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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 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).

• Review the 2020 temporary changes to 29 CFR 1910.134 (March, April and ?).

• Identify how to select the correct respirator for a specific job and job site.
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.
OSHA requirements apply to preventing occupational exposure to SARS-CoV-2.
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).

```markdown
**Respirator-Use Requirements Flow Chart**
29 CFR 1910.134(c)

- Are respirators:
  - necessary to protect the health of the employee; or
  - required by the employer?

  - **YES**
    - Must establish and implement a written respirator program with worksite-specific procedures.
  - **NO**

- Does the employer permit voluntary use of respirators?

  - **NO**
    - **STOP**
  - **YES**

- Does the only use of respirators involve the voluntary use of filtering facepieces (dust masks)?

  - **YES**
    - Employer determines that the respirator itself does not create a hazard.
    - Must provide users with information contained in Appendix D.
    - No respirator program required.
  - **NO**
    - Employer determines that the respirator itself does not create a hazard.
    - Must provide users with information contained in Appendix D.
    - Must establish and implement those elements of a written respirator program necessary to ensure that employee is medically able to use that respirator.
```
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

- 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.”
Hierarchy of Hazard Controls

Navigation hazards
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

<table>
<thead>
<tr>
<th>Equipment/Task</th>
<th>Engineering and Work Practice Control Methods</th>
<th>Required Respiratory Protection and Minimum Assigned Protection Factor (APF)</th>
</tr>
</thead>
</table>
| (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.  
  - When used indoors or in an enclosed area. | ≤ 4 hrs/shift: None  
  > 4 hrs/shift: APF 10                                                                                          |
# Hierarchy of Hazard Controls

## PPE

- **Alternate Respiratory Protection for Healthcare and First Responders - Filtering Facepiece and Elastomeric Respirators**

## What are Air-Purifying Respirators?

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Filtering Facepiece Respirator (FFR)</strong></td>
<td>- Disposable&lt;br&gt;- Covers the nose and mouth&lt;br&gt;- Filters out particles such as dust, mist, and fumes&lt;br&gt;- Select from N, R, P series and 95, 99, 100 efficiency level&lt;br&gt;- Does NOT provide protection against gases and vapors&lt;br&gt;- Fit testing required</td>
</tr>
<tr>
<td><strong>Elastomeric Half Facepiece Respirator</strong></td>
<td>- Reusable facepiece and replaceable cartridges or filters&lt;br&gt;- Can be used to protect against gases, vapors, or particles, if equipped with the appropriate cartridge or filter&lt;br&gt;- Covers the nose and mouth&lt;br&gt;- Fit testing required</td>
</tr>
<tr>
<td><strong>Elastomeric Full Facepiece Respirator</strong></td>
<td>- Reusable facepiece and replaceable canisters, cartridges, or filters&lt;br&gt;- Can be used to protect against gases, vapors, or particles, if equipped with the appropriate cartridge, canister, or filter&lt;br&gt;- Provides eye protection&lt;br&gt;- More effective face seal than FFRs or elastomeric half facepiece respirators&lt;br&gt;- Fit testing required</td>
</tr>
<tr>
<td><strong>Powered Air-Purifying Respirator (PAPR)</strong></td>
<td>- Reusable components and replaceable filters or cartridges&lt;br&gt;- Can be used to protect against gases, vapors, or particles, if equipped with the appropriate cartridge, canister, or filter&lt;br&gt;- Battery-powered with blower that pulls air through attached filters or cartridges&lt;br&gt;- Provides eye protection&lt;br&gt;- Low breathing resistance&lt;br&gt;- Loose-fitting PAPR does NOT require fit testing and can be used with facial hair&lt;br&gt;- Tight-fitting PAPR requires fit testing</td>
</tr>
</tbody>
</table>
Respiratory Protection Program (c)

• The employer must provide respirators, training, and medical evaluations at no cost to the employee.
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.
• **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?

• What are NIOSH Approved-N95 Respirators

“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.

In a healthcare setting, however, these masks are unacceptable.
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?
- Can you share PPE?

Manufactures have updated their Care and Maintenance Guidelines for Electrical PPE, incorporating important CDC guidelines and references to ASTM F496.
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
  - Medical evaluations are conducted PRIOR to fit testing
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.
Respiratory Illness Clusters
Risk Based Occupational Exposure Assessment

• Minimize the number of employees exposed
• Minimize the amount of infectious aerosol in the air
• Protect employees 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)

R: Recognize the hazard
A: Avoid exposure
I: Isolate from the exposure
N: Notify
Respiratory Protection Program (c)

- Respiratory Protection: Program Development and Administration
- RP PER-263-24 Contact Hours
- [https://cdp.dhs.gov/](https://cdp.dhs.gov/)
Risk Based Selection of Respirators (d)

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

“Regular Dust” vs “Respirable Dust”

HUMAN HAIR
50-70 μm (microns) in diameter

PM2.5
Combustion particles, organic compounds, metals, etc.
< 2.5 μm (microns) in diameter

PM10
Dust, pollen, mold, etc.
< 10 μm (microns) in diameter

FINE BEACH SAND
90 μm (microns) in diameter
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 mask will lose any value unless it's combined with frequent hand-washing and social distancing.
Hierarchy of Controls - PPE

- Surgical masks are not designed or certified to prevent the inhalation of small airborne contaminants.
- Surgical masks 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.

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
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 N-95 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)

### Job Safety Analysis Worksheet

**Title of Operation:** Cleaning HEPA Filter HVAC Duck  
**Position/Title:** Building Engineer  
**Department:** Facilities  
**SOP/SWP No.:** 19-619-HVAC  
**Building:** 619  
**Section:** East Campus

<table>
<thead>
<tr>
<th>BASIC STEPS</th>
<th>POTENTIAL HAZARDS</th>
<th>PROCEDURE TO BE FOLLOWED (DOs)</th>
<th>SAFETY PRECAUTIONS (if procedure does not fully control risks) (DON'Ts)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COVID-19</td>
<td>Training, COVID-19,Haz Com RPP, PPE, BBP, Job Sp</td>
<td>N95, Full Suit, Face Shield or non-vented goggles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

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**Prepared by:**  
**Date:**

**Approved by:**  
**Date:**

**H&S Rep/Committee Reviewed:**  
**Date:**

**Next Review Date < 5 yrs:**
# 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

<table>
<thead>
<tr>
<th>Setting</th>
<th>P-100 Respirator</th>
<th>Cloth Face Coverings (Additional guidance here)</th>
<th>Eye Protection Or Face Shield</th>
<th>Gloves</th>
<th>Gown/Coveralls/ Lab Coat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Services (Work on HVAC in Calpulli ONLY)</td>
<td>Yes</td>
<td>No if wearing P-100 respirator</td>
<td>Yes if potential for body fluid or chemical exposure</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes, if not wearing P-100 respirator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities Services - Trades</td>
<td>No</td>
<td>Yes</td>
<td>Yes if potential for body fluid or chemical exposure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities Services - Custodial</td>
<td>Yes, if performing fogging disinfection</td>
<td>Yes</td>
<td>Yes if potential for body fluid or chemical exposure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>No for all other tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities Services - Landscape</td>
<td>No</td>
<td>Yes</td>
<td>Yes if potential for body fluid or chemical exposure</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Shops – Dining Services</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Shops – Campus Stores</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Shops – Conference Services</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Research and Instructional Labs</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Individuals in Offices and Classrooms</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
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.

Fit-testing elastomeric respirators, which filter better than N95s.
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
# Assigned Protection Factors
## Beyond the APF/MUC

<table>
<thead>
<tr>
<th>Respirator Type</th>
<th>Half Mask PF</th>
<th>Full Face Piece PF</th>
<th>Helmet/Hood PF</th>
<th>Loose Fitting Face Piece PF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Purifying</td>
<td>10</td>
<td>50</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>PAPR</td>
<td>50</td>
<td>1000</td>
<td>25/1000</td>
<td>25</td>
</tr>
<tr>
<td>Supplied Air or Airline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Demand Mode</td>
<td>10</td>
<td>50</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>• Continuous Flow</td>
<td>50</td>
<td>1000</td>
<td>25/1000</td>
<td>25</td>
</tr>
<tr>
<td>• Pressure Demand</td>
<td>50</td>
<td>1000</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>SCBA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Demand</td>
<td>10</td>
<td>50</td>
<td>50</td>
<td>---</td>
</tr>
<tr>
<td>• Pressure Demand</td>
<td>---</td>
<td>10,000</td>
<td>10,000</td>
<td>---</td>
</tr>
</tbody>
</table>

10 times safety factor
Maximum use concentration (MUC)

- Means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance.
Selection Factors
Specific Job, Site, Equipment

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”.

N SERIES

NOT RESISTANT TO OIL
N95, N99, N100
Filters at least 95%, 99%, or 99.97% of airborne particles

R SERIES

SOMEWHA T RESISTANT TO OIL
R95, R99, R100
Filters at least 95%, 99%, or 99.97% of airborne particles

P SERIES

STRONGLY RESISTANT TO OIL/OIL PROOF
P95, P99, P100
Filters at least 95%, 99%, or 99.97% of airborne particles

OILS
When products containing oil (like fuel, lubricating or hydraulic oils, solvents, paints, and pesticides) are sprayed or used in processes producing aerosols or droplets, the oil component may become airborne.

CDC
National Institute for Occupational Safety and Health
NIOSH Respirator Selection Guide:
https://www.cdc.gov/niosh/topics/respiratory/dop_part/frespira.html
NIOSH Respirator Selection Guide:
Selection Factors
Specific Job, Site, Equipment
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 on Healthcare Workers

- Dead-space carbon dioxide and oxygen levels were significantly above and below, respectively, the ambient workplace standards, and elevated $P_{CO_2}$ is a possibility.

- If the $P_{CO_2}$ 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.pdf
Some individuals complain of difficulty breathing when wearing an N95 FFR or other protective facemasks, and many pregnant women find that they become somewhat shorter of breath as their pregnancy progresses, causing concern that use of N95 FFRs during pregnancy might make breathing even more difficult and possibly harm the woman and her fetus.

https://blogs.cdc.gov/niosh-science-blog/2015/06/18/respirators-pregnancy/
The higher the dose of a virus given to healthy volunteers, the worse their symptoms.
• 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

Not 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.
Healthcare work tasks associated with exposure risk levels

**High**

- 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.


Your Department Specific Infection Control Policy - An Overview of what might be needed.
Healthcare work tasks associated with exposure risk levels

**Very High**

- 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.
Healthcare workers must use proper PPE when exposed to a patient with suspected or confirmed COVID-19 or other sources of SARS-CoV-2 (See OSHA's PPE standards at [29 CFR 1910 Subpart I]).

OSHA recommends that healthcare workers with exposure to suspected or confirmed COVID-19 patients wear:

- Gloves
- Gowns
- Eye/face protection (e.g., goggles, face shield)
- NIOSH-certified, disposable N95 filter facepiece respirators or better
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 **respirator** for repeated close contact encounters with several patients, without removing the respirator between patient encounters.

[https://www.cdc.gov/niosh/topics/hcw/controls/recommendedguidanceextuse.html](https://www.cdc.gov/niosh/topics/hcw/controls/recommendedguidanceextuse.html)
Fake 3M 8210 Respirators

https://www.3m.com/3M/en_US/worker-health-safety-us/3m-safeguard/
What is a Fit Factor?

• A fit factor is a measure of how well a particular face piece seals against a person's face.
  • It is expressed as a ratio of the concentration of challenge aerosol outside a respirator to the concentration of aerosol that leaks into the respirator through the face seal.
• A fit factor of 100 means the air inside the mask is 100 times cleaner than the air outside.

• OSHA – 500 fit-factor
• CBRNE – up to 2,500 fit-factor
Medical Evaluation (e)

- Must provide a medical evaluation to determine employee’s ability to use a respirator
- Must identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations
  - using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire (information required is contained in mandatory Appendix C)
- Must obtain a written recommendation regarding the employee’s ability to use the respirator from the PLHCP
- Additional medical evaluations are required under certain circumstances.
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
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.
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.
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 filters. 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

• Fitting a specific respirator
  • Manufacturer
  • Make
  • Model
  • Size
• To a specific face
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
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)

**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.

<table>
<thead>
<tr>
<th>Respirators Certified in Other Countries that are Similar to the N95</th>
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<tbody>
<tr>
<td><strong>Country</strong></td>
</tr>
<tr>
<td>Australia</td>
</tr>
<tr>
<td>Brazil</td>
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<td>China</td>
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<td>Europe</td>
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<tr>
<td>Japan</td>
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<tr>
<td>Korea</td>
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<tr>
<td>Mexico</td>
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</tbody>
</table>
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.


Temporary Enforcement Guidance - Healthcare

• 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).
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.
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

Test Performance

- Five Step Fit Test: 8 Seconds Per Test
  1. Face Forward – run step
  2. Bend at the Waist – run step
  3. Shake Head
     • Shake head, stop, face forward – run step
  4. Redon 1
     • Remove mask, redon, face forward – run step
  5. Redon 2
     • Remove mask, redon, face forward – run step
Fit Test During COVID-19

• The same hood is used for an 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

• 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
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.

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Set up two tables 6-10 feet apart – one for supplies and the other for the Portacount.</td>
<td>• 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.</td>
</tr>
<tr>
<td>• Put on disposable gloves, mask and reusable lab coat.</td>
<td>• If testing rooms have operable windows, open them.</td>
</tr>
<tr>
<td>• 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.</td>
<td>• Set up two tables 6-10 feet apart – one for Bitrex and alternatively Saccharine solutions (and other supplies) and the other for the user.</td>
</tr>
<tr>
<td>• Ask user to self-certify that they don’t have Covid-19 symptoms.</td>
<td>• Put on disposable gloves, mask, and reusable lab coat.</td>
</tr>
<tr>
<td>• 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.</td>
<td>• Ask user to declare that they don’t have Covid-19 symptoms.</td>
</tr>
<tr>
<td>• 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).</td>
<td>• 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.</td>
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<tr>
<td>• 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).</td>
<td>• 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.</td>
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<tr>
<td>• 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).</td>
<td>• Place a clean paper towel on the table next to the Sensitivity test.</td>
</tr>
<tr>
<td>• 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.</td>
<td>• Tell the user to don the fit test hood and then remove their mask and place on the paper towel.</td>
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<tr>
<td>• Wipe down gloves with alcohol sanitizer.</td>
<td>• 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.</td>
</tr>
<tr>
<td>• Discard disposable PPE and disinfect reusable lab coats at session’s end.</td>
<td>• Instruct the user to move to the Fit-test zone or Room</td>
</tr>
<tr>
<td></td>
<td>• 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).</td>
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<tr>
<td></td>
<td>• From &gt; 6 feet away, ask the user to put on the respirator and conduct user seal checks.</td>
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<td></td>
<td>• Instruct the user to put on the test hood.</td>
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<td></td>
<td>• (The tester will) Spray the test solution into the hood and time the exercises while the user conducts the exercises.</td>
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<td></td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td>• 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.</td>
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<tr>
<td></td>
<td>• Spray and wipe down the inside of the hood with a disinfectant rated for COVID</td>
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<tr>
<td></td>
<td>• Use alcohol or disinfectant wipe to clean the inside and outside surfaces of an elastomeric respirator).</td>
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These Alternative choice options were effected September 26, 2019 and include new modified rules for the following respirators:

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

- Although employers are not required to use the new protocols, the agency believes having alternative fit testing methods gives employers greater flexibility and can reduce the burdens of complying with the respiratory protection standard.
Federal vs State Plans

- States with OSHA-approved State Plans are not obligated to adopt this final rule. Nevertheless.
- OSHA is strongly encouraging them to adopt the final provisions to provide compliance options to employers in their states.”
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
According to NIOSH, facial hair that lies along the sealing area of a respirator—beards, sideburns, moustaches, or stubble—should not be permitted on employees who are required to wear respirators that rely on tight facepiece fit.

This notice supersedes NIOSH’s Oct. 2, 2006.

How it Works:

- Drop an eyelet into the spring-loaded base & spindle
- Place the N95 mask on top and move the loaded top half of the ACCUPUNCH™ near the base
- Mating magnets automatically align the device so you simply press down
- Within seconds, the inlet port is securely and correctly installed and the mask is ready for testing
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
The QuantiCheck is the first quantitative user seal check device. The user engages the QuantiCheck, takes a comfortable breath and holds. At the lowest point of the negative pull, the system starts a calculation which is a proprietary algorithm that measures pressure loss from the respirator.
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.
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)

- 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.
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.
29 CFR 1910.134 - Appendix D

What type of respirator do you wear?

- N95 or dusk mask
  - Is your use voluntary or required?
    - Voluntary
      - Appendix D Notification
    - Required
      - Full Respiratory Protection Program

- All other respirator types
  - Is your use voluntary or required?
    - Voluntary
      - Abbreviated Respiratory Protection Program
    - Required
      - Full Respiratory Protection Program
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.
All our seminars and in-house training programs are approved hour for hour CEU’s by The Illinois Occupational and Environmental Health and Safety Education and Research Center. The University of Illinois at Chicago School of Public Health.

Contact Dennis Terpin
At
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Thank you