

# Respiratory Protection Program: Single Use N 95 Respirators

Reviewed July 2024.

Please review the presentation and complete the quiz, which can be found on the last page.

**Prepared by: Division of Occupational Health  
and Safety (DOHS)**

Office of Research Services  
National Institutes of Health  
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

## **A note to Contract Employees (non-FTE Employees)**

We welcome non-FTE personnel to utilize this training material. The NIH, however, does not certify or train non-FTE personnel for compliance with the Occupational Safety and Health Administration (OSHA) unless expressly stated in the contract language or contracting employees are enrolled in the NIH Bio-surety Program. Training records for non-FTE personnel are not maintained. The responsibility to provide site-specific training following OSHA standards lies solely with the employer.

# Objectives

**At the end of this training, personnel will be able to:**

- Understand the OSHA Respiratory Protection standards
- Explain the function and use of a N95 respirator
- Understand the limitations and cautions of the N95 respirator
- Demonstrate donning/doffing steps for N95 respirator
- Describe the proper storage of the N95 respirator
- Identify the limited usage of the N95 respirator

# OSHA (1910.134) Respiratory Protection Standard

- **OSHA's Respiratory Protection Standard requires that the employer have a written program that includes:**
  - ❖ **Screening/Medical Evaluation:** This must be conducted by Licensed Medical Professionals to determine if the employee is physically able to wear a respirator. At the NIH, Occupational Medical Services (OMS) provides this service for participants in the RPP.
  - ❖ **Hazard(s) Identification:** Hazards must be identified and known so the proper respirator type can be selected because different respirators are designed to protect against different types of substances.
  - ❖ **Annual training is required** on the selection, use, maintenance, storage, and limitations of the respirator used.
  - ❖ **Annual fit-testing is required** to determine if the respirator fits properly on the employee's face.

## NIH additionally requires that:

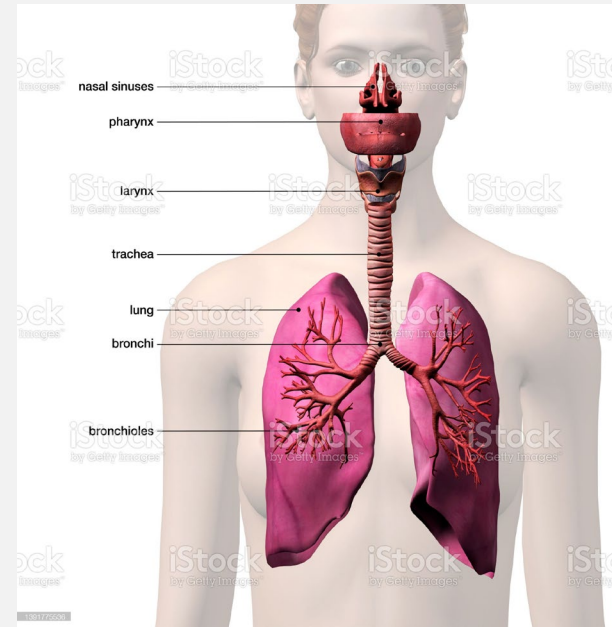
- ❖ Individuals with significant changes verify with OMS that the change would not cause difficulty or pose a health hazard when the person wears an N95. (Examples: Surgery, pregnancy, lobectomy, medications impacting breathing, weight loss or gain of 10 or more pounds, etc.)

***\*\* Emergencies may significantly alter NIH Respiratory Protection Program (RPP) processes and procedures. \*\****

The Respiratory Protection Program is designed to protect against inhalation hazards only, and cannot protect against other routes of exposure, such as ingestion, injection, or absorption.

## Inhalation hazards can include:

- Airborne particulates, excluding lead and asbestos (lead and asbestos require the user to have a P100 respirator or better)
- Oxygen deficient environments ( $O_2 < 19.5\%$ )
- Immediately Dangerous to Life and Health (IDLH) conditions



# Respirator Types: N95 masks

**N95s masks:** Several types of N95s are commercially available; NIH RPP generally has available for fit testing 3M N95:1870+, 1860 R/S, V Flex 1804R/S respirators for the hospital services (HC) and 9205+, 9210+ for the lab employees.

- ***If you use a different single-use respirator, or if there is an NIH-wide respirator shortage, please bring a respirator with you for fit testing.***
- The fit testing process punctures the mask and makes it unusable afterward. If you're bringing a reusable respirator (half-face or full-face), please email us to verify that we have the right adapter for your respirator model.

3M 1870+ (HC)



3M 1860 (HC)



3M VFlex™ 1804



# Respirator Types: N95 masks

- N95s protect against particulates (animal dander, dirt, dust, and pollen. HealthCare grade protects against blood and sputum, etc.), not against chemical gases or lack of oxygen.
- One-time use/disposable masks are intended to be disposed of at the end of one's shift. You may need to dispose of your mask sooner if it becomes contaminated. Discuss your PPE use policy with your supervisor.
- NIH RPP allows N95s that are NIOSH-approved (has NIOSH stamped or printed on)
- The expiration date is usually 5 years out from the manufacturing data, unless the manufacturer states otherwise.
- The expiration data is often stamped on the respirator box itself.
- Straps often dry rot or come loose once past their expiration date.



# Donning/Doffing N95 3M 1860 Respirator

## 3M™ Health Care Particulate Respirator and Surgical Masks, 1860/1860S

### Application



**1** Cup the respirator in your hand with the nosepiece at fingertips, allowing the head straps to hang freely below hand.



**2** Position the respirator under your chin with the nosepiece up.



**3** While holding the respirator in place, pull the top strap over your head so it rests high on the back of your head.



**4** While continuing to hold the respirator firmly in place, pull the bottom strap over your head and position it around your neck, below your ears. Untwist the straps. Position the respirator low on your nose.



**5** Using both hands, mold the nosepiece to the shape of your nose by pushing inward while moving your fingertips down both sides of the nosepiece.  
**Note: Always use two hands when molding nosepiece. Pinching with one hand may result in improper fit and less effective respirator performance.**

### PERFORM A USER SEAL CHECK



**6** The respirator must be checked before each use. To perform the user seal check, place both hands completely over the respirator, being careful not to disturb the position, and exhale sharply. If air leaks around your nose, adjust the nosepiece as described in step 5. If air leaks at respirator edges, adjust the straps back along the sides of your head. Perform seal check again if an adjustment is made. If you cannot achieve a proper fit, see your supervisor. Do not enter area requiring respirator use.

### Removal



**1** Without touching the respirator, slowly lift the bottom strap from around your neck up and over your head.



**2** Lift off the top strap. Do not touch the respirator.



**3** Store or discard according to your facility's infection control policy.

Infection Prevention Division  
3M Health Care  
2510 Conway Avenue  
St. Paul, MN 55144-1000  
U.S.A.  
1-800-228-3957  
[www.3m.com/infectionprevention](http://www.3m.com/infectionprevention)

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#### WARNING

This respirator helps protect against certain particulate contaminants, but does not eliminate exposure to or risk of contracting disease or infection. **Misuse may result in sickness or death.** For proper use, see your supervisor, or User Instructions, or call 3M Health Care Helpline at 1-800-228-3957. In Canada, call 3M Helpline at 1-800-563-2921.



## Helping You Wear it Right

3M™ Aura™ Health Care Particulate Respirator and Surgical Mask 1870+

### Application

Always read and follow User Instructions.

1



Remove the respirator from its packaging and hold with straps facing upward. Place the bottom strap under the center flaps next to the "ATTENTION" statement.

2



Fully open the top and bottom panels, bending the nosepiece around your thumb at center of the foam. Straps should separate when panels are opened. Make certain the bottom panel is unfolded and completely opened.

3



Place the respirator on your face so that the foam rests on your nose and the bottom panel is securely under your chin.

4



Pull the top strap over your head and position it high on the back of the head. Then, pull the bottom strap over your head and position it around your neck and below your ears.

5



Adjust for a comfortable fit by pulling the top panel toward the bridge of your nose and the bottom panel under your chin. Make certain hair, facial hair, jewelry and clothing are not between your face and the respirator as they will interfere with fit.

6



Place your fingertips from both hands at the top of the metal nosepiece. Using two hands, mold the nose area to the shape of your nose by pushing inward while moving your fingertips down both sides of the nosepiece.

**Note:** Always use two hands when molding the nosepiece. Pinching the nosepiece with one hand may result in improper fit and less effective respirator performance.

7



### Perform a User Seal Check

**Check the seal of your respirator each time you use the respirator.**

Place one or both hands completely over the middle panel. Inhale and exhale sharply. Be careful not to disturb the position of the respirator. If air leaks around your nose, re-adjust the nosepiece as described in Step 6. If air leaks around respirator edges, adjust panels and position of straps and make certain respirator edges fit snugly against the face. If you cannot achieve a proper seal, do not enter the contaminated area. See your supervisor.

# Donning/Doffing N95 1870 + Respirator (continue)

## Removal

Can be performed using one or both hands



Without touching the respirator facepiece, slowly lift the bottom strap from around your neck up over your head.



Lift off the top strap. Do not touch the respirator.



Store or discard according to your facility's infection control policy.

3M Health Care  
Medical Solutions Division  
2510 Conway Avenue  
St. Paul, MN 55144-1000  
U.S.A.  
1-800-228-3957  
3M.com/Medical

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70-2010-9153-B

**WARNING**

Respirators help protect against certain airborne contaminants. Before use, the wearer must read and understand the User Instructions provided as a part of the product packaging. Follow all local regulations. In the U.S., a written respiratory protection program must be implemented meeting all the requirements of OSHA 29 CFR 1910.134 including training, fit testing and medical evaluation. In Canada, CSA standards 294.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. Misuse may result in sickness or death. For correct use, consult supervisor and User Instructions, or call 3M Personal Safety Division (PSD) Technical Service in the U.S.A. at 1-800-243-4630. In Canada, call 1-800-267-4494.

- For proper wear of respiratory protection equipment, users should always refer to manufactures' instruction
- Sanitize your hand before/after touching the respirator and anytime you adjust your respirator.



- **Respirators should not be stored in the following environments:**
  - Excessive dust
  - Sunlight (UV)
  - High heat or extreme cold
  - Excessive moisture
  - Damaging chemicals

Storage of respirators in these environments can affect the ability of the respirator to provide adequate protection.

- **Additional Donning/Doffing videos could be reviewed online:**
- **3M 1860-** [https://www.youtube.com/watch?v=M9Wklu\\_g0OM](https://www.youtube.com/watch?v=M9Wklu_g0OM)
- **3M 1870+** <https://www.youtube.com/watch?v=ikrpLxt5oCA>
- **3M 1804** [https://www.youtube.com/watch?v=gaSR6ZU\\_NVc](https://www.youtube.com/watch?v=gaSR6ZU_NVc)

# Limitations of N95 Respirators:

- Do not work against materials that damage/degrade/melt the filter or if they create tears. Ex: “disinfection” via microwave melts the mesh structure
- They are insufficient for asbestos or lead (need P100 respirator)
- Does not work at all for vapors or gases (think of water going through a chain link fence)
- Does not work for O<sub>2</sub> deficient environments; the problem there is the lack of O<sub>2</sub>, not the excess of particulates (may need supplied air)
- Will not provide adequate protection if the environment is immediately dangerous to life and health (IDLH). Supplied air is necessary in this type of environment.

- Are not resistant to oil (N=not oil resistant)
- 95% effective against particulate aerosols 0.3 microns in size; if concentration is too high, significant amounts of the particulates may get through
- Require a tight seal to function; anything that gets between the respirator and skin can cause leakage of the respirator, allowing unwanted substances in.

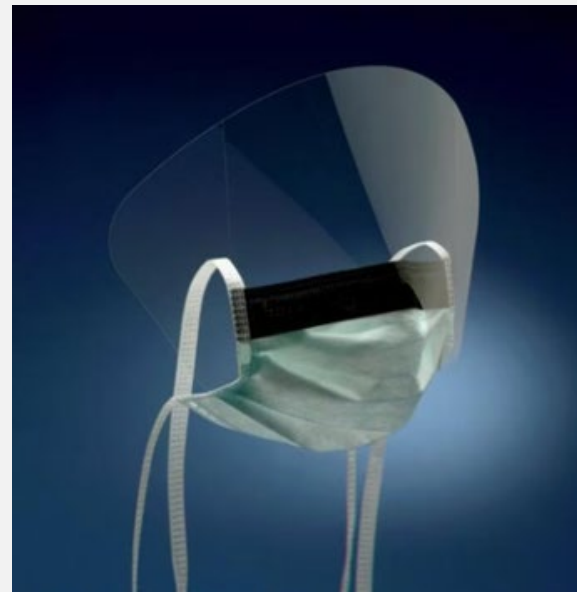
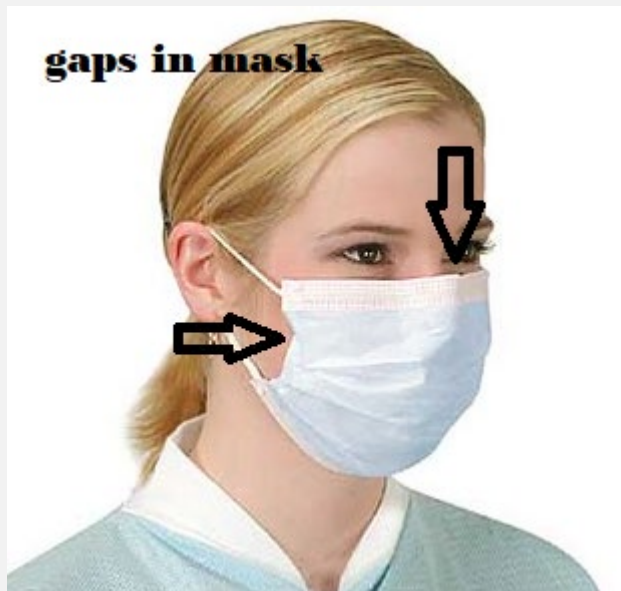
# Warnings Signs - Symptoms

- If the respirator becomes damaged, malfunctions, or you detect signs of exposure, you must leave the area immediately.
- In the event of an emergency, leave the area immediately. Do not remove your mask until you are in an area that is free of contamination.
- Leave the hazardous area and remove your mask if you experience any of the following signs and symptoms:
  - Difficulty Breathing
  - Dizziness
  - Respiratory Distress
  - Smell and/or taste contaminate

# Surgical Masks are not N95 respirators

**Surgical Masks are NOT respirators; they lack the tight seal around the edges.**

Surgical masks are good for cough etiquette and protection from droplets, but do not offer the same level of protection that an N95 does.



# Applicability of NIH RPP

- **Applies to all NIH employees that work with respiratory hazards**
  - Laboratory, Healthcare, and Research facilities where there's a risk of transmission of tuberculosis and other infectious diseases as defined by the CDC, through airborne particles
  - Allergies/Animal Handling
  - Facilities Work
  - Police and Fire Departments
- **May be offered to non-NIH personnel at NIH facilities on a space-available basis**
  - However: NIH does not certify or train non-NIH personnel for the purpose of compliance with OSHA. It is up to each employer to provide site-specific and job-specific training in accordance with OSHA standards.



## Step 1. Medical Clearance Questionnaire

Medical clearance is completed by Occupational Medical Services (OMS). Respirator medical evaluations determine whether it is safe for NIH employees to use respirators.

## Step 2. Online or Face-to-Face Training

After completion of Step 1, employees must complete the facility's site-specific respirator training before their first use of the respirator and then annually. The training records are reviewed by the DOHS, Technical Assistance Branch (TAB), RPP team.

## Step 3. Fit Test

Fit test is performed by the RPP team in the fit test room. Respirator fit testing is done initially (upon hire or transfer), and then every year (within 12-months of the date of the last fit test).

- **OSHA Procedure**

- Bending at the waist
- Talking
- Head side to side
- Head up and down

Each test attempt takes about 5-10 minutes.

Facial hair can interfere with the fit test, so it's important to be aware of this potential issue.

Remove blush/foundation.

**Fit-test room working hours:**

Building 10, NIH Library, Room B1L101B ( inside of the library)

Tues: 10 am-12 pm

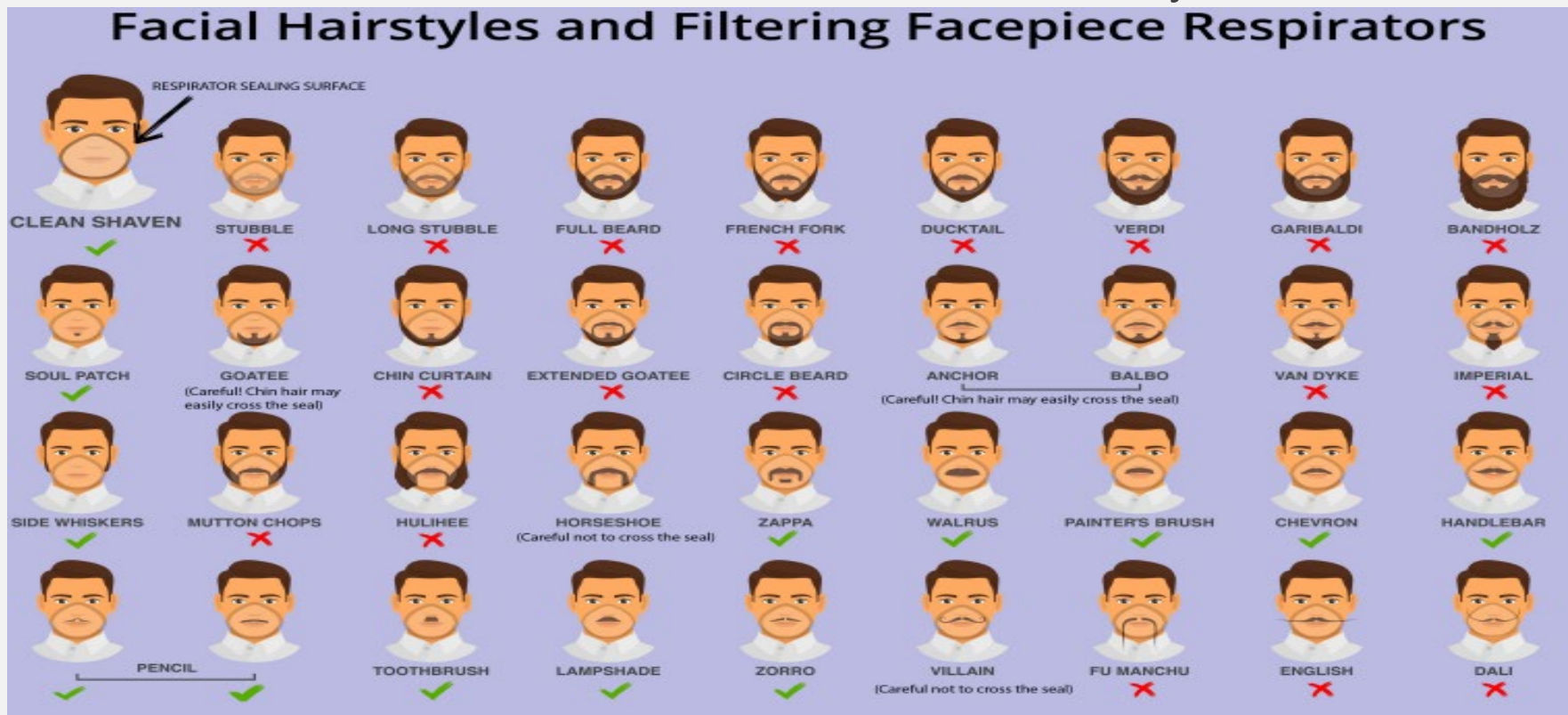
Wed: 8:30 am-11 am

Thurs: 1 pm-3 pm



# Respirator Effectiveness

- Respirators are only effective when the face piece seal is flush with the face
- Respirators can't be worn with facial hair coming between the sealing surface of the mask and face, but some facial hair styles are OK.



- **Medical Related Questions**
  - Occupational Medical Services
    - (301) 496-4411 or [OMS@mail.nih.gov](mailto:OMS@mail.nih.gov)
- **General Respiratory Protection Program Questions**
  - Division of Occupational Health and Safety
    - (301) 496-3457 or [NIHRespirator@mail.nih.gov](mailto:NIHRespirator@mail.nih.gov)
- **Additional Resp. Protection Info:**
  - <https://www.osha.gov/respiratory-protection>
  - <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134>
  - <https://www.cdc.gov/niosh/topics/respirators/default.html>

**Please complete your training with the quiz to obtain the official training records.**

**N95 respirator quiz**

**<https://forms.office.com/g/Dhf4JgGYas>**