



Respiratory Protection Program Toolkit



CO L O R A D O

Department of Public
Health & Environment

COVID-19 GUIDANCE

Respiratory protection program toolkit

Introduction

The COVID-19 pandemic requires workers in Long Term Care Facilities (LTCF) and other critical infrastructure jobs to protect themselves in ways they are not accustomed to. It is important that our workforce is trained on how to properly wear personal protective equipment (PPE), especially respiratory protection.

The Occupational Health and Safety Administration (OSHA) General Industry (29 CFR 1910.134) [Respiratory Protection Standard 1910.134](#) is applicable and enforceable to [employers](#)¹ who have identified hazards in the workplace that require employees to wear a respirator. Organizations that are not governed by OSHA should note that Centers for Disease Control and Prevention (CDC), Centers for Medicare & Medicaid Services (CMS), and the Joint Commission (TJC) defer to OSHA's Respiratory Protection Standard as the best practice for worker and patient safety. To achieve the desired level of protection, respirators must be fit, issued, and used within the context of the OSHA Respiratory Protection Standard 29 CFR 1910.134.

Colorado Department of Public Health and Environment (CDPHE) developed this respiratory protection toolkit by researching OSHA standards and recommendations of Centers for Disease Control and Prevention (CDC), The Joint Commission (TJC), Centers for Medicare & Medicaid Services (CMS), National Institute of Occupational Safety and Health (NIOSH), and the American Association of Occupational Health Nurses (AAOHN). This toolkit focuses on the OSHA Respiratory Protection Standard to help Colorado local public health agencies (LPHAs), along with their community partners, navigate the guidelines to achieve a highly reliable and OSHA-compliant respiratory protection program. This

¹ The OSHA Act of 1970 section 3(5) excludes Federal OSHA's authority over employees of state and local government.



Respiratory Protection Program Toolkit

toolkit is meant to bring about a greater understanding of why the development of a comprehensive respiratory protection program is a best practice to protect employees and patients.

Goals

- Employers will be able to identify hazards within the workplace that require respirator use.
- After hazard identification, employers will promptly develop and implement a written comprehensive respiratory protection program that is OSHA compliant.
- A site respiratory program administrator or champion will be identified to oversee and maintain the program.
- As long as the hazard remains within the workplace, staff will be trained on respirator use and fit tested upon hire and at least annually.
- Medical evaluations will be completed and evaluated prior to an employee donning and being fit to a N95 or higher respirator.
- Quantitative or qualitative fit tests will be performed after medical clearance in accordance with OSHA Standard 1910.134.
- A variety of N95 masks will be obtained and provided to ensure the employee can obtain a proper fit.
- If Powered Air Purifying Respirators (PAPRs) are acquired, a preventative maintenance plan will be drafted in accordance with the manufacturer's instructions for use.
- Employers will implement an OSHA compliant and sustainable respiratory program as long as hazards remain in the workplace.
- Employers will demonstrate understanding of OSHA's temporary guidance and memorandums.

“Ultimately, a highly reliable respiratory protection program is one in which all staff who need to use respirators have the proper training, knowledge, equipment, time, and support, and actually use the appropriate respirators when indicated.” (The Joint Commission, 2014).

Respiratory Protection Program Segments

Fit testing is one part of the respiratory protection standard; however, fit testing alone does not fulfil the program requirements. There are three essential components of OSHA's Respiratory Protection Program: nine required program elements, a written program, and program administration.

Nine required program elements

1. Procedures on how to select a respirator.
2. Medical evaluations of employees who are required to wear respirators.



Respiratory Protection Program Toolkit

3. OSHA compliant fit testing procedures for tight fitting respirators and tight fitting PAPRs².
4. Procedures for correct use of respirators for day-to-day operations and emergency preparedness.
5. Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, and discarding respirators.
6. Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators.
7. Training of employees in the respiratory hazards to which they may be potentially exposed in the workplace.
8. Training of employees in proper use of respirators, including donning, doffing, and respirator limitations.
9. Protocols and procedures on how to evaluate program effectiveness.

Written program

- Policies and procedures are site specific.
- Must be a living document to remain current with the OSHA respiratory protection program standard.
- Must be administered by a suitably trained program administrator such as an:
 - Occupational health nurse.
 - Industrial hygienist.
 - Occupational medicine provider.
 - Infection preventionist.

Program Administration

- Executive support of program.
- Designation of program ownership along with a subcommittee to support program sustainability.
 - Recommended key stakeholders of subcommittee can include: program lead/champion, charge nurses, front line staff, supply chain, environmental services staff (EVS), and human resources.
- Sustainability measures to keep the program active (e.g., attrition).
- Annual competency to align with [scope](#) of persons performing the medical evaluation portion of the program.
- Supply chain and logistics.
 - Establish the minimum level of inventory that you need on hand for a given time period (par levels) and [burn rates](#) (i.e., supply and demand).
 - Maintain a variety of respirators.
 - Offer alternatives for when respirator fit is not obtained³.

² Loose fitting PAPRs do not require fit testing; however, fit testing must still be done for tight fitting PAPRs.

³ Depending on quantities and national supply chain production, options may be limited.



Respiratory Protection Program Toolkit

- Survey staff annually to determine mask selection.
- Acquire and maintain supplies to perform initial⁴ and annual training
- Train and maintain just-in-time fit test trainers.

The purpose of the program is to provide the appropriate level of protection to workers at risk for exposure. This is known as observing permissible practice. This program is meant to ensure staff are trained on which pathogens warrant respirator use, when to wear a respirator, maintaining par levels that correspond with burn rate, maintaining just-in-time trainers to perform fit testing, and when medical evaluations are reviewed by a licensed health care professional and referrals are made if necessary. The purpose of fit testing is to ensure the person wearing the mask is physically able to tolerate wearing the respirator and the respirator forms a tight seal to enable 95% filtration efficiency.

OSHA Emergency Temporary Standard: Mini Respiratory Protection Program 29 CFR 1910.504

In response to the presidential [executive order](#) to protect workers, OSHA published the [Emergency Temporary Standard \(ETS\) for Healthcare Workers](#). The new ETS contains a Mini Respiratory Protection Program (MRPP) to be applied **only in specific circumstances**. The MRPP is **not** meant to replace or substitute OSHA's normal Respiratory Protection standard (29 CFR 1910.134).

A key highlight of the MRPP is that a tight fitting respirator such as a N95 can be used in place of a facemask when a respirator is **not** required. The full respiratory protection program (CFR 29 1910.134) should be observed when there is a risk of exposure to a person with confirmed or suspected COVID-19, for Aerosol Generating Procedures (AGP), and for Standard and Transmission based precautions. Please refer to OSHA's [Mini Respiratory Protection Program Fact Sheet](#) for additional information and criteria for this standard.

Voluntary Respirator Use - ONLY IF IT IS DETERMINED THERE IS NO HAZARD

Employers who choose to allow employees to wear a higher level of protection than needed must determine that no hazard is present. An example of this would be an employee who chooses to wear a N95 respirator when there is no risk or hazard present that would require N95 use.

See [Appendix D or state OSHA additional guidance around voluntary use](#).

Hazard assessment

⁴ If the initial fit test is taking place with a contracted occupational medicine provider, this par level can be deferred.





Respiratory Protection Program Toolkit

This assessment identifies the hazards within the workplace such as bacteria and viruses that can be transmissible when aerosolized. This is done by assessing jobs and tasks that place workers at risk for exposure to airborne (aerosolized) transmissible diseases. Transmission-based airborne precautions may be in place for high risk biological agents such as SARS-CoV-2, measles, tuberculosis (TB), and others. These precautions require the use of respiratory protection that must be utilized in accordance with the OSHA respiratory protection standard. Once the hazards are identified, the next step is to identify the persons who will be exposed to the hazards. Those who routinely care for and provide services for those with confirmed or suspected COVID-19 will meet the criteria. The workers to be fit tested should be primary caregivers and ancillary workers (EVS, spiritual care, etc). Please refer to [OSHA's Mini Respiratory Protection Program](#) fact sheet for criteria of when to apply this standard.

Surgical mask versus N95 tight fitting respirator

CDC's Airborne Precautions

Droplet Precautions	Airborne Precautions
Reduce transmission of large infectious droplets (e.g., pneumonia, pertussis, meningitis)	Reduce exposure to aerosol transmissible diseases (ATDs) (e.g., tuberculosis, SARS, H1N1)
↓	↓
Surgical masks and eye protection (goggles/faceshields)	Respirators and other control measures, such as patient isolation.
	
Surgical Mask	Filtering Facepiece Respirator



Respiratory Protection Program Toolkit

Mask and respirator identification

N95

- N = non-oil resistant.
- 95 = the mask has a 95 percent efficiency of filtering airborne particles when donned correctly each time.
- When respiratory protection is required, employers must provide NIOSH-certified respirators ([American Association of Occupational Health Nurses](#)).

N100

- N = non-oil resistant
- 100 = the mask has a 99.97 percent efficiency of filtering airborne particles when donned correctly each time.

[NIOSH respirator certification](#). TC approval number is the indicator that the respirator is NIOSH-approved.

Required Labeling of NIOSH-Approved N95 Filtering Facepiece Respirators

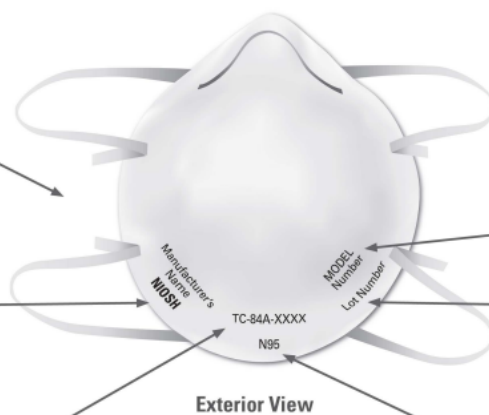
For more information about NIOSH-Approved respirators, go to: <http://knowits.NIOSH.gov>

Example of Exterior Markings—Approval holder business name, a registered trademark or an easily understood abbreviation.

If privately labeled, the private label name or logo will appear instead of the approval holder business name.

NIOSH—NIOSH name in block letters or NIOSH logo.

TC-Approval Number (TC-84A-XXXX)—For products manufactured after September 2008, the TC-Approval number is required to appear on the product.



Model # XXXX—Model Number or Part Number

Lot # XXXX—Lot Number and Date of Manufacture (recommended, but not required)

Filter Designation—NIOSH filter series. Alpha-numerical rating followed by filter efficiency level (example, N95, N99, N100, R95, P95, P99, P100)



Respiratory Protection Program Toolkit

Image courtesy of [NIOSH](#)



Counterfeit respirators - Image courtesy of NIOSH

Unfortunately, there is an abundance of counterfeit respirators. Counterfeit respirators will not provide the same protection as NIOSH-approved respirators. Be certain the respirators you are providing to your employees are on the NIOSH-approved list.

“This is an example of a misrepresentation of the NIOSH-approval. Yark is not a NIOSH approval holder or private label holder. Additionally, respirators from the box include the CE (European) approval mark and NIOSH N95. This is not an acceptable format for a NIOSH-approved respirator. (3/5/2020)” [CDC NIOSH 2020](#)



Respiratory Protection Program Toolkit

Other types of respiratory protection

An alternative to N95 respirators are Powered Air Purifying Respirators (PAPRs) or Continuous Air Purifying Respirator or (CAPRs). These are loose-fitting devices that use positive pressure to provide respiratory protection. A fit test is not required for the use of loose fitting PAPRs; however, a medical evaluation must be completed in advance to aid the licensed health care professional in determining if the person is cleared for use.

Types of PAPRs:

- PAPR (Powered Air Purifying Respirator) Powered Air Purifying Respirator
 - Loose fitting PAPR
 - Tight fitting PAPR (requires a fit test)
- CAPR (Continuous Air Purifying Respirator) Continuous Air Purifying Respirator



Photo courtesy of Maxair



Photo courtesy of 3M



Photo courtesy of CleanSpace

Facilities that are deemed low risk for tuberculosis within accordance of the CDC's TB annual risk assessment may choose to use only PAPRs to meet the requirements of employee safety standards. However, facilities that chose to use PAPRs only must have a comprehensive emergency preparedness plan to institute N95 use and perform just-in-time fit testing. The rationale behind just-in-time fit testing is that there will not be enough PAPRs to allocate to all staff, and the facility will need to initiate fit testing to N95 respirators. Just-in-time trainers must be certified each year as being competent to fit-test staff to tight-fitting N95 respirators. In addition to the just-in-time trainers, the other elements of the respiratory protection program, such as medical evaluations and a variety of respirators, are still valid and must be observed. Facilities and organizations should review their current supply chain and logistics agreements. Vendors for the PAPR should provide manufacturer instructions for use and maintenance of the device.



Respiratory Protection Program Toolkit

Before a person is fit to a respirator or PAPR the following must occur in the following order:

- Medical evaluation.
- Fit test (tight fitting respirators only).
- Fit test education.

Medical evaluation

The purpose of the medical evaluation is to determine if the respirator poses a health risk to the wearer. The employer must determine what the respirator can do to the wearer, versus what it does for the wearer(AAOHN). The medical evaluation must take place prior to fitting a person to the respirator. The medical evaluation must be at no charge to the worker and be offered by the wearer's work at a time that is convenient for them. Prior to fitting a person to a tight fitting respirator, a [Medical Evaluation](#) must be completed and reviewed. If a person is found not approved to wear a respirator, they may require a Medical exemption⁵ or reassignment. OSHA has provided templates for employers to use and adapt for their own internal use with branding. Please note that questions 10-15 are used for those who are required to wear a self contained breathing apparatus (SCBA) and these questions can be omitted when determining N95 use.

The [medical questionnaire can be found here](#).

Fit Testing

Fit testing must be performed upon hire and at least annually thereafter. If the respirator inventory (e.g., model and/or size of N95 respirator) changes, then the users must be re-fit to the new respirator. Hosting a fit testing clinic can be done either using a decentralized approach where fit testing occurs through the use of just-in-time trainers or a centralized approach requiring all staff to be fit during designated times. Fit testing must be conducted during working hours and at no additional cost to the employee. Fit testing can also be completed by a third party at a convenient location at no charge to the employee.

[Qualitative vs. Quantitative](#)

Qualitative

- Subjective feedback.
- Requires person being tested to be able to taste.
- Need testing media such as bitters and/or sweet (saccharine).

See an example of a fit test kit below. All parts of this kit are required to perform a fit test.

⁵ Employers must be prepared to have employees who are unable to be medically cleared to wear a respirator. Medical clearance for N95 use may require changes in physical essential function of job requirements



Respiratory Protection Program Toolkit

- Two bulb squeeze nebulizers
 - One for sensitivity.
 - One for test.
- Test media
 - Sensitivity solution.
 - Test solution.
- Hood with or without plastic collar



Quantitative Fit Testing

- Porta-count machine in place of hood.
- Objective in determination of fit.
- Measures ambient air and assigns fit factor.
- Metal grommet punctured into mask resulting in compromising mask, therefore mask must be discarded.

Whether using quantitative or qualitative fit testing methods, there are some special considerations:



Respiratory Protection Program Toolkit

- The person must be clean shaven the day of the test and when they are anticipated to wear their respirator. [Find the CDC's facial hair guide here.](#)
- The person must be fit to the N95 while wearing the same PPE and other required gear to ensure fit is not compromised. If an employee needs to wear different types of respirators, then they must be fit to all varieties.
- Find [OSHA videos on how to perform respirator fit testing here.](#)

Fit test education

Employees should be able to answer the following questions:

- What biological hazards indicate the need for respirator use?
- Why is respirator use necessary?
- Why is proper fit, usage, and maintenance are critical to the effectiveness of the respirator?
- What are the limitations of the respirator and how do you respond to respirator malfunction?
- How do you inspect, don, doff, and seal check the respirator?
- How do you store and maintain the respirator?
- How do you recognize medical signs and symptoms of respirator intolerance?
- What is the OSHA respiratory protection standard 1910.34?

Supply chain and logistics

The facility must establish a method to calculate [burn rates](#) and establish par levels for the different types of respirators being worn by staff. With consideration to PPE shortages, the facility may have a limited selection of NIOSH-approved N95 respirators. In health care, it is best practice to wear a NIOSH-approved surgical N95. A surgical N95 has approval from both the FDA and NIOSH. If the facility is unable to obtain surgical N95s, then a surgical mask must be worn over the non-surgical N95 to provide fluid resistance. If this method is to be used, additional par levels will need to be established to support both respirator and surgical mask usage. [Find a list of NIOSH approved respirators here.](#)

Crisis capacity conservation strategies - extended use and reuse of N95 respirators

In the event of a pandemic or epidemic, there may be a declaration by the secretary of labor if there is a national or global shortage of NIOSH-approved N95 respirators. In this circumstance, all employers who have employees who meet the criteria of a respiratory protection program can consider extended use and reuse of N95 respirators in accordance with all state and local public health orders. All employers should have routine reporting and monitoring of respiratory protection supplies and maintain par levels that support day-to-day operations as well as emergency preparedness standards. CDC has provided a [flowchart](#) that can provide a framework for decision-making.



Respiratory Protection Program Toolkit

If the facility is operating under extended use or reuse of N95s, the following advice from the Association of Professionals in Infection Control and Prevention (APIC) on how to observe infection control for mask extended use and reuse can be found [here](#).

N95 Respirator Extended Use or Reuse - [APIC Recommendations](#)

Practices for extending the use and/or reusing a respirator include:

- Perform hand hygiene before handling/touching the respirator and after removing the face shield or mask.
- Respirators should only be worn and/or reused by a single wearer.
- Do not remove, adjust, or touch the respirator during patient care activities.
- Do not touch the outside of the respirator.
- Do not touch the inside of the respirator.
- Discard the respirator after it has been used during an aerosol-generating procedure.
- Discard the respirator if it becomes grossly contaminated with body fluids, including blood or respiratory secretions. Note that this may be difficult for the wearer to discern.
 - Health care personnel should be aware that even if not visibly soiled, the external surface of the respirator may be considered to be contaminated.
- Discard the respirator if it becomes obviously soiled or damaged (e.g., creased, torn, saturated) or if breathing through the device becomes difficult
- Potentially use a surgical/procedure mask or face shield over the respirator to reduce/prevent contamination of the device.
 - If masks are in short supply, the use of a face shield will help conserve masks
- Use care during removal of the mask or face shield to ensure the respirator is not contaminated
- Discard surgical/procedure masks after a single use.
 - Decontaminate reusable face shields between uses

[Storage to Extend or Reuse N95 respirators](#)

- The respirator should be stored in a clean, dry location within the facility or designated location to preserve the integrity of the respirator and prevent cross contamination outside of the facility.
- The respirator must be stored in a breathable container/paper bag or hung in a designated area.
- Respirator and breathable container must be marked with the user's name
- The container/bag should be discarded after the respirator is re-donned because the inside is considered contaminated.
- Respirators must be inspected prior to use and discarded if damaged or the user is unable to form a positive to negative pressure seal.



Respiratory Protection Program Toolkit

The team

It is essential to have a program administrator for a successful respiratory protection program. There are many myths and misunderstandings about respiratory protection programs and fit testing. The administrator(s) of the program should be invested in employee safety and have the capability to understand, implement, and enforce the complete OSHA standard in respiratory program management. If staffing resources do not support one designated person, then a team who holds the same qualifications, training, and demonstrates competency can be designated. Organizational leadership is responsible to ensure sustainable measures are in place to maintain program administrators. Additional supporting documents and tool kits are listed below.

Just-in-time trainers

Just-in-time trainers are a great alternative to subcontracting a service provider for fit testing. The benefits of using internal staff to perform fit testing are establishing trust amongst frontline staff, cost effectiveness, and allowing fit testing capabilities throughout the year. Maintaining a team of just-in-time trainers also supports workforce readiness for emergency preparedness planning which is a CMS requirement. Just-in-time trainers should undergo initial and annual training to maintain competency in the respiratory protection standard to maintain employee, patient, and visitor safety.

Resources and toolkits for a sustainable respiratory protection program

The resources listed in this document are meant to provide aid in implementing an effective respiratory protection program and do not constitute or imply endorsement of these organizations.

OSHA's Respiratory Protection Program [Toolkit](#)

The [Joint Commission](#) Implementing Hospital Respiratory Protection Programs: Strategies from the Field

<https://www.cdc.gov/niosh/npptl/hospresptoolkit/programeval.html>

<https://www.cdc.gov/infectioncontrol/guidelines/healthcare-personnel/index.html#>

<https://www.cdc.gov/tb/publications/factsheets/prevention/rphcs.htm>

<https://www.cdc.gov/niosh/docs/2005-100/pdfs/2005-100.pdf?id=10.26616/NIOSH PUB2005100>



Respiratory Protection Program Toolkit

<https://www.cdc.gov/niosh/npptl/pdfs/ElastomericPAPR-Healthcare-508.pdf>

Fit testing services

Onboarding new employees

Integrate fit testing into the onboarding process using the organization's designated occupational medicine provider. These providers have the expertise and resources to support your respiratory program. Internal staff may perform this service as well as long as the facility has the essential personnel to meet the elements of the OSHA respiratory protection program.

Annual fit testing

Depending on the number of those who need annual fit testing, contracted occupational medicine providers can support this requirement (must be at no cost to the employee). Some private and federal agencies offer online medical evaluations if the respiratory protection program is administered by a non-licensed health care provider.

For large groups of employees, it may be best to contract with a vendor to come onsite for scheduled days within the month.

Supply chain and purchasing of respiratory protection program needs

NIOSH-approved N95 respirators

There are multiple vendors who distribute these kits. Please check with your local supply chain ordering manager for next steps.

Qualitative fit test kits

There are multiple vendors who distribute these kits. Please check with your local supply chain ordering manager for next steps.

Quantitative fit testing

Portacount machine vendors sell and rent equipment. Work with your local supply chain to find the best fit for your needs.