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THANK YOU
TO ALL ESSENTIAL WORKERS!

Thank You
TO OUR ESSENTIAL STORE WORKERS

A New Challenge for the RPP Administrator

- New challenges are now common place
  - Day to day operations
  - Changes in the workforce
  - Cross training
  - PPE shortages directly affect your respiratory protection program
  - Misleading and conflicting information
  - Training and Fit testing concerns
  - Multiple person operations
  - Non compliance issues.

Objectives

- Identify administrative components required for employers to establish and maintain a respiratory protection program in accordance with 29 CFR 1910.134, and (c)(3). In a COVID-19 or Pandemic Environment.

Objectives

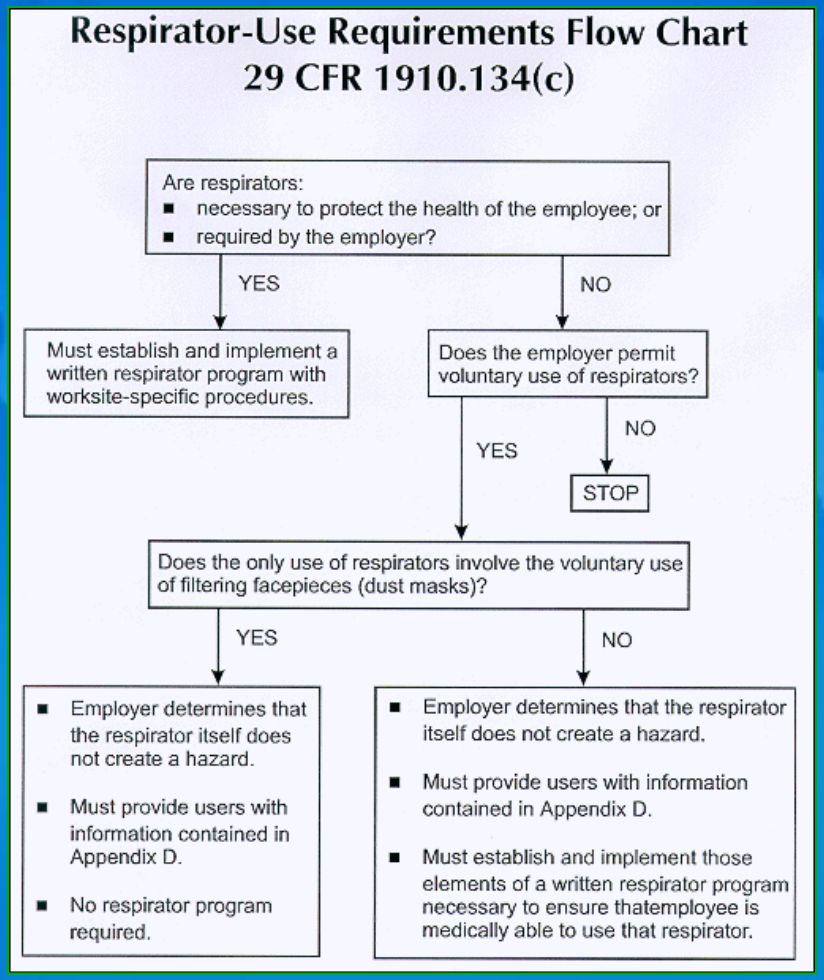
- Review the different technologies that are being evaluated for the sterilization of Filtering Facepiece Respirators.
- Demonstrate cleaning procedures for respirator maintenance in accordance with Respiratory Cleaning Procedures (Mandatory), Appendix B-2 to § 1910.134 and the manufacturer's guidelines.

The primary

objective of your respiratory protection program is to

- **prevent exposure** from air contaminated with Biologicals, harmful dusts, fogs, fumes, mists, gases, smokes, vapors, or sprays, and thus **to prevent occupational illness**.

- A program administrator must be responsible for the program 29 CFR 1910.134 (C)(3).



Mandatory Respiratory Protection Program Elements – "Still in Play"

1. Selection
2. Medical evaluation
3. Fit testing
4. Use
5. Maintenance & care
6. Breathing air quality and use
7. Training
8. Program evaluation

The requirements applicable to *construction* work under this section are identical to those set forth at 29 CFR 1910.134

Respiratory Protection Administrator (c) (3)

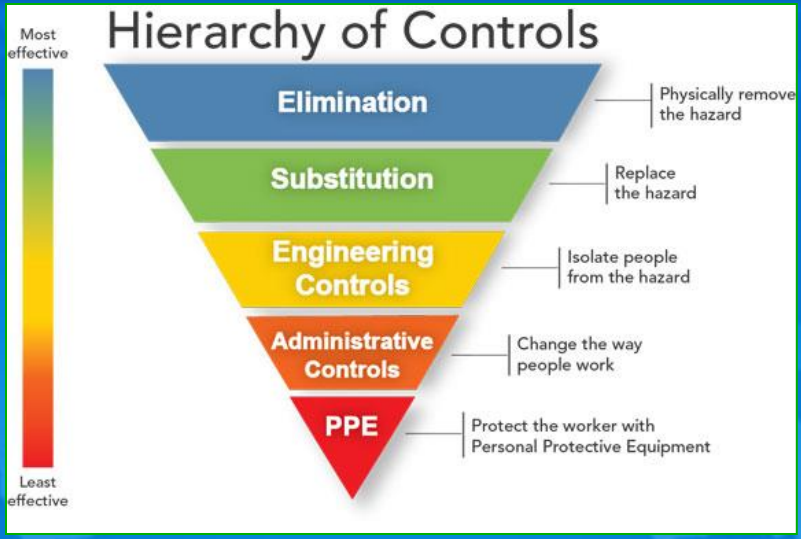
- The employer shall designate a program administrator who is **qualified by appropriate training or experience that is commensurate with the complexity of the program to administer or oversee** the respiratory protection program and conduct the required evaluations of program effectiveness.

“SHOULD , SHALL , Temporary Enforcement Guidance ”

- The provisions of this standard are **mandatory** in nature where the word “**shall**” is used and
- **advisory** in nature where the word “**should**” is used.
- **Temporary Enforcement** Guidance **during COVID-19**

Hierarchy of Hazard Controls

- Establishes OSHA's hierarchy of controls by requiring the use of feasible engineering controls as the primary means to control air contaminants.
- Respirators are required when "effective engineering controls are not feasible, or while they are being instituted."



Alternative exposure control methods

- Use dust controls to protect workers from silica exposures **below or at the PEL**
- **Provide respirators** to workers when dust controls cannot limit exposures to the PEL

One standard paver cut releases 9 million micrograms.
That's enough silica to exceed 10,714 days worth of dust exposure

https://iqpowertools.com/how-much-silica-dust-is-too-much/

Hierarchy of Hazard Controls Policies and Procedures

- Reducing period of exposure
- The introduction of appropriate working practices and systems of work, e.g. to close and store containers securely when not in use
- Use of monitors and warning devices to give a clear indication when unsafe airborne concentrations are present
- Good housekeeping
- Provision of a respiratory protective program

Table 1: Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica

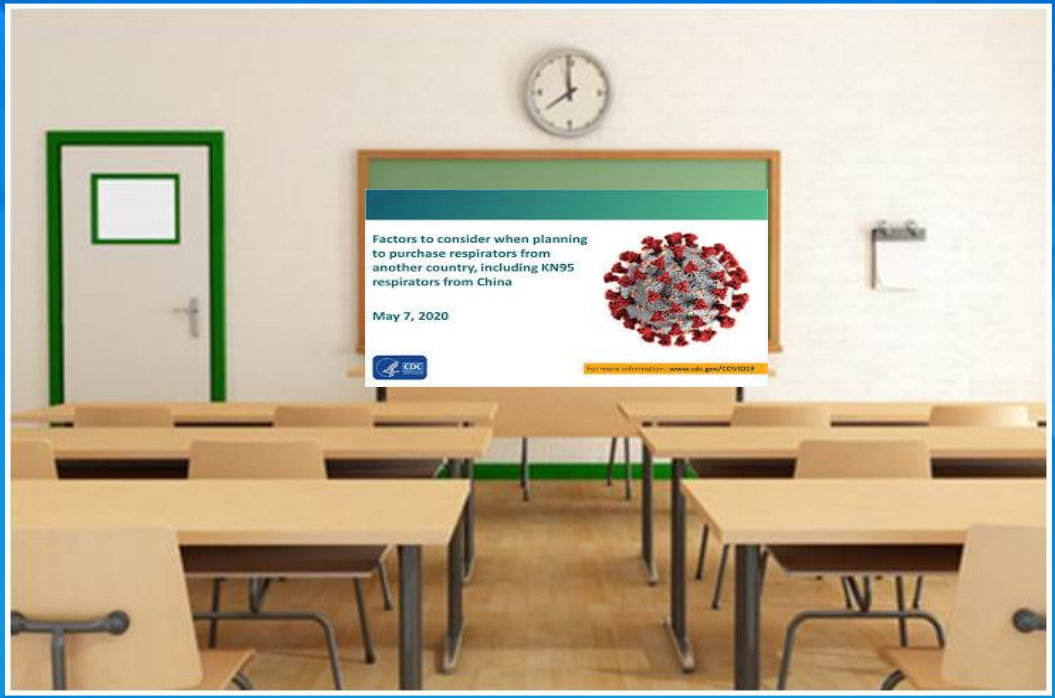
Equipment/ Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hrs/ shift	> 4 hrs/ shift
(ii) Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.		
	• When used outdoors.	None	APF 10
	• When used indoors or in an enclosed area.	APF 10	APF 10

Hierarchy of Hazard Controls
PPE –

- More Questions than Answers
  - Alternate Respiratory Protection for Healthcare and First Responders - Filtering Facepiece and Elastomeric Respirators

Respiratory Protection Program (c)

- The employer be current in provide respirators, training, and medical evaluations at no cost to the employee.



1910.134(c)(3) – Re-visited

- The employer shall designate a program administrator who is **qualified by appropriate training or experience that is commensurate with the complexity of the program** to administer or oversee the respiratory protection program and conduct the required evaluations of program effectiveness.

Qualified Program Administrator Non-health care

- **DO** you currently use **N95** respirators, or other filtering respirators; air-purifying respirators; surgical masks; and surgical gloves.
- Is your **PPE** needed considered "scarce or threatened medical supplies"
- **Do** you understand the differences in respiratory protection?
- Have you **updated** your written program?

"Respirators with exhalation valves should not be used in situations where a sterile field must be maintained"

Exhalation Valves on N95 Filtering Facepiece Respirators

- Exhalation valves (EVs) are touted as useful in dissipating humidity, heat, and carbon dioxide from the dead space of N95 filtering facepiece respirators and decreasing exhalation resistance.
  - However, the health agency notes that “respirators with exhalation valves should not be used in situations where a sterile field must be maintained... because the exhalation valve allows unfiltered exhaled air to escape into the sterile field.”

The bottom line: If we’re all looking to keep the air as virus-free as possible, an N95 mask with a valve might not be the best option.

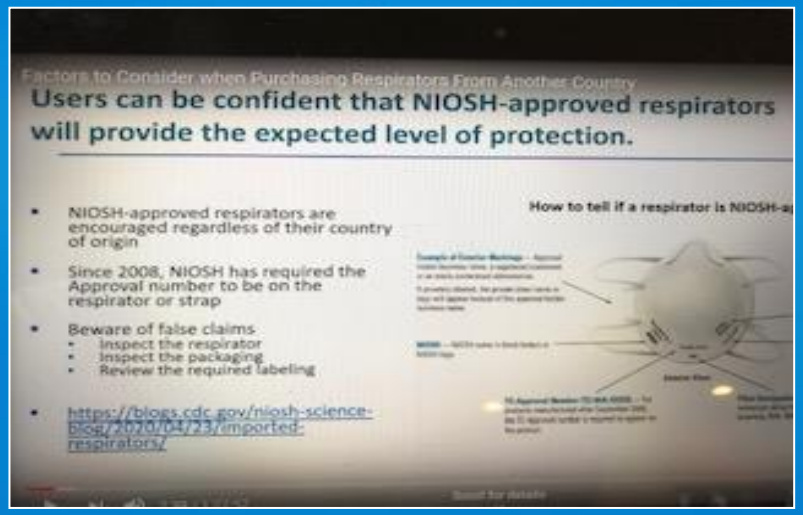
Qualified Program Administrator Non-health care

- **Do** you employ essential critical infrastructure workers?
- **Have** you implemented all possible PPE use reduction strategies?
- If **PPE** is still needed, is it required by law or regulation?
- **Have** you sought regulatory relief or approved alternatives?
- **Have** you completed a hazard and risk assessment?
- Does your workforce change?
- Do you still share PPE?

Manufactures have updated their Care and Maintenance Guidelines for Electrical PPE, incorporating important CDC guidelines and references to ASTMF496.

Qualified Program Administrator

- Maintaining the site Respiratory Protection Program
  - **Evaluating** for potential workplace respiratory hazards
  - **Assessing** worker exposure for these hazards
  - **Selecting** the appropriate respirators
  - Provide Medical evaluations **PRIOR** to fit testing



Understanding the differences

https://www.osha.gov/laws-regs/standardinterpretations/2017-12-20

Not considered PPE under OSHA

Loose fitting masks are, however, still subject to the OSHA PPE Standard, which requires proper protection if necessary to prevent a job-related injury or impairment.

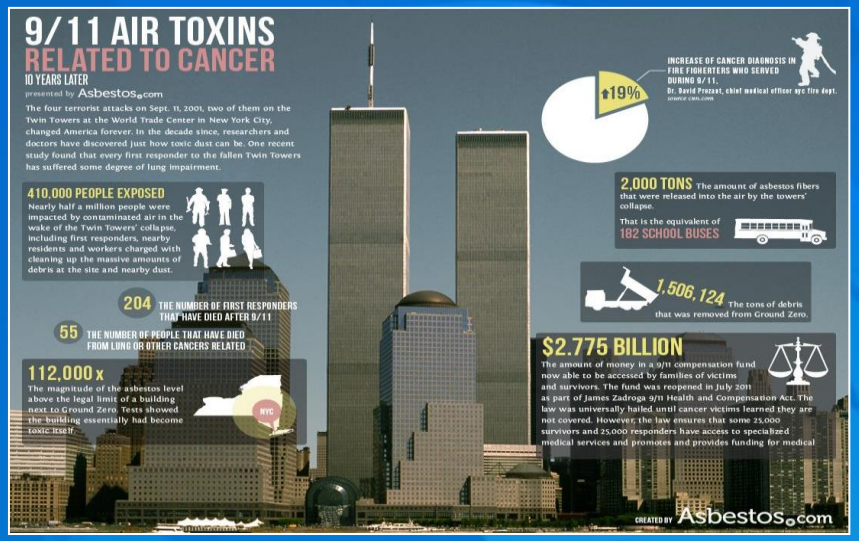
National Institute for Occupational Safety and Health

NIOSH

Overview of the National Personal Protective Technology Laboratory (NPPTL)

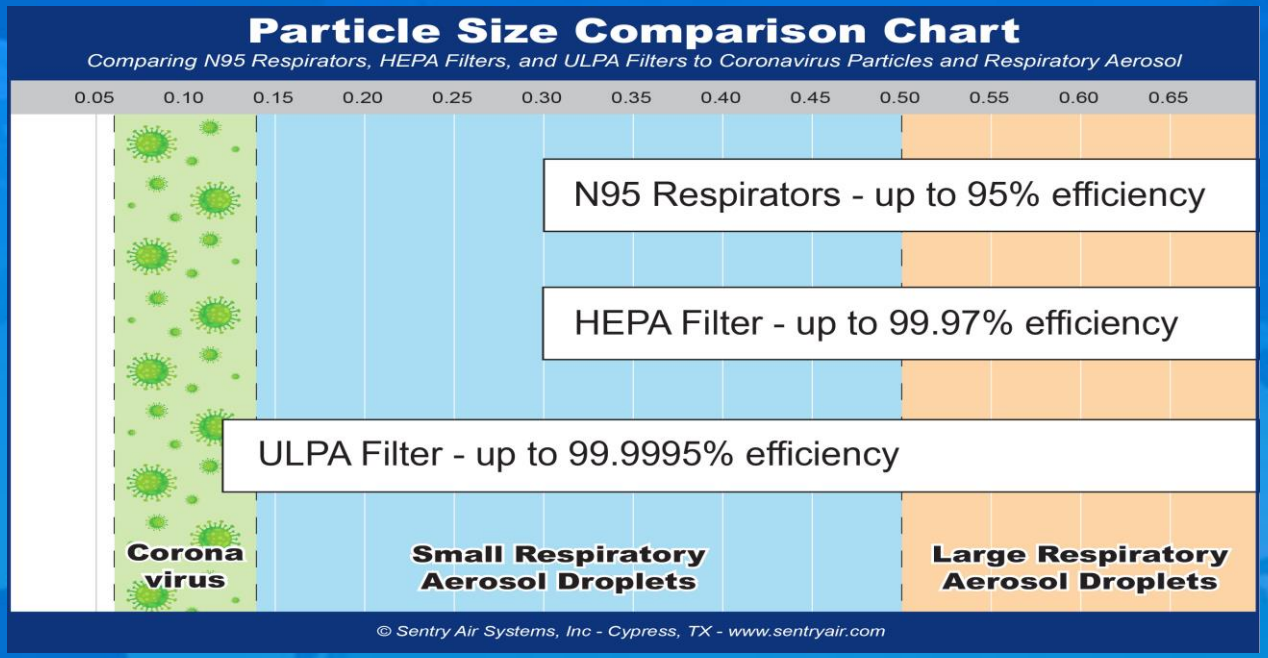
CDC Workplace Safety and Health | NIOSH | NPPTL Research to Practice through Partnerships

Understand Respiratory Illness Clusters



Risk Based Occupational Exposure Assessment

- **Minimize** the number of employees exposed
- **Minimize** the amount of infectious aerosol in the air
- **Protect** employee who must be exposed



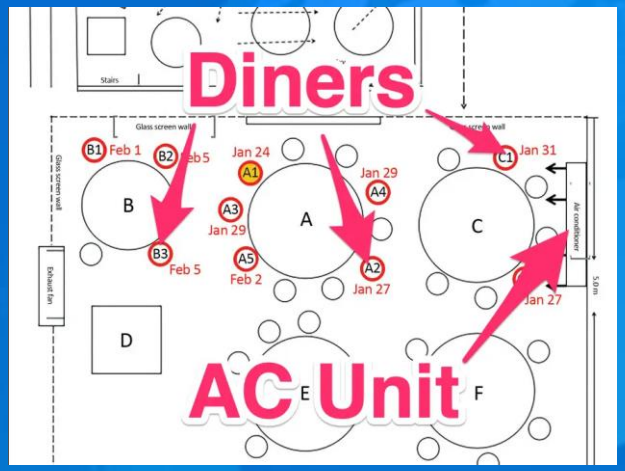
Recognizing Hazards

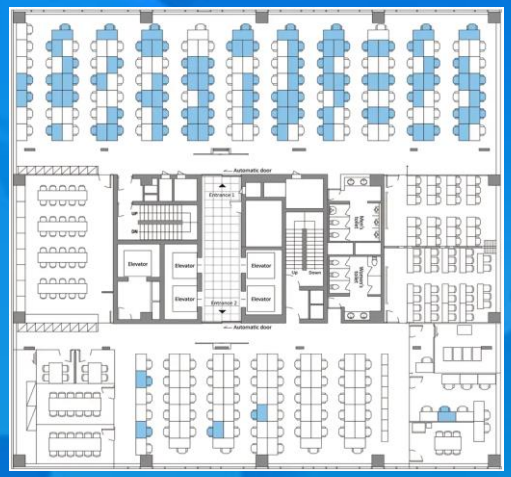
- Reviewing area **hazard analysis,** documents, job hazard analysis and mitigation
- **Observing employee** activities (such as chemical handling, procedural steps)
- **Surveying** existing conditions (ventilation, sanitation, ergonomics, lifting)

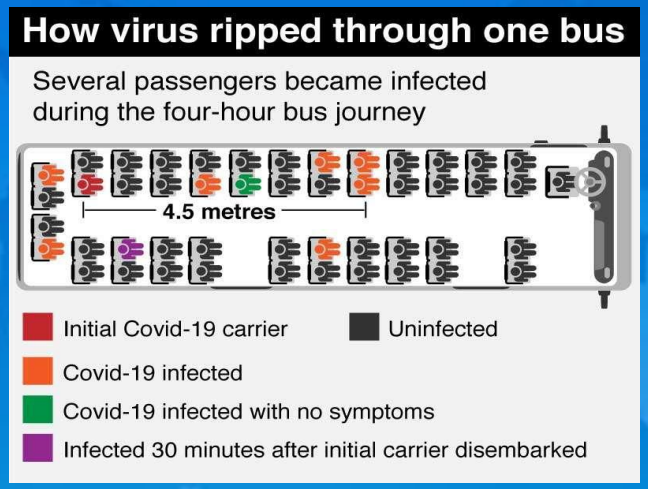
Recognize the hazard
Avoid exposure
Isolate from the exposure
Notify

Hierarchy of Controls
Administrative Controls

Close Spaces are a COVID Challenge - Aerosol Exposure







The next few slides describe the use of Hierarchy of Controls best practices based on current hazard and risk assessments to reduce the potential exposure of members to COVID-19.

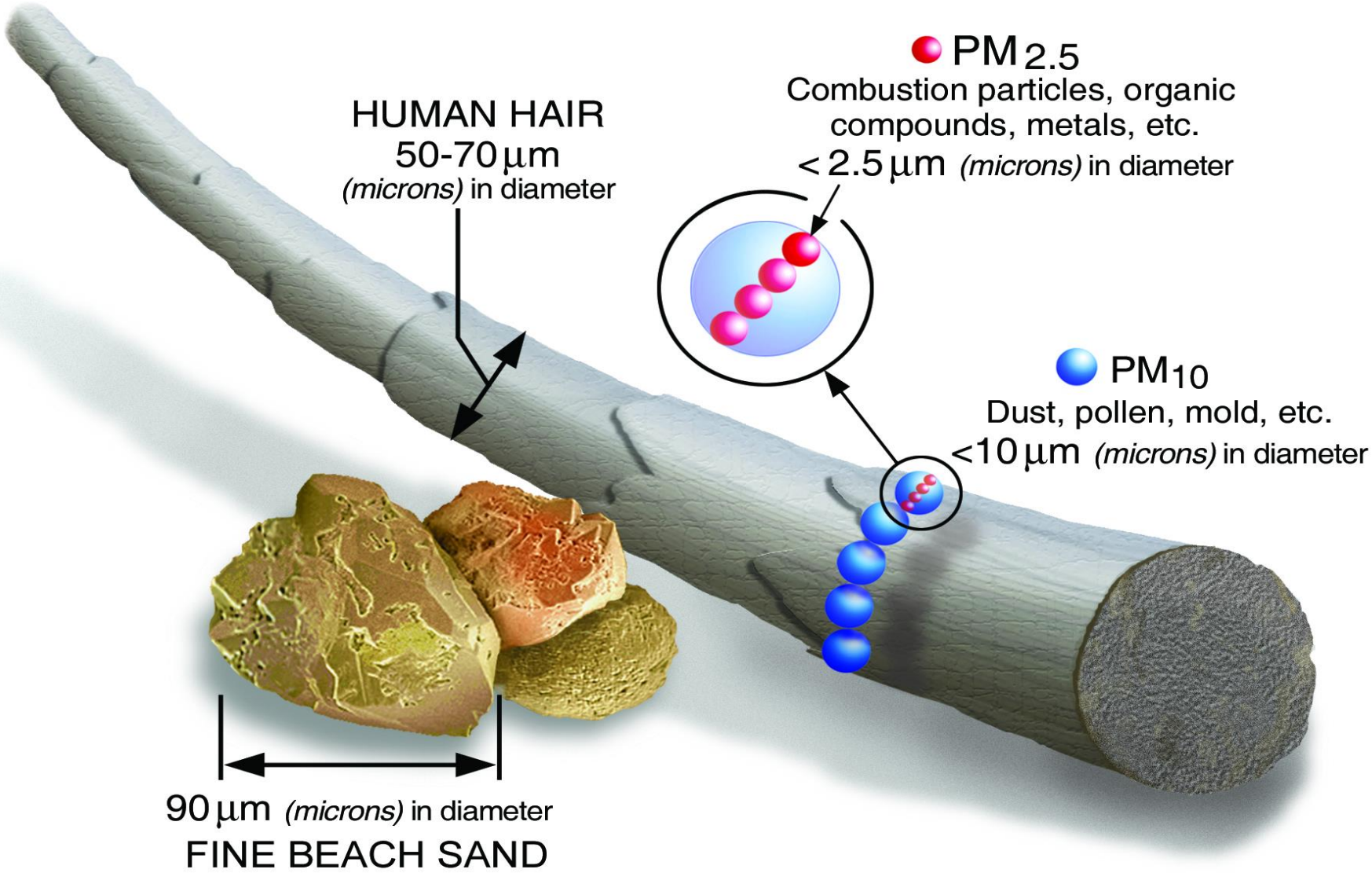
Respiratory Protection Program (c)

- Respiratory Protection: Program Development and Administration
- RP PER-263-24 Contact Hours

https://cdp.dhs.gov/

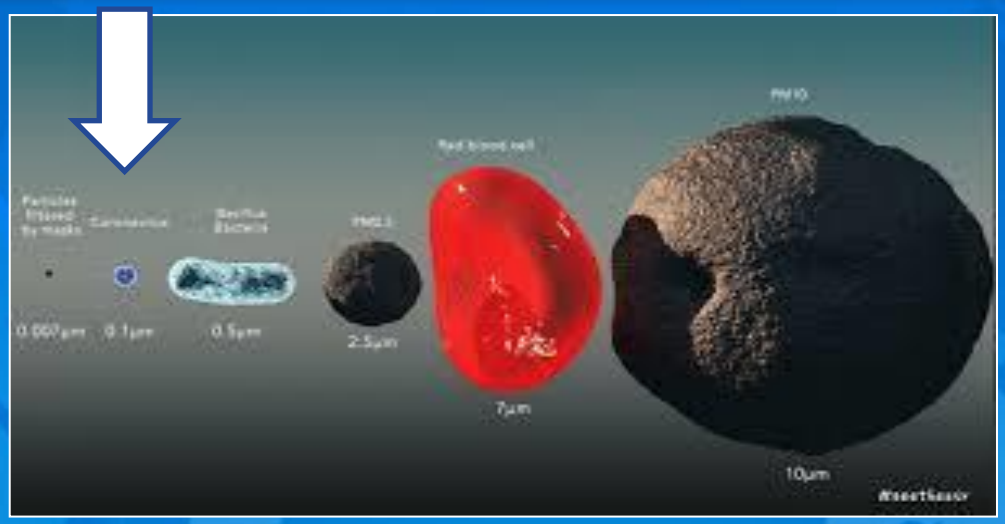
Respiratory Hazards

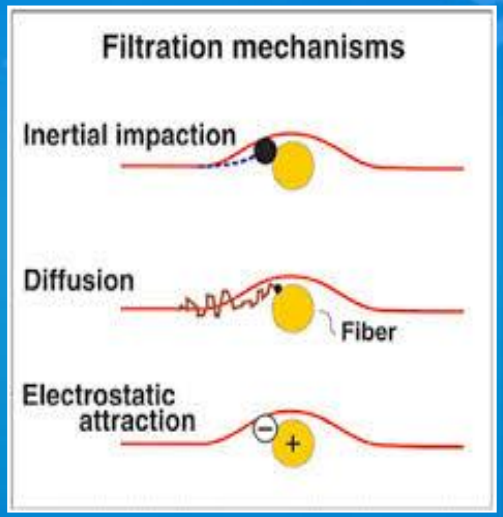
"Regular Dust" vs "Respirable Dust"



Risk Based Selection of Respirators (d)

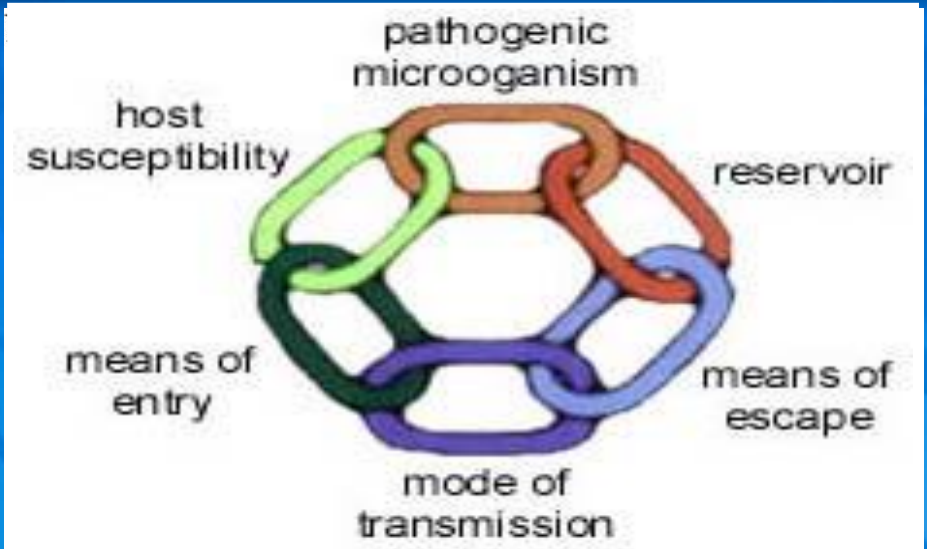
- **Dose-response relationships** and respirator penetration values
- **Pathways** into the body by body systems
- Chemical **concertation**
- **Particle size**
- Donning and doffing procedures
- IH results
- Unknowns

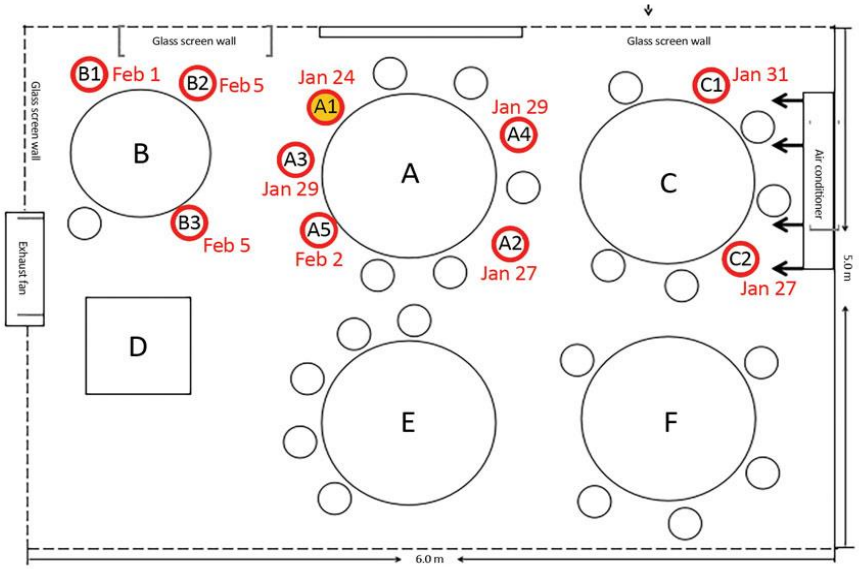




When must an employer conduct an exposure assessment?

- Identify and evaluate the respiratory hazards in the workplace.
- Where exposure cannot be identified or reasonably estimated.





Homemade (Face Coverings)

- Face masks only provide
  - **Only filter out 2% of larger particles** half the protection of surgical masks and
  - 50 times less protection than N95's, provide very limited protection from small particles.
- But wearing a cloth face covering **will lose any value** unless it's combined with frequent hand-washing and social distancing.

Hierarchy of Controls - PPE

https://www.cidrap.umn.edu/news-perspective/2020/03/commentary-covid-19-transmission-messages-should-hinge-science

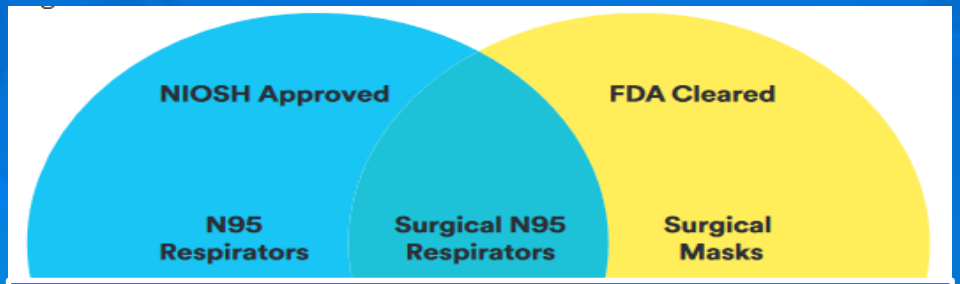
https://www.osha.gov/Publications/OSHA3219.pdf

https://www.fda.gov/media/136449/download

- Surgical mask are not a item of Personal Protective Equipment **(OSHA) - Surgical masks are not designed or certified to prevent the inhalation of small airborne contaminants**.
- Surgical mask may be effective in blocking splashes and large-particle droplets, by design, **does not filter or block very small particles in the air that may be transmitted by coughs, sneezes, or certain medical procedures** especially below the ears).

Duke University Study

The best to the worst – no facial hair

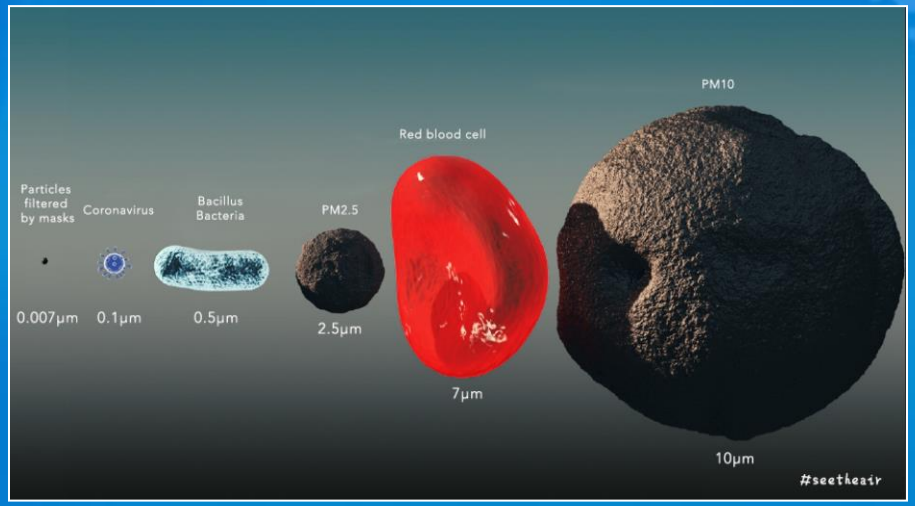


1.The Best and Most Effective Surgical Mask and Particulate Respirator (FFR)

The disposable surgical mask was the second-most effective variety, ranging from zero to 0.1 in terms of the particles spread from speaking while wearing one.

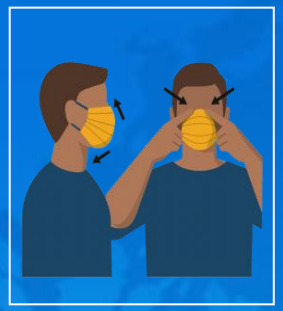
N95 Filtering facepiece respirators (FFR)

- An N95 Filtering facepiece respirators (FFR) respirator is a negative pressure respiratory protective device designed to achieve a very close facial fit and very efficient filtration of airborne particles.
- The 'N95' designation means that when subjected to careful testing, the respirator blocks at least 95 percent of very small (0.3 micron) test particles.



Cloth Face Covers

- **What are Cloth Face Coverings**
  - Cloth face coverings are NOT surgical masks or N95 respirators
  - Limitations of face coverings
  - Use the Face Covering to Protect Others
  - Donning and doffing
  - Temporarily Removing Universal Masks
  - Take Off Your Cloth Face Covering Carefully, When You're Home
  - How to Wash Cloth Face Coverings
  - How to dry your face covering



Face Covering or N95 with one-way exhalation valves are not acceptable

Risk Based Selection of Respirators (d)

https://www.ashrae.org/technical-resources/resources

Job Safety Analysis Worksheet

Title of Operation:	Cleaning HEPA Filter HVAC Duck	**SOP/SWP No:**	19-619-HVAC
Position/Title: *(Person who does job)*	Building Engineer	**Building:**	619
Department:	Facilities	**Section:**	East Campus

BASIC STEPS	POTENTIAL HAZARDS	PROCEDURE TO BE FOLLOWED (DOs)	SAFETY PRECAUTIONS *(if procedure does not fully control risks)* (DON'Ts)
	COVID-19	Training, COVID-19,Haz Com RPP, PPE,BBP, Job Sp	N95, Full Suit, Face Shield or non-vented goggles
		System turned off, while wearing gloves, with respiratory protection N95 or higher, place in a plastic bad outdoors if possible, and disposed of in a sealed bag.	

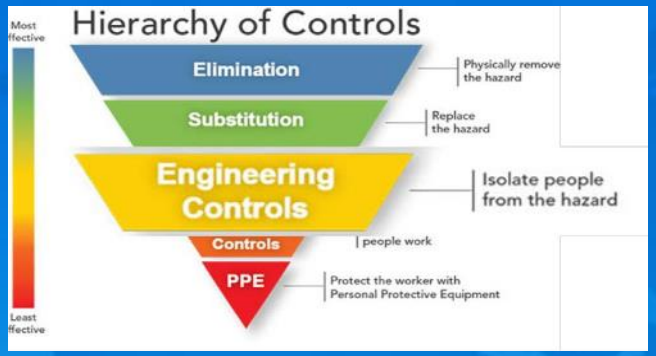
Prepared by:	**Date:**
Approved by:	**Date:**
H&S Rep/Committee Reviewed:	**Date:**
Next Review Date < 5 yrs:	

Hierarchy of Controls
Job safety Analysis

- **The basics**
  1. Break the job task into steps.
  2. Identify possible hazards for each step.
  3. Establish strategies that will reduce or eliminate each hazard.
  4. Include COVID-19 related concerns
- List no more than 10 steps for the task. To break down the job, follow these steps, according to OSHA/IDOL
  - Observe a worker performing the job. List each step in order.
  - Start each step with an action verb.
  - Avoid making the steps too general or detailed.
  - Consider videotaping or shooting photos of the task.
  - Go over the steps with workers who perform the task to ensure nothing was missed.

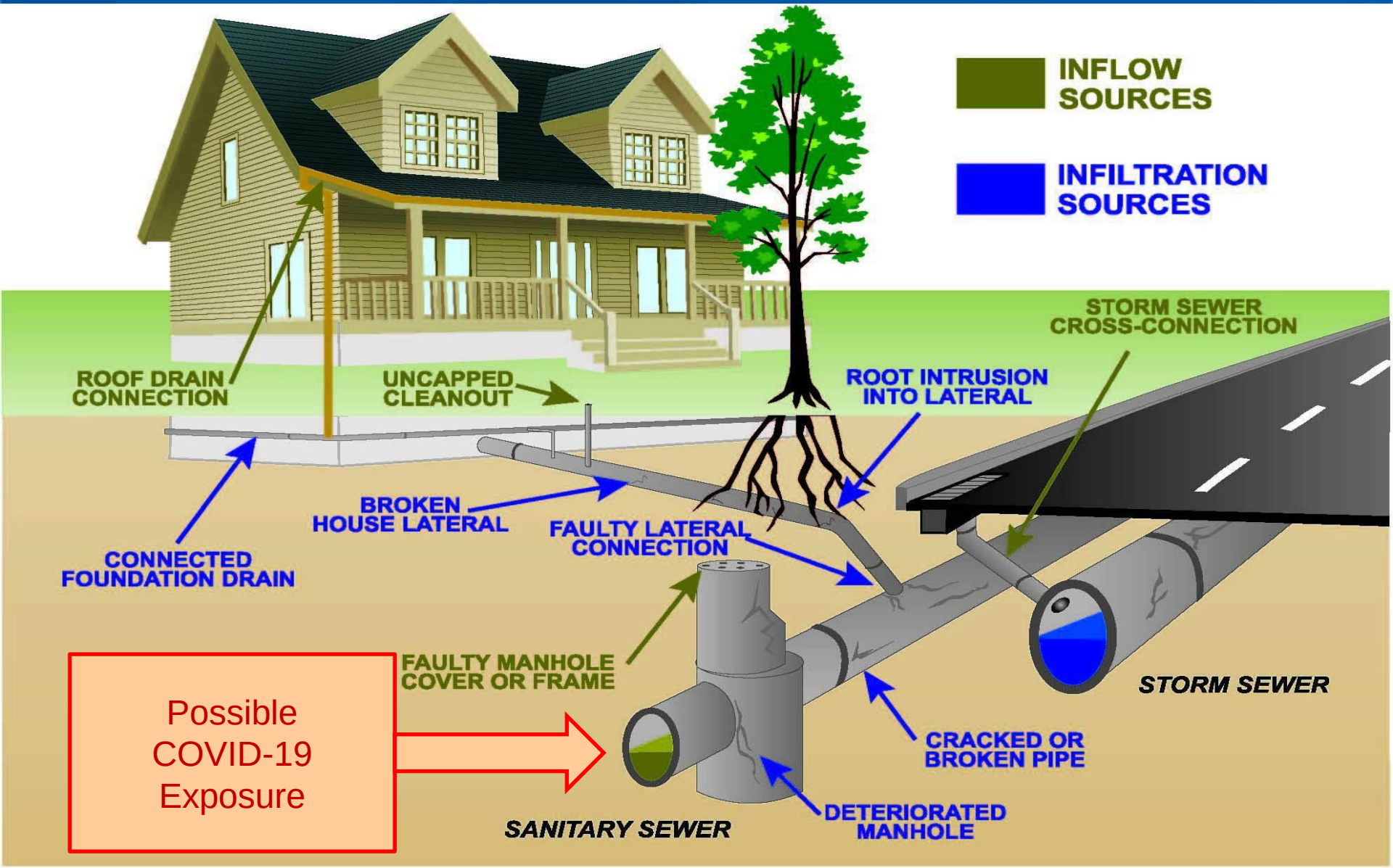
Hierarchy of Controls
Engineering Controls – HVAC Systems

- Installing high-efficiency air filters (HEPA).
  - check the HVAC system for compatibility
  - requires PPE to change filters
- Increasing ventilation rates in the work environment.
- Use ASHRAE's building readiness guidance report



https://www.ashrae.org/about/news/2020/ashrae-offers-covid-19-building-readiness-reopening-guidance

Hierarchy of Controls
Job Safety Analysis - Workshop



Possible COVID-19 Exposure

Risk Based Selection of Respirators (d)

SAN DIEGO STATE UNIVERSITY

Covid-19 Personal Protective Equipment (PPE) Guidance for Staff

The following table is provided as a general guide for protective clothing as it relates to COVID-19 and does not supersede any regulatory requirements for PPE based on specific job tasks and hazards. **This guidance does not include recommendations for Student Health Services or University Police Department staff.**

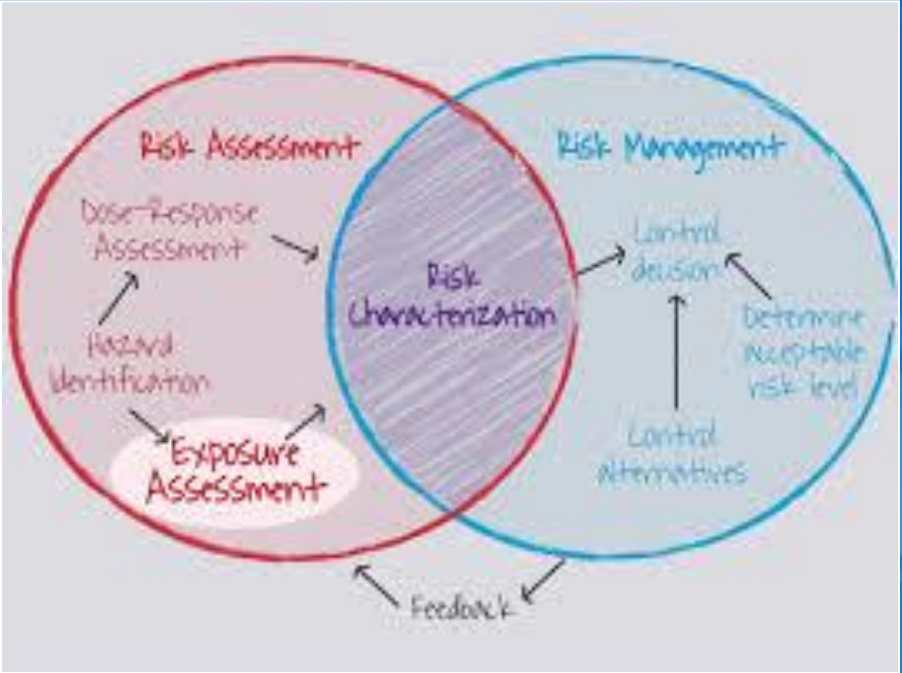
RECOMMENDED PPE BY SETTING					
	P-100 Respirator	**Cloth Face Coverings** (Additional guidance here)	**Eye Protection Or Face Shield**	**Gloves**	**Gown/Coveralls/ Lab Coat**
Facilities Services (Work on HVAC in Calpulli ONLY)	Yes	No if wearing P-100 respirator Yes, if not wearing P-100 respirator	Yes if potential for body fluid or chemical exposure	Yes if potential for body fluid or chemical exposure	Yes
Facilities Services - Trades	No	Yes	Yes if potential for body fluid or chemical exposure	Yes if potential for body fluid or chemical exposure	No
Facilities Services - Custodial	Yes, if performing fogging disinfection No for all other tasks	Yes	Yes if potential for body fluid or chemical exposure	Yes if potential for body fluid or chemical exposure	No
Facilities Services - Landscape	No	Yes	Yes if potential for body fluid or chemical exposure	Yes if potential for body fluid or chemical exposure	No
Shops – Dining Services	No	Yes	No	Yes	No
Shops – Campus Stores	No	Yes	No	Yes, as needed	No
Shops – Conference Services	No	Yes	No	No	No
Research and Instructional Labs	No	Yes	Yes	Yes	Yes
Individuals in Offices and Classrooms	No	Yes	No	No	No

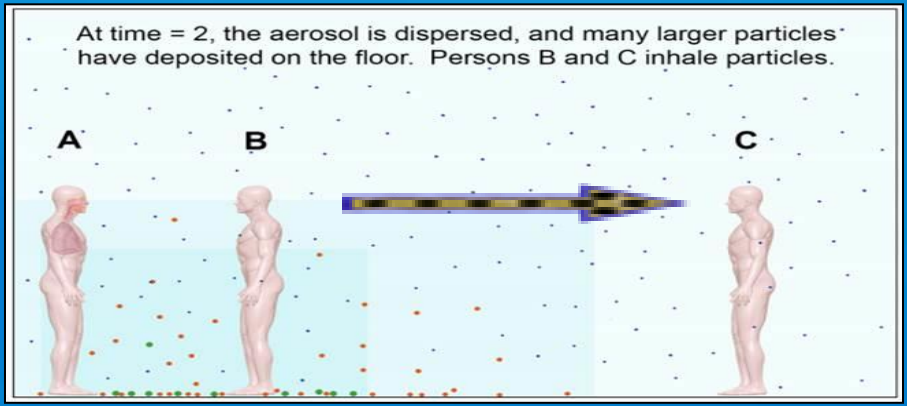
Risk Based - Health and Safety issues for electricians

- Respiratory hazards
  - Lead, solvents, solder, and other materials.
  - Working in confined spaces.
  - Welding hazards, including UV radiation.
  - Molds, fungi, virus, and bacteria.
  - Risk of infection from bird or rodent droppings.
  - Working at heights.
  - Possible exposure to asbestos
  - Possible exposures to Silica
  - Possible exposures to Lead

When must an employer conduct an exposure assessment?

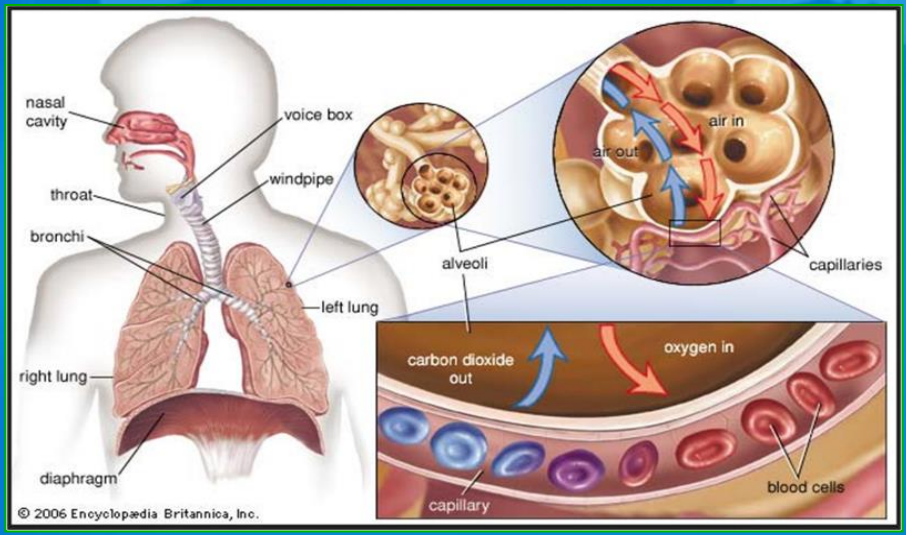
- When OSHA has a substance specific standard (e.g., lead, methylene chloride).
- When employees notice symptoms (e.g., irritation, odor) or complain of respiratory health effects.
- When the workplace contains visible emissions (e.g., fumes, dust, aerosols).
- What is the identity and nature of the airborne contaminant?





Selection of Respirators (d)

- The respirator certified by the National Institute for Occupational Safety and Health (NIOSH).
- Identify and evaluate the respiratory hazards in the workplace.
- Where exposure cannot be identified or reasonably estimated.



Respirator Selection Factors

- The **size** of the particles,
- **Nature** of the hazard, and the physical and chemical properties of the air contaminant;
- **Concentrations** of contaminants;
- Relevant **permissible exposure limit** or other occupational exposure limit;

Respirator Selection Factors

- **Time period** the respirator is worn;
- **Work activities** and physical/psychological stress;
- **Fit testing**; and
- **Physical characteristics,** functional capabilities and limitations of respirators.

When must an employer conduct an exposure assessment?

- Specific characteristics of the airborne hazard must be established in order to select an appropriate respirator.
  - Is the airborne contaminant a particulate (dust, fumes, mist, aerosol) or a gas/vapor?
- Is the airborne contaminant a chemical and are safety data sheets available?
- Is the airborne contaminant a biological (bacteria, mold, spores, fungi, virus)?
- Are there any mandatory or recommended occupational exposure levels for the contaminant?

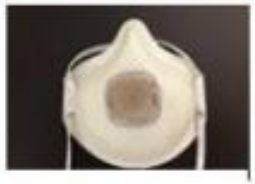
Selection of Respirators (d)

Loose-fitting respirators

Tight-fitting respirators

Selection of Respirators (d)

- Types of Respirators
  - Air Purifying
    - Negative Pressure
    - Positive Pressure (PAPR)
  - Air Supplying
    - Air Line
    - SCBA

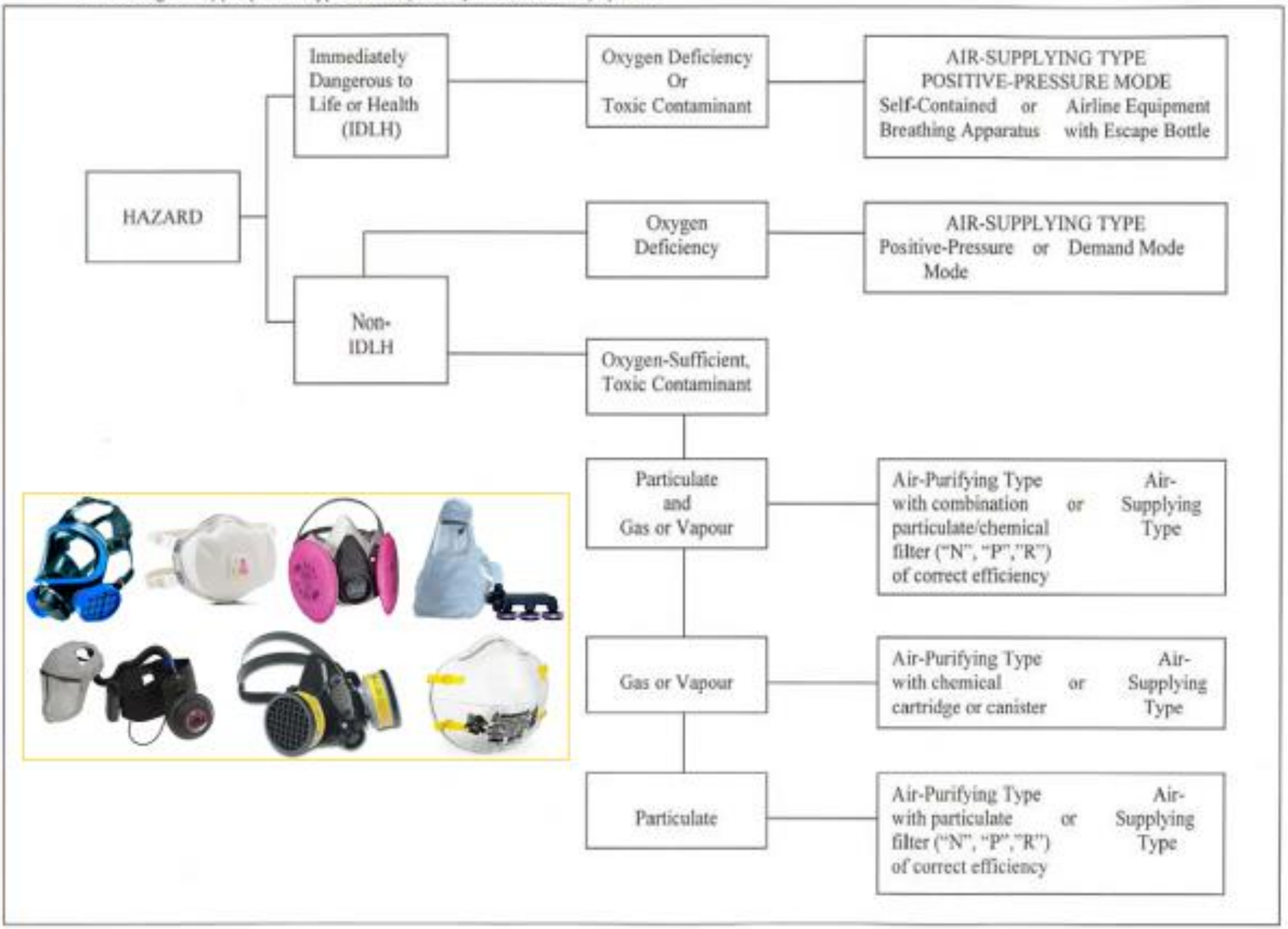


N-95

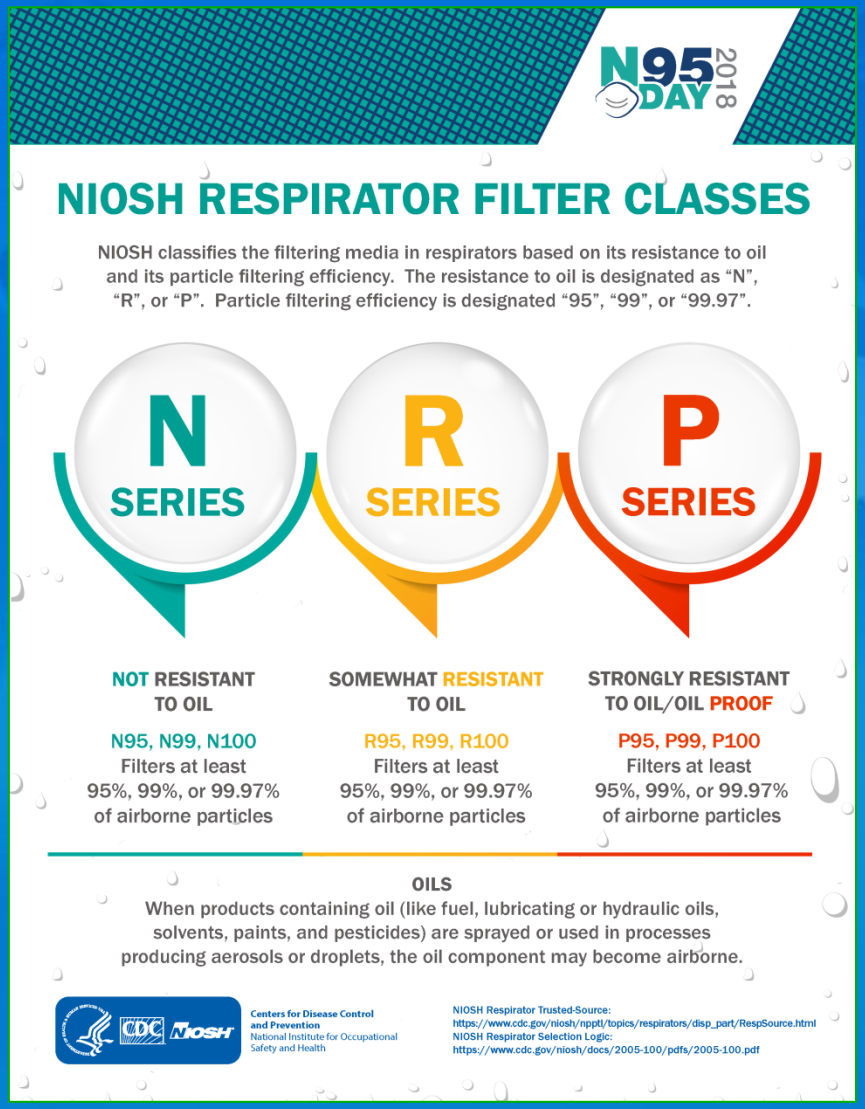
Half Face

Full Face

Choosing an Appropriate Type of Respiratory Protective Equipment



Selection Factors
Specific Job. Site, Equipment



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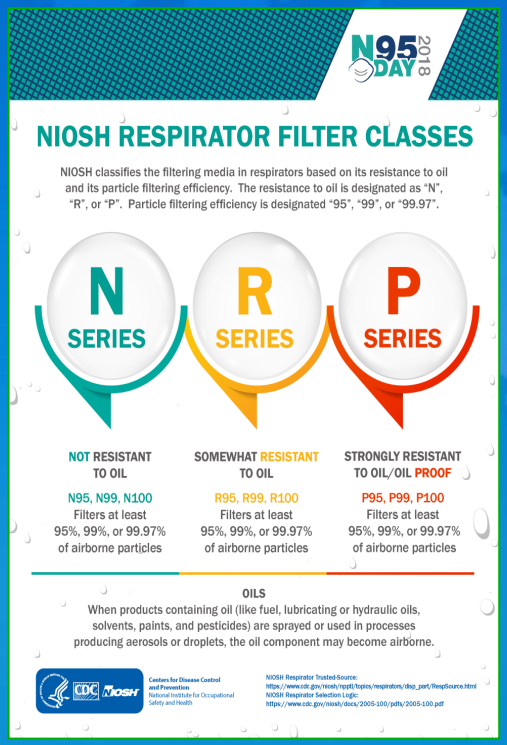


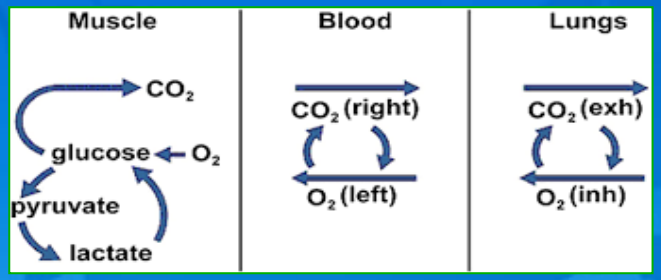
Physiological Impact of PPE and Respirators

- Two basic principles relevant to respirator use:
  - Work cannot usually be performed as long or as hard while wearing a respirator compared to when respirators are not worn.
  - Wearing protective clothing plus respirators makes this situation even worse.
    - Either more time must be allowed for a particular task or more workers must be assigned to the same task.

Heat Stress

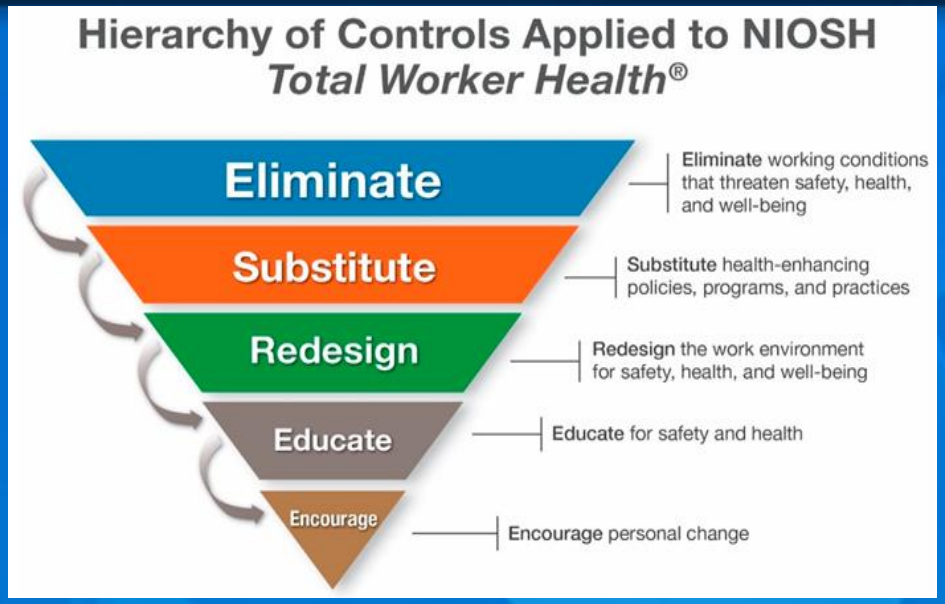
Physiological Impact of the N95 Filtering Facepiece Respirator

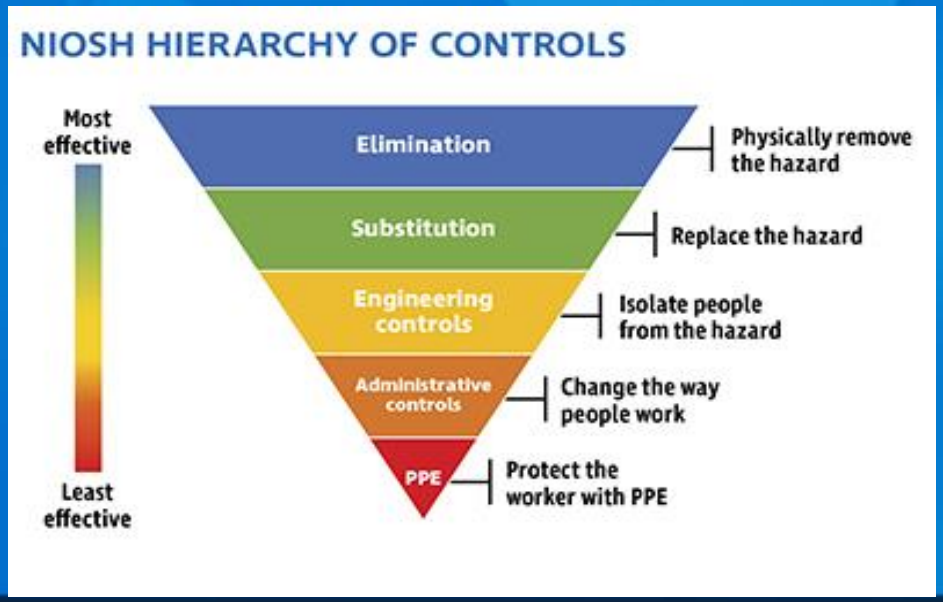
- **Physiological Impact of the N95 Filtering Facepiece Respirator on Healthcare Workers**
  - Dead-space carbon dioxide and oxygen levels were significantly above and below, respectively, the ambient workplace standards, and elevated P_{CO2} is a possibility.
    - If the P_{CO2} is higher than 45 mmHg, the patient is hypoventilating, and if the pH is less than 7.35, is in respiratory acidosis.



https://core.ac.uk/download/pdf/81710462.pdfzX

March 14, 2020, Temporary Enforcement Guidance - Healthcare Respiratory Protection

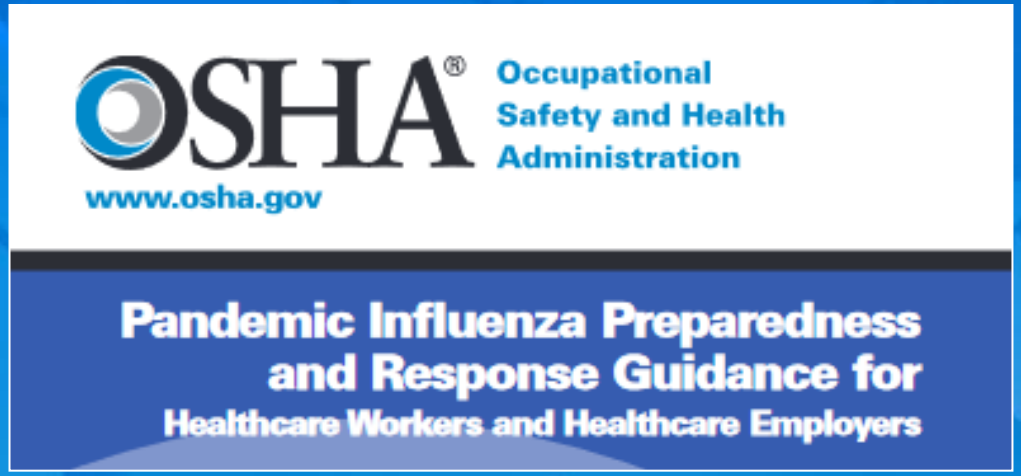




The higher the dose of a virus given to healthy volunteers, the worse their symptoms.

The Respiratory Protection Standard - March and April, 2020

- The Respiratory Protection standard has specific requirements,
  - including a written
  - medical evaluation,
  - fit-testing, and
  - training,
- that employers must follow to ensure workers are provided and are properly using appropriate respiratory protection when necessary to protect their health.



OSHA recommends

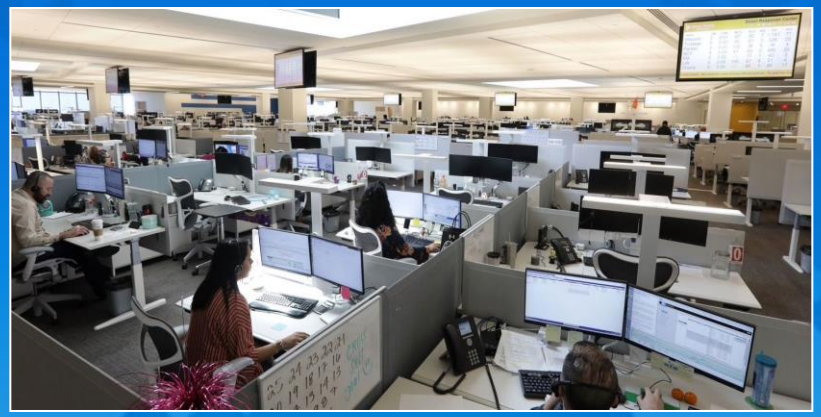
- Appropriate respiratory protection is required for all healthcare personnel providing direct care of these patients.
- OSHA recommends HCP employers follow existing CDC guidelines, including taking measures to conserve supplies of these respirators while safeguarding HCP.

A Surgical Mask is not a respirator

A N95 is a Negative Pressure Respirator Is a Mask

Classifying Your Employee Risk from COVIS-19 Exposure

- **Lower Exposure Risk**
  - occupations are those that **do not require contact** with people known to be infected with the pandemic virus, nor frequent close contact (within 6 feet) with the public.
  - Even at lower risk levels, however, employers should be cautious and develop preparedness plans to minimize employee infections.



Personnel in this risk group include those who have minimal occupational contact with the general public and other coworkers (e.g., office employees).

Classifying Employee Risk from COVIS-19 Exposure

- **Medium Exposure Risk**
  - occupations include jobs that require frequent, close contact (within 6 feet) exposures to known or suspected sources of pandemic virus such as coworkers, the general public, outpatients, school children, or other such individuals or groups.
  - Personnel in this risk group include those with high-frequency contact with the general population.

Classifying Employee Risk from COVID-19 Exposure

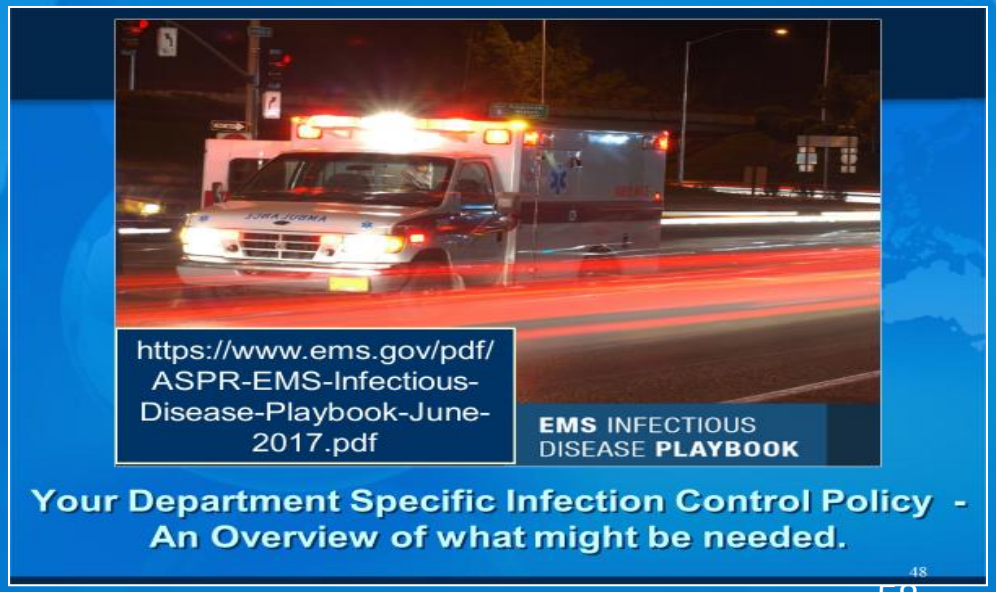
- **Medium Exposure Risk**
  - occupations include **jobs that require frequent, close contact** (**within 6 feet**) exposures to known or suspected sources of pandemic virus such as coworkers, the general public, patients, school children, or other such individuals or groups.
  - Personnel in this risk group include those with high-frequency contact with the general population.

Personnel in this risk group include schools, high population density work environments,.

Healthcare work tasks associated with exposure risk levels

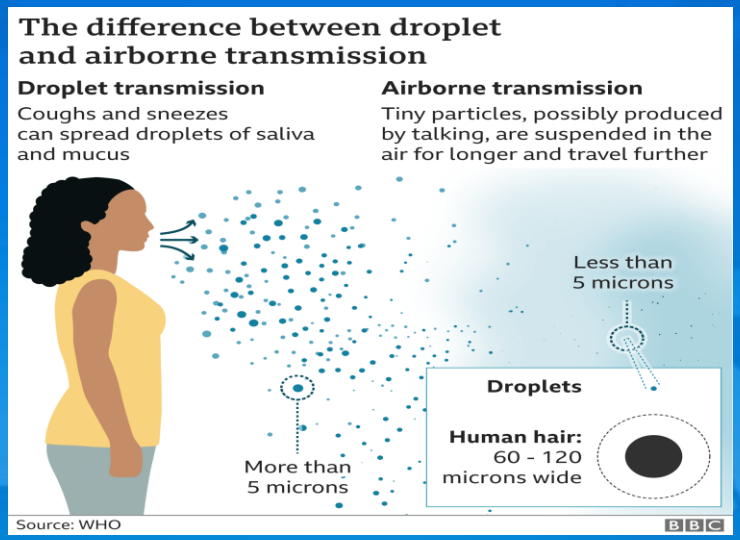
High Exposure Risk

- Entering a known or suspected COVID-19 patient's room.
- Providing care for a known or suspected COVID-19 patient not involving aerosol-generating procedures.



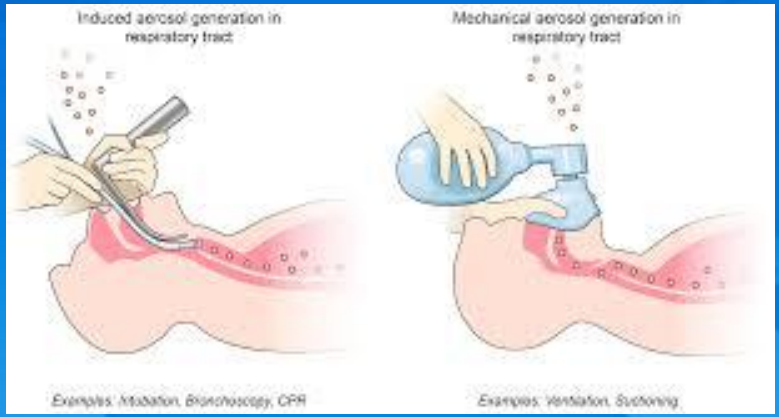
Public Works

- **High Exposure Risk**
  - Entering an indoor work spaces
    - unknown occupants
    - unknown cleaning practices
    - entering confined spaces
    - no daily employee check-in policy
    - shared coffee pots
    - multi-employee tasks
    - multi-employee ride shares
    - not practicing social (**safe**) distancing



Healthcare work tasks associated with exposure risk levels

Very High Exposure Risk



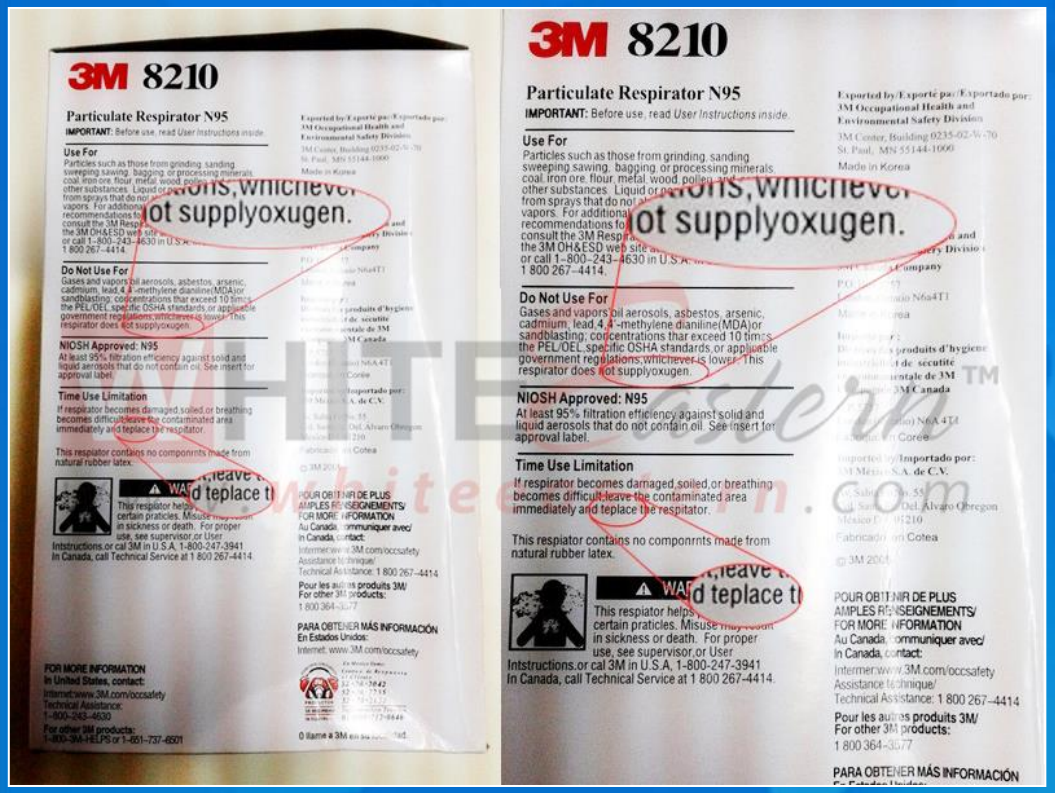
- Performing aerosol-generating procedures (e.g., intubation, cough induction procedures, bronchoscopies, some dental procedures and exams, or invasive specimen collection) on known or suspected COVID-19 patients.
- Collecting or handling specimens from known or suspected COVID-19 patients

N95 Reuse and Extended use

- Reuse refers to the practice of using the same N95 **respirator** for multiple encounters with patients but removing it ('doffing') after each encounter
- Extended Use refers to the practice of wearing the same N95 **respirato**r for repeated close contact encounters with several patients, without removing the respirator between patient encounters.

https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html

Fake 3M 8210 Respirators



https://www.3m.com/3M/en_US/worker-health-safety-us/3m-safeguard/

CAN ANYONE FIT TEST?

THE IMPORTANCE OF IN-HOUSE FIT TESTING

Fit-Testers Qualifications

- Appendix A - 29 CFR 1910.134:
  - Fit Testing Procedures (Mandatory) - *Part I. OSHA-Accepted Fit Test Protocols,*
- 1926.103 Respiratory Protection,
- EPA Directive (OSWER 9285.3-12)
- ANSI Z88.10 standard

Z88.10 - 5.0 - Qualifications of Fit Test Operators

- **5.1 General Qualifications.**
  - Fit test operators shall be properly trained and demonstrate a proficiency in the fit test method(s) being used.

- The preamble specifically stated that, ***"Individuals with poorly fitting respirators were often detected only through fit - testing, and not by other methods such as observation of changes in facepiece fit, failure to pass a user seal check, or an employee reporting problems with the fit of the respirator."***

Required Qualifications for Respirator Fit Test Providers

- OSHA does not list specific training requirements for fit test providers.
  - As long as the person you select to perform the fit test can follow the procedure properly and documents the results, you should be compliant.

Fit-Testing
Testing a Specific Respirator
(Manufacture, Model and Size) to a Specific Face

You only get one chance

True or False

- **Qualitative fit tests** may only be used on negative pressure respirators when the required protection factor is **10 or lower**, and the atmosphere is not IDLH.
- **Quantitative fit tests** are required for negative pressure respirators when the required protection factor is **greater than 10**, or the atmosphere is **immediately dangerous to life and health**.

Qualitative
Or
Quantitative

5.2.4.Selection of filters - Respirator Fit Test Operator

- The isoamyl acetate QLFT requires respirators equipped with organic vapor cartridges.
- Both the saccharin and bitrex QLFT require respirators equipped with particulate Both the saccharin and bitrex QLFT require respirators equipped with particulate filters (either a 95, 99, or 100 series filter is acceptable).
- To perform the irritant smoke test, the respirator needs to be equipped with either a P100 series particulate filter or HEPA filter.

FIT-TESTING

Qualitative

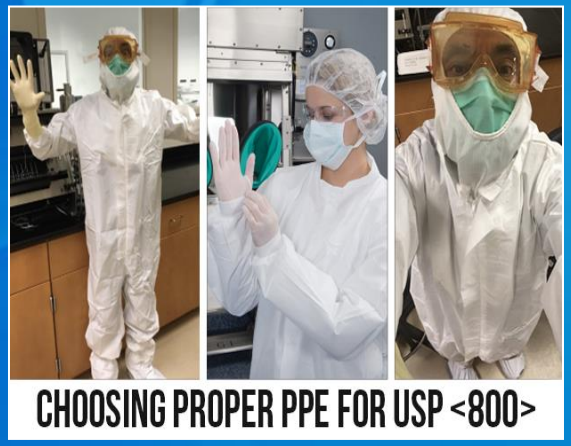
and

Quantitative

Fit Tests

The fit test shall

- be performed while the test subject is **standing wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit**.



Fit Testing (f)

- All employees using a negative or positive pressure tight-fitting facepiece respirator must pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT).

Quantitative fit test (QNFT).

- measures real-time fit while the user simultaneously performs a series of moving, breathing and talking exercises designed to simulate the same movements made in the field.

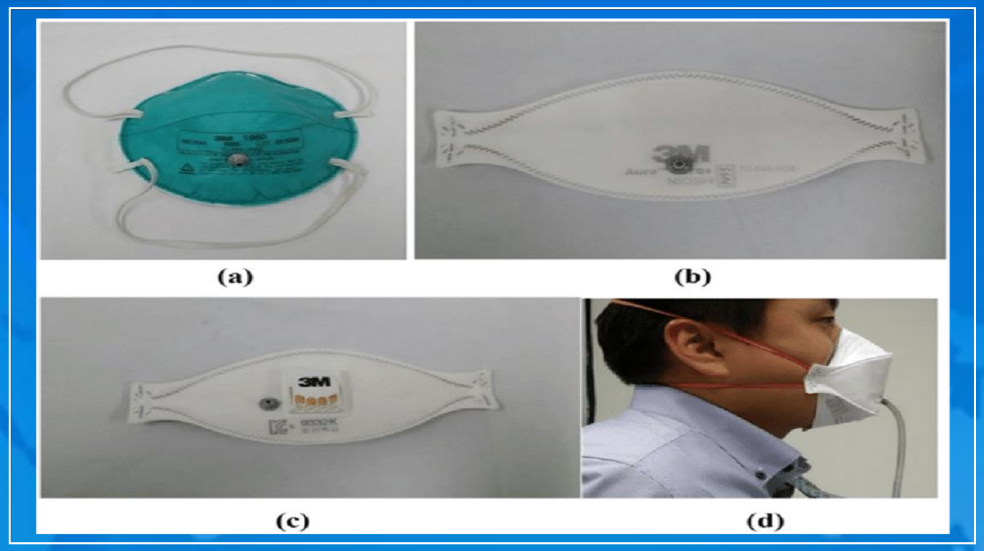
- **Particle Counting**
- **Controlled Negative Pressure**

Particle Counting

- Need ambient particles
  - Loss of ambient particles
- Modification of facepiece required - needs adapters
- Must refrain from eating for 15 minutes smoking for 30 minutes
- Annual cleaning and re-calibration

OSHA recommends

- Healthcare employers may change the method of fit testing from a destructive method (i.e., quantitative) to a non-destructive method (i.e., qualitative.



Temporary Enforcement Guidance - Healthcare and General Industry

- Perform **initial fit tests for each HCP with the same model, style, and size respirator that the worker will be required to wear for protection against COVID-19** **(initial fit testing)** is essential to determine if the respirator properly fits the worker and is capable of providing the expected level of protection

Respirators Certified in Other Countries that are Similar to the N95		
Country	Performance Standard	Acceptable Classifications
Australia	AS/NZS 1716:2012	P3; P2
Brazil	ABNT/NBR 13694:1996 and 13697:2010	P3; P2
China	GB 2626-2006	KN100; KP100; KN95; KP95
Europe	EN 149-2001	FFP3; FFP2
Japan	JMHLW-2000	DS/DL3; DS/DL2
Korea	KMOEL-2017-64	Special 1st
Mexico	NOM-116-2009	N100; P100; R100; N99; P99; R99; N95; P95; R95

Temporary Enforcement Guidance – Healthcare and General Industry

- Inform workers that the employer is temporarily suspending the **annual fit testing of N95 filtering facepiece respirators** to preserve and prioritize the supply of respirators for use in situations where they are required to be worn

Annual Fit Testing Suspended
Not Initial Fit Testing

https://www.osha.gov/news/newsreleases/national/03142020

https://www.osha.gov/memos/2020-04-08/expanded-temporary-enforcement-guidance-respiratory-protection-fit-testing-n95

Temporary Enforcement Guidance

- Most respirator manufacturers produce multiple models that use the same basic head form for size/fit.
- Manufacturers may have a crosswalk (i.e., a list of their respirators with **equivalent** fit).

Equivalent

Temporary Enforcement Guidance - Healthcare

- Therefore, 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.

Preformed

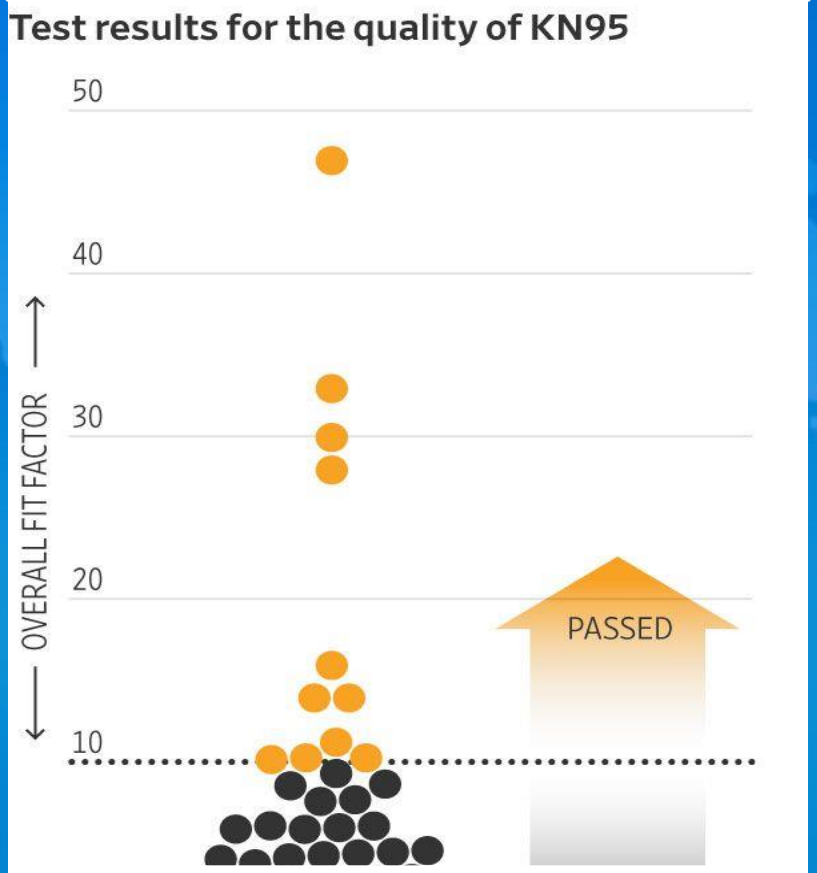
Flat folded

Not Equivalent

KN95's are not equal to N95's

- Studies have shown that the filtration efficiency of KN95 masks, for example, drops after sterilization or extended use.
- The filtration efficiency can drop even 50% post-sterilization.
- FDA removes Emergency Use Authorization for some KN95 masks
  - Masks failed to demonstrate at least 95% particulate filtration efficiency

High fit test failure rate



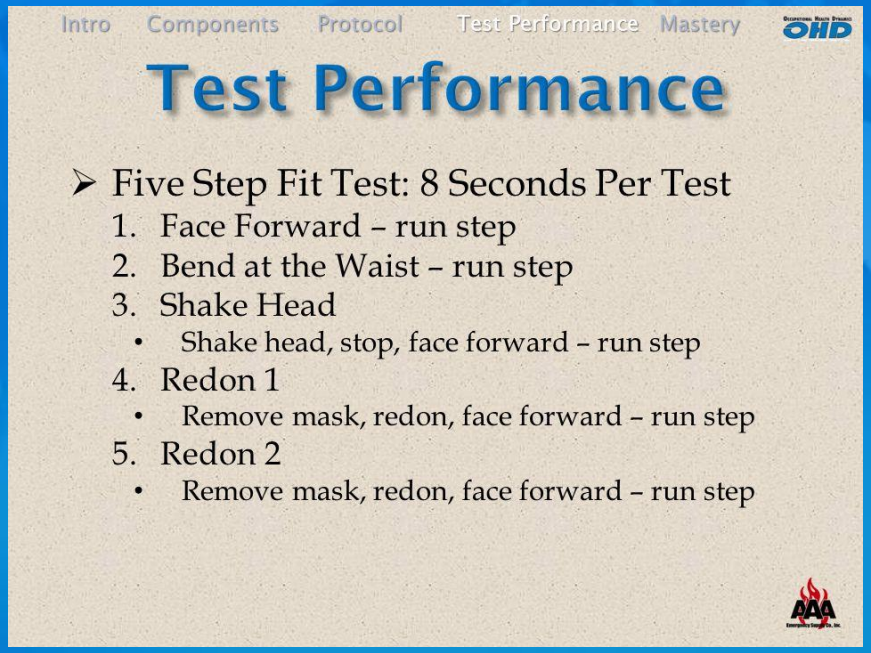
Most do not measure up to the minimum filtration standards

Appendix A - Mandatory

8-Step

(1) Normal breathing
(2) Deep breathing
(3) Turning head side to side
(4) Moving head up and down.
(5) Talking
(6) Grimace
(7) Bending over
(8) Normal breathing

REDON



OSHA Final Rule - Sept 26th - 2019 Volume 84, Number 187

- These Alternative choice options where effected September 26, 2019 and include new modified rules for the following respirators:

Fast-Full Method	Fast-FFR
Full-facepiece and Half-mask elastomeric respirators	Filtering facepiece respirators

Fit Test During COVID-19

- The same hood is used for a employee that was used during the sensitivity test for that subject
- Use one set of nebulizers for each subject being fit tested.
- Disinfect the inside surface of hoods and the outer surfaces of nebulizer nozzles between each fit test,

Fit Test During COVID-19

- Non-regulation Qualitative Fit Test hoods could lead to false passes.
  - the HSE's OC 282/28 and the ANSI Z88.10:2010 recommend that Qualitative Fit Test hoods be 12" in diameter, 14" tall, form a cylindrical shape and have an internal **hood space volume of 20l**, not all Fit Test kit hoods measure up.

Fit Test During COVID-19

- Exhaled breath could make contact with internal areas of an adapter kit
  - Disinfect the outside of the fit testers
  - Adapters should be disinfected between each fit test
  - Moisture can build up in the duel and triple tubing

Draft

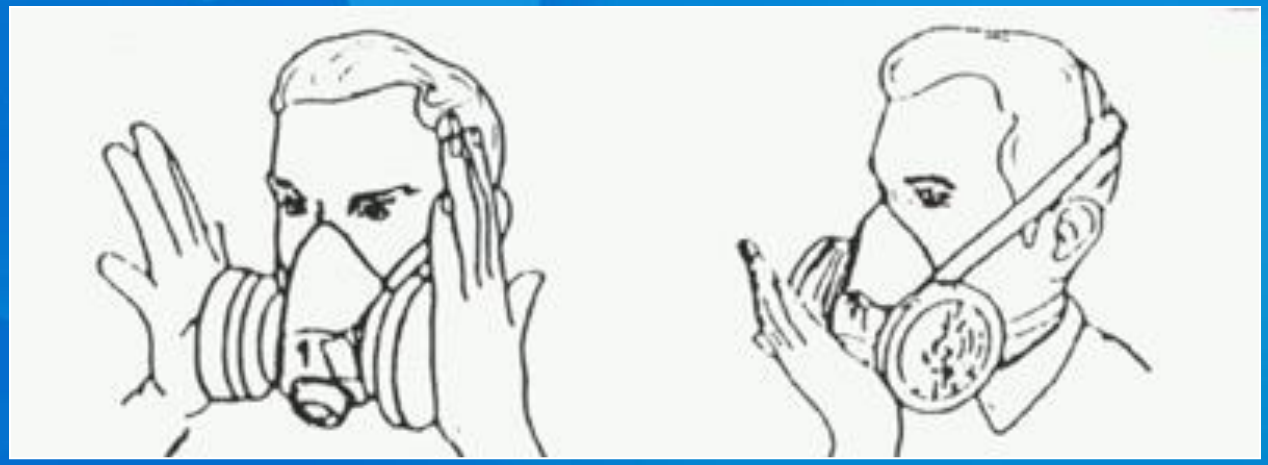
Quantitative and Qualitative Fit Testing Protocols – Modified with Social Distancing

Summary: A few steps will be moved up, to avoid contacting the respirators after the user has touched it, and the user will get verbal reminders more than 6 feet away from the tester.

Quantitative	Qualitative
• Set up two tables 6-10 feet apart – one for supplies and the other for the Portacount. • Put on disposable gloves, mask and reusable lab coat. • Place a blank quantitative fit-test report form and a laminated annotated form for the four exercises at the supplies table for the user to fill out and review, respectively. • Ask user to self-certify that they don't have Covid-19 symptoms. • Get concurrence from the user about make, model and size of a recommended respirator to try first and affix the adapter and tubing to the respirator at Portacount table. • Step back to the supplies table and ask the subject to put on the respirator and conduct user seal checks (with the tubing attached but with the Portacount pump off). • Instruct the user to hit the start button and look at the Portacount screen for the prompts on each new exercise (supplemented by a verbal reminder). • Ask the user to take off the respirator and remove the tubing from the respirator, placing the elastomeric respirator beside the Portacount (or disposing of the N95 filtering facepiece respirator) and stepping back to the supplies table (where the tester places the fittest card if applicable). • Use alcohol or disinfectant wipe to clean the outside of the end of the tubing, the inside and outside surfaces of an elastomeric respirator, and the Portacount screen. • Wipe down gloves with alcohol sanitizer. • Discard disposable PPE and disinfect reusable lab coats at session's end.	• Use two adjacent rooms: one for the sensitivity test, the other for the fit test. If not practical, delineate separate zones with tables or chairs to maintain distance. • If testing rooms have operable windows, open them. • Set up two tables 6-10 feet apart – one for Bitrex and alternatively Saccharine solutions (and other supplies) and the other for the user. • Put on disposable gloves, mask, and reusable lab coat. • Ask user to declare that they don't have Covid-19 symptoms. • Make sure the user is not congested and hasn't smoked, eaten, chewed gum, or drunk flavored beverages within the last 15 minutes to an hour. • Place a blank qualitative fit-test report form and laminated annotated form for the seven exercises at the user table for the user to fill out and review, respectively. • Place a clean paper towel on the table next to the Sensitivity test. • Tell the user to don the fit test hood and then remove their mask and place on the paper towel. • Extend arm to spray the user with one of the test solutions, to conduct odor threshold screening to confirm that the user is sensitive to the solution in increments of 10, 20, or 30 squeezes of the atomizer. • Instruct the user to move to the Fit-test zone or Room • Get concurrence from the user about a make, model and size of a recommended respirator to try first (from sealed Ziploc bags if a separate room wasn't used for sensitivity testing). • From > 6 feet away, ask the user to put on the respirator and conduct user seal checks. • Instruct the user to put on the test hood. • (The tester will) Spray the test solution into the hood and time the exercises while the user conducts the exercises. • After the successful conclusion of the 7th test and before the hood comes off, the user is to reach up and inside the hood and begin to pull the respirator away from the face. Confirm that the wearer now smells the solution. If so, then testing has come to an end. • Ask the subject to take off the respirator, placing the elastomeric respirator on the user table (or placing passing N95s in a paper bag for user to reuse or placing failed N95s into common bag for potential decontamination) and picking up the fit test card if applicable at the supplies table. • Spray and wipe down the inside of the hood with a disinfectant rated for COVID • Use alcohol or disinfectant wipe to clean the inside and outside surfaces of an elastomeric respirator). • Wipe down gloves with alcohol sanitizer. • Discard disposable PPE and disinfect lab coats at session's end.

Use of Respirators (g)

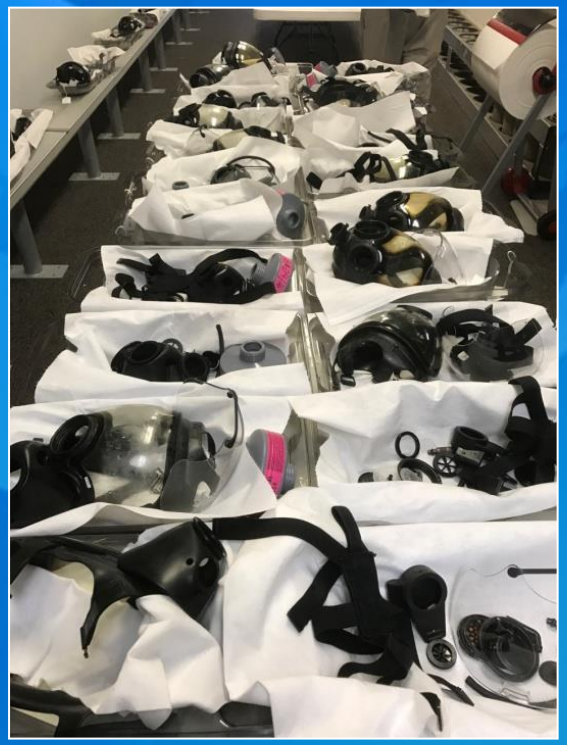
- Employees shall perform a user seal check each time they put on a tight-fitting respirator using the procedures in mandatory Appendix B-1 or equally effective manufacturer's procedures. Donning/Doffing Procedures for respirator use in IDLH atmospheres



1910.134 APP B-2 - RESPIRATOR CLEANING PROCEDURES (MANDATORY)

OSHA VS MANUFACTURES GUILDELINES

1910.134 App B-2 – (Mandatory)

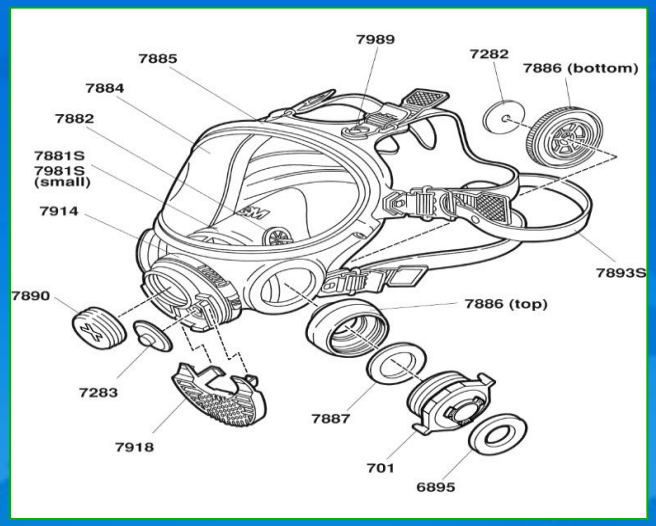


Decontamination of FFR's

- Ultraviolet germicidal irradiation (UVGI),
- Vaporous hydrogen peroxide (VHP), and
- Moist heat showed the most promise as potential methods to decontaminate FFRs, researchers, decontamination companies, healthcare systems, or individual hospitals should focus current efforts on these technologies

Cleaning, Inspection and Storage

- All respirators must be inspected for basic function before each use and during the cleaning and disinfecting process.
- A respirator inspection must include a check of the respirator's ability to work properly; the tightness of any connections; and the condition of the various parts, such as the facepiece, head straps, valves, tubes, hoses, and any cartridges, canisters, or filters.



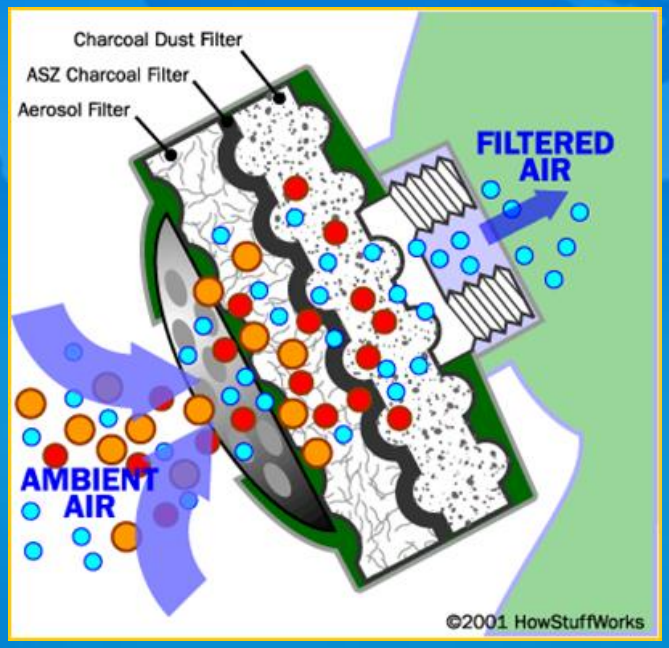
Identification of Filters, Cartridges, and Canisters (j) – Dual Hazard Now

- used in the workplace must be labeled and color coded with the NIOSH approval label.
  - The label must not be removed and must remain legible.

	N7500-82 Acid Gases and Highly Toxic Particulates Filter/Cartridge (HEPA)	**Chlorine, Hydrogen Chloride, Sulfur Dioxide or Hydrogen Fluoride or Formaldehyde; Dusts, Fumes, Mists, Radionuclides and Radon Daughters:** Approved for respiratory protection against chlorine, hydrogen chloride, sulfur dioxide or hydrogen fluoride or formaldehyde; dusts, fumes and mists having a time-weighted average less than 0.05 milligram per cubic meter, and asbestos containing dusts and mists, radionuclides and radon daughters attached to these dusts fumes and mists.
	N7500-83 Organic Vapors, Acid Gases and Highly Toxic Particulates Filter/Cartridge (HEPA)	**Organic Vapors, Chlorine, Hydrogen Chloride, Sulfur Dioxide or Hydrogen Fluoride or Chlorine Dioxide; Dusts, Fumes, Mists, Radionuclides, and Radon Daughters:** Approved for respiratory protection against organic vapors, chlorine, sulfur dioxide or hydrogen fluoride or chlorine dioxide; dusts, fumes, mists and having a time-weighted average less than 0.05 milligram per cubic meter, and asbestos containing dusts and mists, radionuclides and radon daughters attached to these dusts, fumes and mists.
	N7500-84 Ammonia, Methylamine and Highly Toxic Particulates Filter/Cartridge (HEPA)	**Ammonia, Methylamine, Dusts, Fumes, Mists Radionuclides, and Radon Daughters:** Approved for respiratory protection against ammonia and methylamine, dusts, fumes and mists having a time-weighted average less than 0.05 milligram per cubic meter, and asbestos containing dusts and mists, radionuclides and radon daughters attached to these dusts, fumes and mists.
	N7500-85 Organic Vapors, or Formaldehyde and Highly Toxic Particulates Filter/Cartridge (HEPA)	**Organic Vapors, or Formaldehyde; Dusts, Fumes Mists, Radionuclides, and Radon Daughters:** Approved for respiratory protection against organic vapors,or formaldehyde; dusts, fumes and mists having a time-weighted average less than 0.05 milligram per cubic meter, and asbestos containing dusts and mists, radionuclides and radon daughters attached to these dusts, fumes and mists.
	9800-8 PAPR* Highly Toxic Particulates Filter (HEPA)	**Dusts, Fumes, Mists, Radionuclides and Radon Daughters:** * For use with PAPR only! Approved for respiratory protection against dusts, fumes and mists having a time-weighted average less than 0.05 milligram per cubic meter, asbestos containing dusts and mists, radionuclides and radon daughters attached to these dusts, fumes and mists. **TC-21C-481**

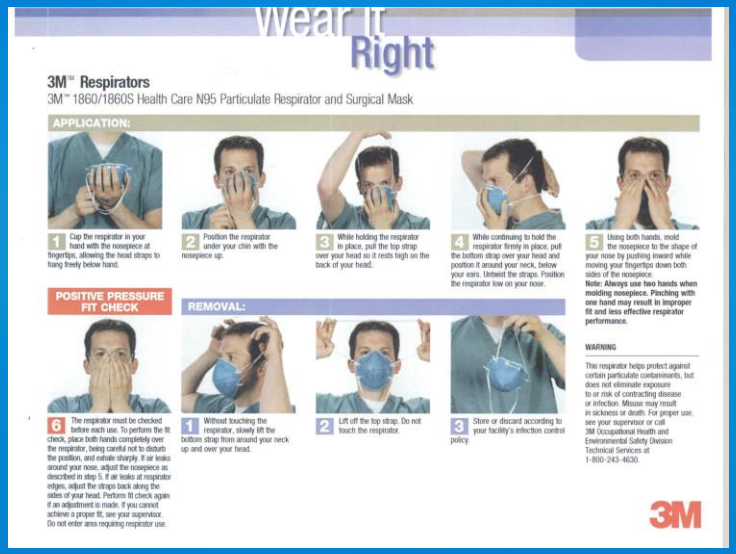
Developing a Respirator Cartridge Change Schedule

- The following factors must be considered when developing a respirator cartridge change schedule:
  - Contaminants
  - Concentration
  - Frequency of use
    - continuously, intermittently) throughout the shift
  - Temperature
  - Humidity
  - Wearer's work rate
  - The presence of potentially interfering chemicals

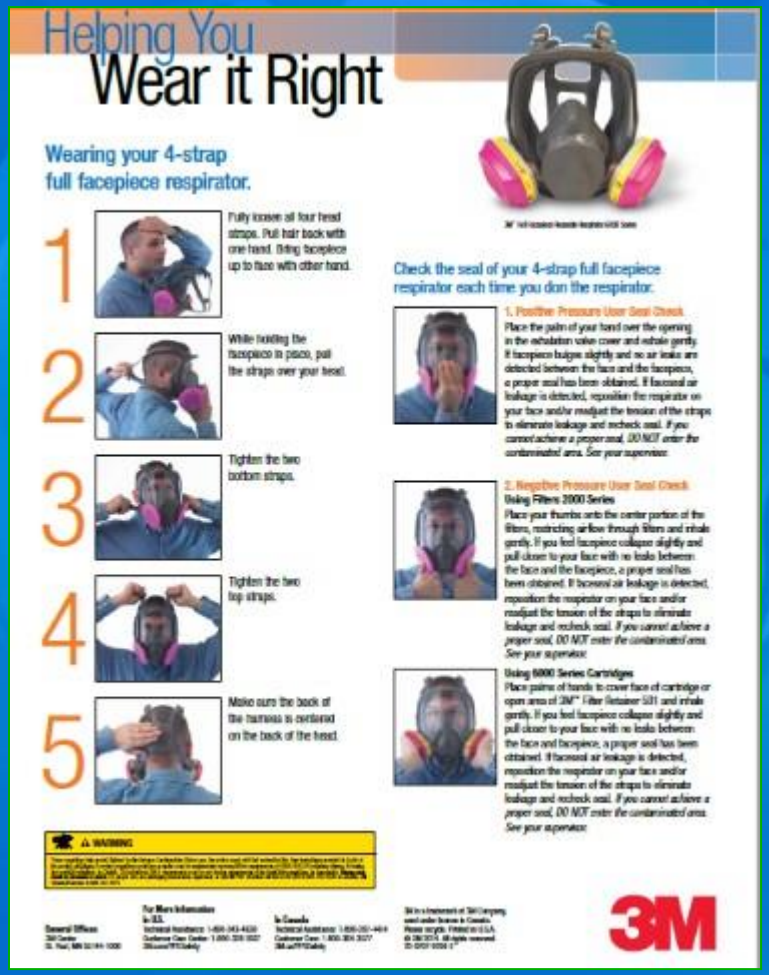


Training and Information (k)

- Employees can demonstrate knowledge of:
  - Why the respirator is necessary and the consequences of improper fit, use, or maintenance.
  - Limitations and capabilities of the respirator.
  - How to effectively use the respirator in emergency situations.
  - How to inspect, put on, remove, use, and check the seals of the respirator.
  - Maintenance and storage procedures.



Program Evaluation (I)



- The type and extent of hazards in your workplace.
- The types of respirators used by your employees.
- The number of your employees who use respirators.
- The amount of experience your respirator-wearing employees have in using respirators.

Recordkeeping (m)

- Records of medical evaluations must be retained and made available per 29 CFR 1910.1020.
- A record of fit tests must be established and retained until the next fit test.
- A written copy of the current program must be retained.

UNIVERSITY OF IOWA
QUALITATIVE FIT TEST RECORD

Within the last year, you have been medically cleared by UEHC staff to wear a respirator and you have a "Respirator Fitness Medical Form". Yes__ No__

Since your last medical evaluation, you have **not** experienced any medical signs or symptoms that impact your ability to wear a respirator. Yes__ No__

*If you answered no to either question, **do not** proceed with the fit test. Contact UEHC (at 6-3631) to request an appointment. Fill out the OSHA questionnaire (see following 2 pages) and take with you to your appointment. Sign on the line immediately below:*

Employee's signature_____ Date _____

Name_____ Date _____

University I.D.# _____ Job Title_____

Department or Workgroup _____

Pos.___ and/or Neg.___ Pressure Check Employee Initials_____

Type of qualitative fit test used_____

Name of test operator_____ Initials_____

Sensitivity Test: Pass ____/ Fail ____ Protection Factor = 10

# of squeezes needed to detect test solution 10 20 30

RESPIRATOR BRAND	MODEL	SIZE	PASS/FAIL?
#1_____	_____	S M L	P / F
#2_____	_____	S M L	P / F
#3_____	_____	S M L	P / F

NOTES: _____

This record indicates that you have passed or failed a qualitative fit test as shown above for the particular respirators shown. You are only eligible to wear the respirator types for which you passed a fit test in the last 12 months. If you need or desire any additional type of respirator, you must pass a fit test on that specific type.

Western

Respirator Fit-Test Record

Name: _____

Was successfully fit-tested and trained in the proper use, care and limitations of this respirator

Make _____ **Model** _____ **Size** _____

Issue Date: _____ **Expiry Date** _____

Trainer Signature _____

Occupational Health and Safety

The International Safety and Health Specialists

- Dennis A. Terpin, Ph.D., O.H.S.T., EMT-P, Certified Fire Officer, Master Instructor FEMA/DHS
- Retired Senior Industrial Hygienist and Emergency Manager at The University of Illinois Chicago

Thank you for letting me share my 50 years of experience