RESPIRATORY PROTECTION PLAN

Contents

1 Purpose

The purpose of this plan ("Plan") is to describe the Respiratory Protection Program ("Program") of the Virginia Beach Department of EMS (VBDEMS). The Program is designed to protect VBDEMS field personnel from inhaling hazardous airborne agents during normal work as well as non-routine emergency situations. It was developed to comply with the requirements of the VBDEMS *Exposure Control Policy* ("Policy"). The Policy incorporates (by reference) the City of Virginia Beach Occupational Safety Respiratory Protection Plan, which is binding upon all VBDEMS employees, and which provides fundamental guidance applicable to all VBDEMS volunteers.

Through its incorporated documents, the Policy requires that if other means of reducing or eliminating exposure to the airborne hazards are not feasible and employees are provided with respirators to protect them from airborne hazards, then a respiratory protection program must be implemented incorporating all of the program components described in the United States Department of Labor / Occupational Safety and Health Administration's *Respiratory Protection Standard* (29 CFR 1910.134).

This Plan applies to all VBDEMS personnel who are required to wear respirators during emergency medical response operations.

This Plan was adapted substantially from the model respiratory protection plan of the New Jersey Public Employees Occupational Safety and Health Program.

2 Plan administration

The Program Administrator's duty shall be to oversee the development of the Program and make sure it is carried out at the workplace. The administrator will also evaluate the Program regularly to make sure procedures are followed, respirator use is monitored and respirators continue to provide adequate protection when job conditions change. Responsibilities include:

- Become familiar with 29 CFR 1910.134
- Identify tasks that require respiratory protection
- Develop and maintain the written Plan
- Select respirators
- Arrange for medical clearance / distribute questionnaire
- Arrange for and/or conduct initial and annual fit-testing
- Coordinate initial and annual respirator training
- Monitor respirator use, maintenance, disposal and storage
- Assure that records are maintained as described in this Plan
- Evaluate and update the Program as needed
- Monitor applicable respiratory standards for changes

In addition, the Training Chief and the officers in the operational chain of command will assist the Program Administrator in ensuring that the Program is implemented, understood, and followed by EMS personnel under their charge. Duties include:

- Ensuring that members under their supervision (including new members) have received:
    - medical evaluation and clearance to wear a respirator
    - initial and annual fit-testing

  - initial and annual training

- Being aware of tasks requiring the use of respiratory protection
- Enforcing the proper use of respiratory protection when necessary
- Ensuring the availability of appropriate respirators and accessories
- Ensuring that respirators are properly cleaned, maintained, and stored and disposed of according to this Plan
- Observing members for any signs and symptoms that may indicate an inability to use a respirator and referring them for a medical re-evaluation
- Maintaining records as required by this Plan
- Alerting the Program Administrator if respiratory protection needs to be changed

Individual EMS personnel have the responsibility to wear their respirator when and where required and in the manner in which they were trained. They must also:

- Care for and maintain their respirators as instructed and store them in a clean and sanitary location
- Inform the Program Administrator through their chain of command if the respirator no longer fits well and request a new one that fits properly
- Inform the Program Administrator through the chain of command of any respiratory hazards that they feel are not adequately addressed and of any other concerns they have regarding the Program
- Complete the mandatory Respirator Medical Evaluation Questionnaire and any medical evaluation requirements deemed necessary by the evaluating health care professional
- Wear respiratory protection devices in conjunction with all requirements of this Plan and any applicable policies and Standard Operating Guidelines (e.g., no facial hair)
- Take annual respirator training and attend annual fit-testing

3 Identifying airborne hazards requiring respirator use

The Program Administrator will select respirators to be used based on the hazards to which members are exposed and in accordance with all applicable standards. The Program Administrator or designee, will conduct a hazard evaluation for each operation, process, or work area where airborne contaminants may be present in routine operations or during an emergency. The evaluation shall include a reasonable estimate of member exposures to respiratory hazards and an identification of the contaminant's chemical state and physical form. The Program Administrator must revise and update the hazard assessment as needed (i.e., any time work process changes may potentially affect exposure or the nature of the hazards change).

3.1 Chemical Hazard Assessment

The Program Administrator has reviewed the chemical products used in this agency and those likely to be encountered in the line of response duties. Based on this review, there are no chemical agents used above permissible exposure levels that would require the use of respirators. In responding to hazardous materials emergencies in the community, members are trained to Awareness Level and would take no further action beyond notifying the authorities of a release and would transport only decontaminated victims. For chemical / hazardous materials emergencies, EMS personnel should notify the dispatcher or a duty supervisor to arrange for an appropriate fire department response.

3.2 Biological Hazards

Based on an evaluation of current job tasks which place EMS personnel at risk of exposure to biological hazards the Program Administrator has determined that airborne infectious agents may be encountered by members, so respiratory protection is required for all EMS personnel involved in transport and direct patient care of patients with signs and symptoms of potential respiratory diseases.

4 Physical evaluations

Persons assigned to tasks that require respiratory protection must be physically able to perform the tasks while wearing a respirator. Medical evaluation and clearance to wear the respirator should be finalized before EMS personnel are fit-tested or need to wear the respirator. A qualified Evaluator should determine individual medical clearance by reviewing a medical questionnaire and/or providing an in-person medical evaluation. Members refusing a medical evaluation will not be allowed to work in conditions requiring respirator use.

The Program Administrator will provide the Evaluator with a copy of this Plan, a copy of the respiratory protection standard and the following information about respirator use and conditions:

- the type and weight of the respirator
- duration and frequency of respirator use
- expected physical work effort
- additional clothing and equipment to be worn
- temperature and humidity extremes that may be encountered

If the Respirator Medical Evaluation Questionnaire is administered, this information, as well as information from in-person medical evaluations will remain confidential between the EMS responder, the Evaluator, and the designated recordkeeper. The outcome of the medical evaluation is a written recommendation from the Evaluator to the Respiratory Protection Program Administrator regarding the employee's ability to wear a respirator. No confidential medical information is contained in this statement. It states only that the EMS responder is or is not cleared to use a respirator and whether there are any restrictions. VBDEMS will not maintain any actual medical records for its personnel (career staff or volunteer); that responsibility belongs exclusively to the Virginia Beach Human Resources Department / Occupational Safety and Health Services office (OSHS).

The follow-up medical evaluation will include any medical tests, consultations, or diagnostic procedures the Evaluator deems necessary to make the final determination. Re-evaluation will be done in the following situations:

- The EMS responder reports signs and symptoms relating to their ability to use a respirator, such as shortness of breath, dizziness, chest pain or wheezing;
- It is identified that a responder is having a medical problem during respirator use;
- The healthcare professional recommends it;
- A change occurs in workplace conditions that may result in increased physiologic burden on the member.

4.1 Volunteer personnel

The VBDEMS Operational Medical Director (OMD) or a health care professional designated by the OMD will serve as the Evaluator for volunteer personnel. Each of the Evaluator's written recommendations will be sent to OSHS, and OSHS will then provide approval to VBDEMS for the evaluated member to be fit tested.

4.2 Career personnel

A health care professional designated by OSHS will serve as the Evaluator for career personnel, as is common practice for all city employees.

5 Respirator selection

Only respirators approved by OSHS will be selected and used. The Program Administrator will be responsible for contacting vendors and arranging to have available a variety of approved brands and sizes of the appropriate type of OSHS-approved respirator for fit-testing. Based on the biological hazards noted above, respirators of the types described in the following subsections will be issued to members to the extent supported by market, supply chain, and budgetary factors.

To the extent allowed by market forces, supply chain limitations, and budgetary considerations, VBDEMS will favor respirators that have voice diaphragms or other features or accessories that facilitate efficient and effective voice communications.

5.1 Negative pressure respirators

Negative pressure respirators are those that rely on the wearer's own inhalations to move ambient air through the filter media, where contaminants will be trapped, and for filtered air to then reach the wearer's airway. Fit testing is always indicated for these respirators because their functionality relies on a constant and uncompromised seal to the wearer's skin.

To the extent allowed by market forces, supply chain limitations, and budgetary considerations, VBDEMS will maintain an inventory of the following classes of negative pressure respirators to issue to personnel according to operational priorities. VBDEMS will favor models that do not feature free exhalation valves, or that can be adapted to filter exhaled air.

- Filtered Facepiece Masks (disposable N95s, etc)
- Half-face elastomeric respirators
- Full-face elastomeric respirators

5.2 Positive pressure respirators

Positive pressure respirators are those that are capable of moving ambient air through the filter media, where contaminants will be trapped, and moving the filtered air to the wearer's airway, without relying on the wearer's own inhalations. Because the constant flow of filtered air through

these respirators prevents unfiltered air from ever reaching the wearer's airway, their functionality does not rely on a tight seal, so fit testing is not indicated. These respirators can be worn by personnel who cannot get a good enough seal with a negative pressure respirator to pass a fit test. These respirators tend to cost much more than negative pressure respirators because of their additional complexity.

To the extent allowed by market forces, supply chain limitations, and budgetary considerations, VBDEMS will maintain an inventory of the following classes of positive pressure respirators to issue to personnel according to operational priorities:

- Powered Air-Purifying Respirators (PAPRs)

5.3 Filters and cartridges

All filters and cartridges provided by VBDEMS to its members shall carry a NIOSH N95 or higher rating for particulate filtering. VBDEMS may issue filters and cartridges that also carry other ratings (such as Organic Vapor [OV], Acid Gas [AG], etc) for use in specific situations such as when crowd control gases may be present.

VBDEMS may establish business rules regarding which combinations of respirators and filters or cartridges are allowable. For instance, when operating in the presence of crowd control gases, members may be required to use the combination of a full facepiece respirator and OV/AG/P100 cartridges.

6 Respirator fit testing

Fit tests are conducted to determine that the respirator fits the user, and that a good seal can be obtained, according to the protocol defined by the appropriate standard. Negative pressure respirators that do not seal do not offer adequate protection. All EMS personnel who wear respirators should be fit-tested prior to initial use and at least annually thereafter or more frequently if there is a change in the status of the wearer (10% weight change or changes in facial structure) or if the model or type of respirator changes. All EMS personnel will be fit-tested with the make, model and size of the respirator that they will actually wear. They will be provided with several models and sizes so they may find an optimal fit. Personnel who wear corrective glasses or other PPE with their respirator should wear them during the fit-test. VBDEMS has chosen to use QUANTitative Fit Test (QNFT) as its method of choice when feasible, although consideration must be given to the fact that performing a QNFT on a disposal respirator (N95, etc) renders the respirator unusable afterward. The Department will maintain a capability to perform QUALitative Fit Tests (QLFTs) as a contingency. Documentation of fit-testing will include the information required by the Policy and the documents it includes by reference.

VBDEMS will maintain custody of at least one TSI PortaCount QNFT device and its associated software, supplies, and accessories. OSHS and other City departments are also custodians of such devices.

VBDEMS will maintain custody of QLFT hoods, nebulizers, sense substances, and fit test record forms (if using paper). OSHS and other City departments may also be custodians of such supplies.

Fit test results are kept as follows:

- QNFT: “W:\Safety\Fit Test Data\Default_ACCESS.mdb”, which is the data file created by the proprietary TSI FitPro+ program, and which is accessible to authorized VBDEMS staff and to authorized OSHS staff. The format of this data file is controlled entirely by FitPro+.

- QLFT: by OSHS

6.1 Volunteer personnel

VBDEMS Program staff will be responsible for conducting initial and annual fit-testing of volunteer members.

The Program Administrator shall coordinate with the Training Chief to assure that initial fit testing is conducted as part of each BLS Academy for enrolled students.

The Program Administrator shall coordinate with the Division Chief of Administration to assure that initial fit testing (if not already conducted) and issuance of an appropriate respirator is accomplished for each member who is receiving his or her first BLS Intern or Facilitated Physician ID card.

The Program Administrator shall make fit re-tests available to volunteer members. Quantitative fit re-tests for volunteers shall be by appointment. The Program Administrator shall encourage each volunteer member to get a re-test at least bi-annually in the month of the member's birthday.

The Program Administrator shall also coordinate mass qualitative fit testing events as requested, and shall assure that adequate resources (space, fit testers, gear, paperwork, data entry, etc) are assigned to each such event.

6.2 Career personnel

OSHS will be responsible for conducting initial and annual fit-testing of career employees.

7 Proper Respirator Use and Disposal

EMS personnel will use their respirators under conditions specified by this Plan, and in accordance with the training they receive on the use of the selected models. In addition, a respirator shall not be used in a manner for which it was not certified by the National Institute of Occupational Safety and Health (NIOSH) or recommended by the manufacturer. EMS personnel shall be trained as follows:

- Not to wear respirators if they have any condition that prevents them from achieving a tight seal, including facial hair, facial scars or missing dentures.
- Not to wear headphones, jewelry or other articles that may interfere with face to facepiece seal.
- Glasses or goggles should be worn in a way that doesn't interfere with the seal.
- Prior to donning the respirator, inspect the respirator to see if it is damaged, misshapen or soiled. If so, the respirator should be discarded (or repaired, for reusable respirators).
- When donning the respirator, determine whether the straps hold the respirator tightly against the face, and if the metal nose clip (if applicable on the chosen model) is in place and functions properly. If not, discard the respirator.
- Conduct a seal check each time they wear a respirator following the manufacturer's recommended procedures. In general, the seal check involves placing both hands completely over the filtering facepiece, inhaling sharply and repositioning the respirator if air leaks are detected between the face and faceseal. If a proper seal cannot be achieved, do not enter a contaminated area.
- Discard disposable respirators after each use unless an executive order or Standard Operating Guideline (SOG) is in effect that directs otherwise.
- EMS personnel should leave a contaminated area if the respirator needs to be changed.
- Respirators should be stored in a clean, dry area where they won't be crushed or misshapen.

8 Respirator Training

The Program Administrator will arrange for training of personnel when respirators are issued and annually thereafter. If a new type of respirator is issued or conditions affecting respirator use change, additional training in using that respirator will be provided. After completing training, personnel must be able to demonstrate their understanding of the topics covered in the training. Training will include the following elements:

- Why the respirator is necessary – potential hazards and health effects
- The respirator's capabilities and limitations
- How improper fit, use or maintenance can make the respirator ineffective
- How to properly inspect, put on, seal, check use and remove the respirator
- Procedures for cleaning, maintenance and repair
- Where to find this Plan and the Policy documents it includes by reference

Training records will be maintained by the Training Division.

9 Respiratory Program Evaluation

The Deputy Chief of Support Services or designee will complete an evaluation of the program on at least an annual basis by taking the following steps and is responsible for correcting any problems identified during the evaluation and updating the written program:

- Talking with employees who wear respirators about their respirators
- Checking results of fit-tests and health provider evaluations
- Periodically checking employee job duties for changes in exposure
- Periodically checking how employees use their respirators
- Periodically checking maintenance and storage of respirators (if applicable)

This Plan will contain a list of revisions and the dates they were made.

10 Recordkeeping

10.1 Respirator deployment

The designated recordkeeper for the issuance of reusable respirators to personnel, and the assignment of shared reusable respirators to response units or facilities, shall be the Program Administrator.

10.2 Inventory management

The designated recordkeeper for the Department's inventory of unissued and unassigned Program assets and supplies shall be the Logistics Program Manager.

10.3 Selection of fit testers

Selection of fit testers shall be by consensus of the chiefs of all Department divisions. The designated recordkeeper for the selected fit testers and their qualifications shall be the Program Administrator.

10.4 Training

The designated recordkeeper for initial and annual respirator training shall be the Training Chief.

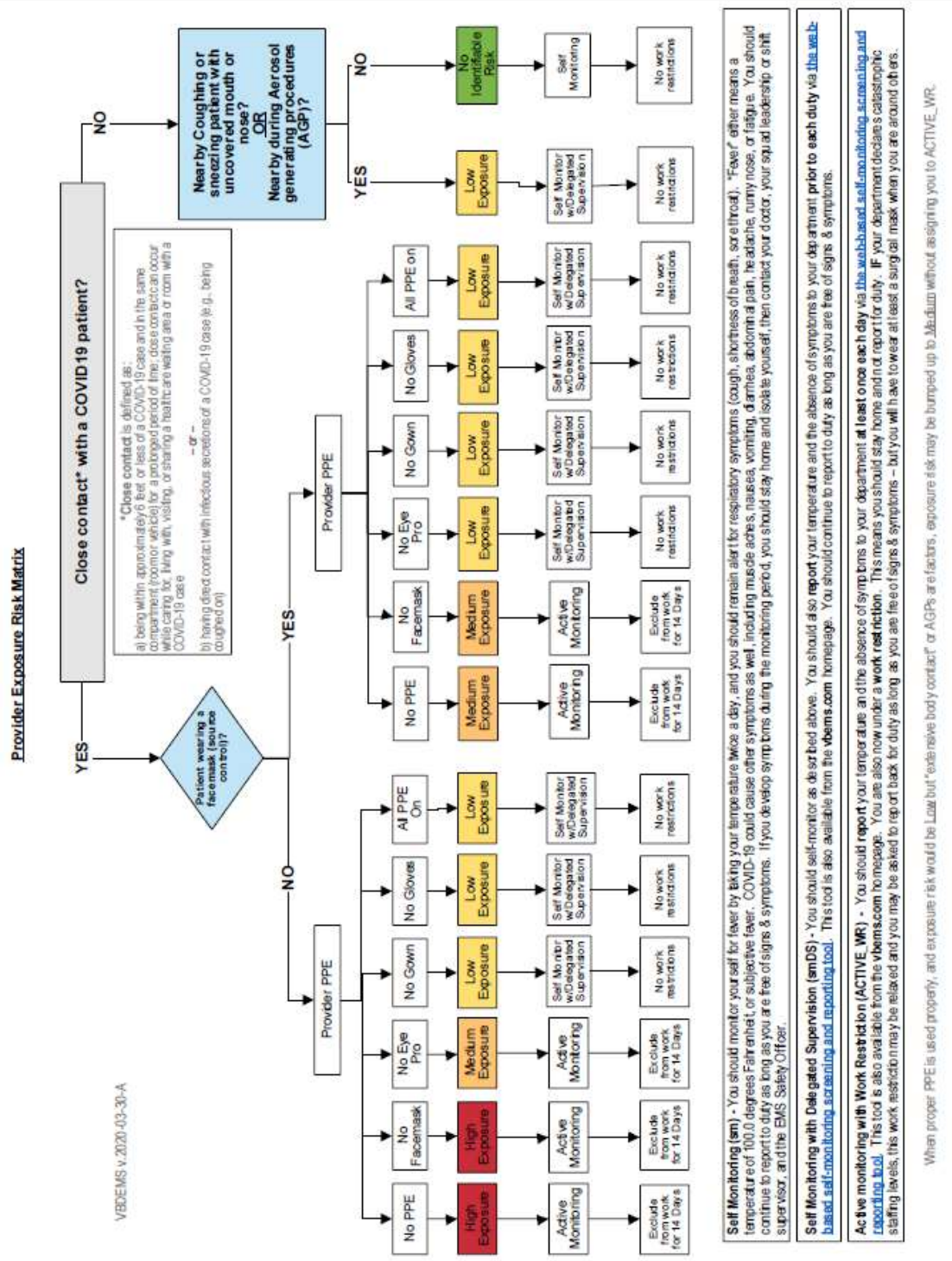
10.5 Physical evaluations

The designated recordkeeper for physical evaluations shall be OSHS.

Appendices

The items in this part of the plan are meant to serve as examples of the artifacts that were developed when the Plan was adopted. In actual practice, the latest available or most appropriate versions or variations of these items should always be used.

A. Job aid: EMS provider exposure risk matrix



B. Elastomeric half-mask distribution guidance

VA BEACH EMS
EMERGENCY MEDICAL SERVICES

ELASTOMERIC MASK DISTRIBUTION GUIDANCE (HALF MASK)

BASICS
- This 3M Series 6000 mask is yours to keep.
- Read the instructions that come with the mask.
- Bring this mask with you to duty.
- Stay clean shaven.
- You may use this instead of an N95 mask.

SIZING
- Comes in three sizes: Small, Medium, Large
- Today's sizing will be verified by informal self-check only.
- Watch for announcements to make an appointment for a formal fit testing.

ATTACHING CARTRIDGES
- Bayonet mount: match tabs to notches
- Turn clockwise 90 degrees
- Verify that all tabs are secure
- Practice this while wearing the facepiece

CLEANING
- BETWEEN CALLS
  - Germicidal wipes (but NOT bleach)
  - Alcohol preps
- BETWEEN SHIFTS
  - Remove cartridge attachments, use mild (dish) soap and hot tap water
  - Air dry
- CAUTION: Flapper valves are fragile

FILTER PROPERTIES
- We're issuing "7093" cartridges, which are rated P100.
  - Protects from dust & particles, including COVID-19 and other viruses
  - Not for tear gas or other hazardous materials
  - May be reused at least a year

Restock parts from EMS-1/2/3.

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C. VB*EMS elastomeric respirator supported combinations

VB*EMS ELASTOMERIC RESPIRATOR SUPPORTED COMBINATIONS		May use w/ HALF facepiece	May use w/ FULL facepiece	REUSABLE if exposed	After exposure	Comment
3M 7093 P100 cartridges (magenta)		Yes 1st choice	Yes 1st choice	Yes	Wipe outside w/ non-bleach disinfectant, keep inside dry	**"7093"**
3M 7093C P100/HF cartridges (magenta/olive)		Yes 2nd choice	Yes 2nd choice	Yes	Wipe outside w/ non-bleach disinfectant, keep inside dry	Contingency substitute for 7093
3M 2091 P100 filters (magenta)		Yes 3rd choice	Yes 3rd choice	**NO**	Discard	**"Pink pancakes"**
3M 60923 OV/AG/P100 cartridges (magenta/yellow)		**NO**	**ONLY COMBO FOR CIVIL UNREST**	Yes	Wipe outside w/ non-bleach disinfectant, keep inside dry	

NOTE: Hard cartridges are preferred because only hard cartridges can be wiped off and reused after exposure, and/or used in the rain.

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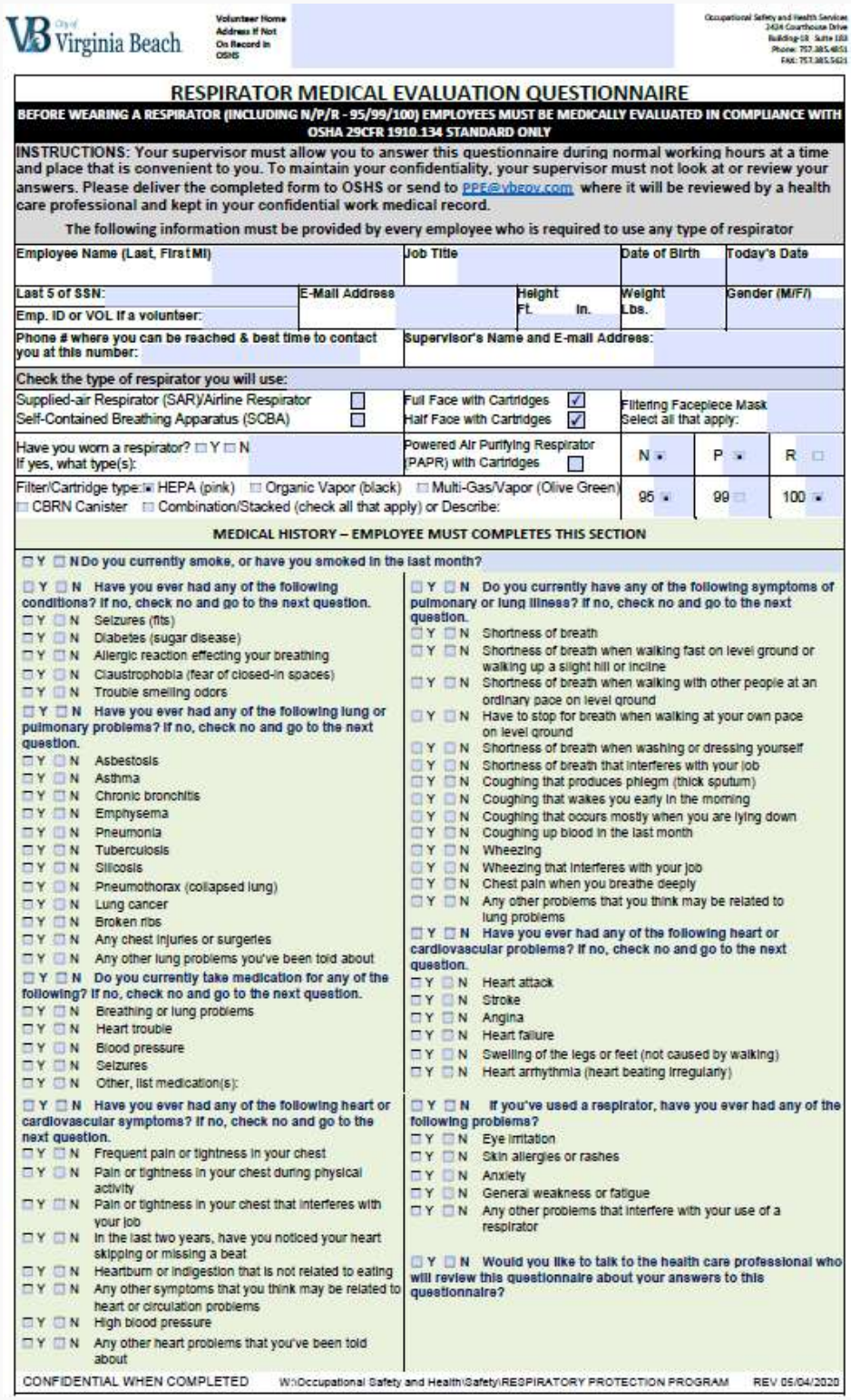
D. Physical evaluation form



Virginia Beach

Volunteer Home Address If Not On Record in OSHS

Occupational Safety and Health Services
2424 Courthouse Drive
Building 18 Suite 103
Phone: 757.385.4851
FAX: 757.385.5621

RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE

BEFORE WEARING A RESPIRATOR (INCLUDING N/P/R - 95/99/100) EMPLOYEES MUST BE MEDICALLY EVALUATED IN COMPLIANCE WITH OSHA 29CFR 1910.134 STANDARD ONLY

INSTRUCTIONS: Your supervisor must allow you to answer this questionnaire during normal working hours at a time and place that is convenient to you. To maintain your confidentiality, your supervisor must not look at or review your answers. Please deliver the completed form to OSHS or send to PPE@vbgov.com where it will be reviewed by a health care professional and kept in your confidential work medical record.

The following information must be provided by every employee who is required to use any type of respirator

Employee Name (Last, First MI)		Job Title		Date of Birth	Today's Date
Last 5 of SSN:	E-Mail Address		Height Ft. In.	Weight Lbs.	Gender (M/F/)
Emp. ID or VOL if a volunteer:					
Phone # where you can be reached & best time to contact you at this number:		Supervisor's Name and E-mail Address:			

Check the type of respirator you will use:

Supplied-air Respirator (SAR)/Airline Respirator	☐	Full Face with Cartridges	☑	Filtering Facepiece Mask Select all that apply:		
Self-Contained Breathing Apparatus (SCBA)	☐	Half Face with Cartridges	☑			
Have you worn a respirator? ☐ Y ☐ N If yes, what type(s):		Powered Air Purifying Respirator (PAPR) with Cartridges	☐	N ▪	P ▪	R ☐
Filter/Cartridge type: ▪ HEPA (pink) ☐ Organic Vapor (black) ☐ Multi-Gas/Vapor (Olive Green) ☐ CBRN Canister ☐ Combination/Stacked (check all that apply) or Describe:				95 ▪	99 ☐	100 ▪

MEDICAL HISTORY – EMPLOYEE MUST COMPLETES THIS SECTION

☐ Y ☐ N **Do you currently smoke, or have you smoked in the last month?**

☐ Y ☐ N **Have you ever had any of the following conditions? If no, check no and go to the next question.**
- ☐ Y ☐ N Seizures (fits)
- ☐ Y ☐ N Diabetes (sugar disease)
- ☐ Y ☐ N Allergic reaction effecting your breathing
- ☐ Y ☐ N Claustrophobia (fear of closed-in spaces)
- ☐ Y ☐ N Trouble smelling odors

☐ Y ☐ N **Have you ever had any of the following lung or pulmonary problems? If no, check no and go to the next question.**
- ☐ Y ☐ N Asbestosis
- ☐ Y ☐ N Asthma
- ☐ Y ☐ N Chronic bronchitis
- ☐ Y ☐ N Emphysema
- ☐ Y ☐ N Pneumonia
- ☐ Y ☐ N Tuberculosis
- ☐ Y ☐ N Silicosis
- ☐ Y ☐ N Pneumothorax (collapsed lung)
- ☐ Y ☐ N Lung cancer
- ☐ Y ☐ N Broken ribs
- ☐ Y ☐ N Any chest injuries or surgeries
- ☐ Y ☐ N Any other lung problems you've been told about

☐ Y ☐ N **Do you currently take medication for any of the following? If no, check no and go to the next question.**
- ☐ Y ☐ N Breathing or lung problems
- ☐ Y ☐ N Heart trouble
- ☐ Y ☐ N Blood pressure
- ☐ Y ☐ N Seizures
- ☐ Y ☐ N Other, list medication(s):

☐ Y ☐ N **Have you ever had any of the following heart or cardiovascular symptoms? If no, check no and go to the next question.**
- ☐ Y ☐ N Frequent pain or tightness in your chest
- ☐ Y ☐ N Pain or tightness in your chest during physical activity
- ☐ Y ☐ N Pain or tightness in your chest that interferes with your job
- ☐ Y ☐ N In the last two years, have you noticed your heart skipping or missing a beat
- ☐ Y ☐ N Heartburn or indigestion that is not related to eating
- ☐ Y ☐ N Any other symptoms that you think may be related to heart or circulation problems
- ☐ Y ☐ N High blood pressure
- ☐ Y ☐ N Any other heart problems that you've been told about

☐ Y ☐ N **Do you currently have any of the following symptoms of pulmonary or lung illness? If no, check no and go to the next question.**
- ☐ Y ☐ N Shortness of breath
- ☐ Y ☐ N Shortness of breath when walking fast on level ground or walking up a slight hill or incline
- ☐ Y ☐ N Shortness of breath when walking with other people at an ordinary pace on level ground
- ☐ Y ☐ N Have to stop for breath when walking at your own pace on level ground
- ☐ Y ☐ N Shortness of breath when washing or dressing yourself
- ☐ Y ☐ N Shortness of breath that interferes with your job
- ☐ Y ☐ N Coughing that produces phlegm (thick sputum)
- ☐ Y ☐ N Coughing that wakes you early in the morning
- ☐ Y ☐ N Coughing that occurs mostly when you are lying down
- ☐ Y ☐ N Coughing up blood in the last month
- ☐ Y ☐ N Wheezing
- ☐ Y ☐ N Wheezing that interferes with your job
- ☐ Y ☐ N Chest pain when you breathe deeply
- ☐ Y ☐ N Any other problems that you think may be related to lung problems

☐ Y ☐ N **Have you ever had any of the following heart or cardiovascular problems? If no, check no and go to the next question.**
- ☐ Y ☐ N Heart attack
- ☐ Y ☐ N Stroke
- ☐ Y ☐ N Angina
- ☐ Y ☐ N Heart failure
- ☐ Y ☐ N Swelling of the legs or feet (not caused by walking)
- ☐ Y ☐ N Heart arrhythmia (heart beating irregularly)

☐ Y ☐ N **If you've used a respirator, have you ever had any of the following problems?**
- ☐ Y ☐ N Eye irritation
- ☐ Y ☐ N Skin allergies or rashes
- ☐ Y ☐ N Anxiety
- ☐ Y ☐ N General weakness or fatigue
- ☐ Y ☐ N Any other problems that interfere with your use of a respirator

☐ Y ☐ N **Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire?**

CONFIDENTIAL WHEN COMPLETED W:\Occupational Safety and Health\Safety\RESPIRATORY PROTECTION PROGRAM REV 05/04/2020

MEDICAL HISTORY – THESE QUESTIONS MUST BE ANSWERED BY EVERY EMPLOYEE WHO HAS BEEN SELECTED TO USE EITHER A FULL-FACEPICE RESPIRATOR OR A SELF-CONTAINED BREATHING APPARATUS (SCBA). FOR EMPLOYEES WHO HAVE BEEN SELECTED TO USE OTHER TYPES OF RESPIRATORS, ANWERING THESE QUESTIONS IS VOLUNTARY

- ☐ Y ☐ N Have you ever lost your vision in either eye (temporarily or permanently)?
- ☐ Y ☐ N Have you ever had an injury to your ears, including a broken eardrum?
- ☐ Y ☐ N Have you ever had a back injury?

☐ Y ☐ N **Do you currently have any of the following vision problems? If no, check no and go to the next question.**

- ☐ Y ☐ N Wear contact lenses
- ☐ Y ☐ N Wear glasses
- ☐ Y ☐ N Color blind
- ☐ Y ☐ N Any other eye or vision problems

☐ Y ☐ N **Do you currently have any of the following hearing problems? If no, check no and go to the next question.**

- ☐ Y ☐ N Difficulty hearing
- ☐ Y ☐ N Wear a hearing aid
- ☐ Y ☐ N Any other hearing or ear problems

☐ Y ☐ N **Do you currently have any of the following musculoskeletal problems.**

- ☐ Y ☐ N Weakness in any of your arms, hands, legs, or feet
- ☐ Y ☐ N Back pain
- ☐ Y ☐ N Difficulty fully moving your arms or legs
- ☐ Y ☐ N Pain and stiffness when you lean forward or backward at the waist
- ☐ Y ☐ N Difficulty fully moving your head up or down
- ☐ Y ☐ N Difficulty fully moving your head side to side
- ☐ Y ☐ N Difficulty bending at your knees
- ☐ Y ☐ N Difficulty squatting to the ground
- ☐ Y ☐ N Difficulty climbing a flight of stairs or a ladder carrying more than 25 lbs.
- ☐ Y ☐ N Any other muscle or skeletal problem(s) that interferes with using a respirator

THESE ADDITIONAL QUESTIONS MAY BE ASKED BY THE HEALTHCARE PROVIDER TO DETERMINE ADDITIONAL EXPOSURE FACTORS

☐ Y ☒ N Do you work in a place that has lower than normal amounts of oxygen (over 5,000 ft, confined space, etc.)?

☐ Y ☐ N If yes, do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when working under these conditions?

☐ Y ☐ N At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals, (e.g. gases, fumes, or dust), or have you come into skin contact with hazardous chemicals? If yes, name the chemical(s):_____

☐ Y ☐ N **Have you ever worked with any of these materials, or under any of the conditions listed below?**

- ☐ Y ☐ N Asbestos
- ☐ Y ☐ N Silica (sandblasting)
- ☐ Y ☐ N Dusty Environment
- ☐ Y ☐ N Tungsten/cobalt (welding, grinding)
- ☐ Y ☐ N Aluminum
- ☐ Y ☐ N Iron
- ☐ Y ☐ N Tin
- ☐ Y ☐ N Any other hazardous exposure, please describe:

- ☒ Y ☐ N Will you be working in hot conditions (77 degrees F or above)?
- ☒ Y ☐ N Will you be working in humid conditions?
- ☒ Y ☐ N Will you be wearing protective clothing and/or equipment (other than a respirator) when you are using your respirator?

If yes, please describe the protective clothing or equipment: PPE such as Gown/Tyvek Suit, Medical Gloves

Please describe the work you will be doing when you are using your respirator: EMS response, patient care and transport

How often are you expected to wear the respirator?

- ☐ Y ☒ N Escape only (no rescue)
- ☒ Y ☐ N Emergency rescue only
- ☐ Y ☒ N Less than 5 hrs. per week
- ☐ Y ☒ N Less than 2 hrs. per day
- ☒ Y ☐ N 2-4 hrs. per day
- ☐ Y ☒ N Over 4 hrs. per day

List any second jobs/side businesses, previous occupation, hobbies, etc. when you worked with/around hazardous material:_____

During the work period when you are using your respirator is your work effort:

☐ Y ☒ N Light (sitting while writing/typing, light assembly work, standing while operating a drill press, etc.).
If yes, how long does this work last during your work shift: Shift:_____Hours:_____Minutes:_____

☒ Y ☐ N Moderate (sitting while nailing or filing, driving a truck or bus in urban traffic, standing while drilling or nailing, transferring moderate loads (about 35 lbs., performing assembly work, pushing a wheelbarrow);
If yes, how long does this work last during your work shift: Shift: 2 Hours:_____Minutes:_____

☒ Y ☐ N Heavy (lifting/moving/climbing with a heavy load (about 40 lbs.) from floor to waits/shoulder level, shoveling, walking on a graded surface, shoveling, standing while brick laying/casting, working on a loading dock, etc.)
If yes, how long does this work last during your work shift: Shift: 2 Hours:_____Minutes:_____

Describe the work you will perform and describe any special hazards or conditions you might encounter when using a respirator (confined space, hazardous gases, etc.): COVID-19 exposure and similar airborne hazards

Provide any know information about toxic substances you may be exposed to when using your respirator:

Name of toxic substance(s): Virus or other pathogens

Estimated maximum exposure level per shift: 12 hrs

Duration of exposure per shift: 2-4 hrs

Describe any special responsibilities you will have while using your respirator that may affect the safety and well-being of others (rescue, security, etc.): EMS - Rescue

MEDICAL CLEARANCE - PHYSICIAN OR OTHER LICENSED HEALTH CARE PROFESSIONAL (PLHCP) (MD, DO, NP, PA, RN) MUST COMPLETE THIS SECTION

Medical Clearance for use of identified respirator(s):

☐ Approved ☐ Approved with Restrictions ☐ Denied

Remarks:

Clinician Printed Name and Signature: Date:

CONFIDENTIAL WHEN COMPLETED W:\Occupational Safety and Health\Safety\RESPIRATORY PROTECTION PROGRAM REV 04/07/2020

E. QLFT record form

CITY OF VIRGINIA BEACH

Qualitative respirator fit test record

(See guidelines on reverse side)

OFFICE OF OCCUPATIONAL SAFETY
AND HEALTH SERVICES
Main (757) 385-4851
Fax (757) 385-5621

MUNICIPAL CENTER
2424 COURTHOUSE DRIVE
BUILDING 18 VIRGINIA
BEACH, VA 23456

Employee data

Employee name _____ Last 5 SSN/ID# _____ Vol: ○ Yes ○ No

Department _____ Job title _____

Prescription glasses required? ○ Yes ○ No Presence of dentures? ○ Yes ○ No

Presence of facial hair? ○ Yes ○ No Will facial hair interfere with facepiece seal? ○ Yes* ○ No

Respirator data

Manufacturer _____ Model _____

Type/face piece _____ Size _____

NIOSH approval no. _____

Test record

Test agent: ○ Irritant smoke ○ Isoamyl acetate ○ Bitrex™ ○ Saccharin mist

Sensitivity test (N=)	N = 10		N = 20		N = 30		Not detected
	Test						
	1		2		3		
1. Initial fit ok?	P	F	P	F	P	F	
2. Positive pressure check	P	F	P	F	P	F	
3. Negative pressure check	P	F	P	F	P	F	
4. Exercise regime							
a. Normal breathing (1 min)	P	F	P	F	P	F	
b. Deep breathing (1 min)	P	F	P	F	P	F	
c. Turning head side to side (1 min)	P	F	P	F	P	F	
d. Moving head up and down (1 min)	P	F	P	F	P	F	
e. Reading (rainbow passage, etc)	P	F	P	F	P	F	
f. Bend over or jog in place (1 min)	P	F	P	F	P	F	
g. Normal breathing (1 min)	P	F	P	F	P	F	
5. Fit satisfactory? ○ Yes ○ No							

Employee (signature) _____ Date _____

Test performed by _____ Date _____

*Do not administer fit test

A respirator can't protect you if you don't know how to use it properly. In addition, there is other important information that you must know about your respirator. Therefore, your employer must provide you with respirator training before you use a respirator on the job.

This training must be presented in a way that you can understand and must include at least the following information:

- Why you need to use the respirator;
- What the respirator can and cannot do to protect you;
- How to properly inspect, put on and take off, and use your respirator;
- How to check the seal of your respirator (also called a "user seal check");
- How to use the respirator effectively in emergency situations, including situations in which the respirator doesn't work properly;
- How to recognize medical signs and symptoms that may limit or prevent you from using a respirator;
- How improper fit, usage, or maintenance can reduce your respirator's ability to protect you;
- What the procedures are for maintenance and storage of the respirator; and
- What the requirements are for federal OSHA's or your State OSHA's Respiratory Protection Standards.

You should ask questions if you do not understand the information that is being provided to you.

Guidelines for the respirator fit test record

The respirator fit test record is used to document the results of qualitative respirator fit tests, as recommended in ANSI Z88.2 and required in certain OSHA regulations. An individual record is used for each employee assigned a respirator that requires fit testing.

Employers may use quantitative fit testing on any type of tight-fitting respirator. For negative pressure respirators, the qualitative fit test procedures may only be used when a respirator needs to provide an assigned protection factor of 10 or less (equivalent to a fit factor of 100 or less). Qualitative tests are also permitted for any positive pressure respirator.

Note: Generally, respirators with loose fitting hoods, helmets or face pieces are not fit tested.

a. Employee data – Enter the employee's name, social security number or employee ID number, department and job title. Also indicate whether they wear prescription glasses, dentures and have facial hair. Note: Fit testing is not to be conducted on employees with facial hair that interferes with the respirator seal. Additionally, medical clearance is required prior to fit testing any employee.

b. Respirator data – Enter the respirator manufacturer and model.

   Enter the type of respirator (e.g., air-purifying, supplied air) and the type of facepiece (e.g., half-mask, full facepiece).

   Enter the size and NIOSH approval number.

   NOTE: A new record is started for any employee assigned a new respirator of a different type, manufacturer, model or size.

c. Test record – Indicate the test agent used.

   For each step in the fit test procedure, indicate whether the employee passes or fails. (Failed test must be repeated until a pass test is obtained).

d. Signatures – Employee should sign and date the form, along with the person administering the test.

F. Basic N95 respirator training material

N95 Respirator Training

The following training guide covers training requirements for disposable N95 filtering facepiece respirator users.

I. What Is An N95 Filtering Facepiece Respirator?

N95 filtering facepiece respirators are *air-purifying* respirators certified by the National Institute of Occupational Safety and Health (NIOSH) to have filter efficiency level of 95% or greater against particulate aerosols free of oil and greater than 0.3 microns in size.

Examples of airborne contaminants that N95 respirators filter out include dusts, fumes, mists and microbial agents such as tuberculosis bacteria & flu virus.

II. When Are N95 Respirators Required?

Depending on your job responsibilities, N95 respirators may be required as personal protective equipment. Individuals may be required to wear N95 for tasks such as entering isolation rooms, and other activities involving close contact with potentially infected persons.

III. Approval for Required N95 Use:

Per OSHA, personnel who are required by their employer to wear respirators, shall be approved after completing the following:

1) *Medical Evaluation/ Clearance*: to determine if users are physically fit to wear a respirator.

2) *Training*: to ensure users are familiar with N95 respirators, their proper use and protective limitations. Training is required on an **annual** basis.

3) *Fit-Testing*: to determine which respirator model/ size provides the proper fit for the user. Such fit-test is required on an **annual** basis.

IV. Capabilities and Limitations of N95 Respirators

1) N95 respirators **ONLY** filter out particulate contaminants.

2) N95 respirators do not protect you from:

   - Chemical vapors/ gases
   - Oxygen deficient atmosphere
   - High risk exposures such as those created by aerosol-generating procedures (i.e., bronchoscopy, autopsy) and asbestos handling.

3) N95 respirators are disposable – one time use only.

V. Effective Use of N95 Respirators

The effectiveness of N95 respirators relies on how well the respirator seals to the user's face.

To ensure N95 respirators work effectively:

1) **ONLY** use the respirator model and size for which you have been fit-tested. N95 respirators vary by model and size. Improper fit will likely result in inadequate protection.

2) **DO NOT** use the respirator with beards or other facial hair, which may interfere with the direct contact between your face and the sealing surface of the respirator.

3) Conduct a seal-check **every time** you put the respirator on (before entering area of concern).

4) If the respirator becomes damaged, soiled or you experience problems with using the respirator (breathing becomes difficult, dizziness, irritation, etc.), leave the work area immediately and remove the respirator when you are no longer exposed to the potential airborne hazard. Inform your supervisor about the issue.

-- Continue on next page

VI. Further Medical Evaluation/ Training/ Fit-Testing

1) Medical re-evaluation is required if user reports medical signs/ symptoms that are related to the ability to use a respirator, or if changes in the work place/ activities may result in a substantial increase in the physiological burden placed on the respirator user.

2) Fit-Testing needs to be repeated annually and whenever changes in the work place/ activities or type of respirator used affect the respirator fit [i.e. facial/ dental changes and changes in body weight (more than 10-20 lbs)].

3) Training needs to be repeated annually and whenever inadequacies in user's knowledge or use of the respirator indicate that the user has not retained the requisite understanding or skill to wear a respirator.

VII. Inspection

Prior to wearing the N95 respirator, inspect the respirator for damage and contamination. Verify all components of the respirator are in good condition (e.g. straps, nose piece, etc.)

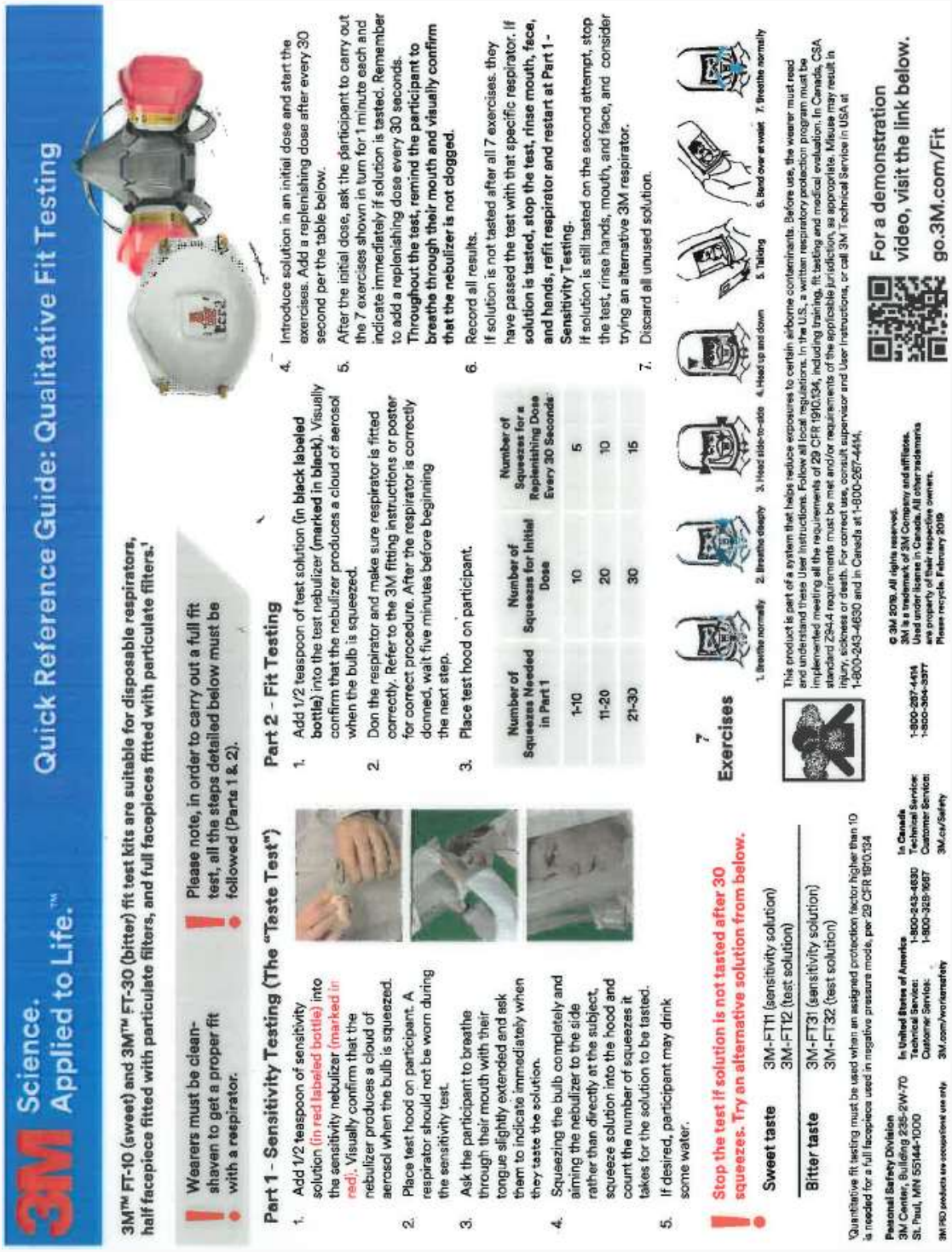
VIII. Wearing The Respirator & Seal-Checking Procedures

1) Hold the respirator in one hand, with the nose piece at the fingertips and let the head straps hang loosely in front of the respirator.	
2) Place respirator under the chin, with the nosepiece up. While holding the respirator with one hand, pull the top strap over your head, resting it at the top back of your head. Pull the bottom strap over your head, and place it around your neck, below your ears.	
3) Using both hands, mold the nose piece to the shape of your nose by pushing inward with your fingertips. Note that pinching the molding piece with 1 hand will likely result in less effective respirator fit.	
4) **Seal-check**: cover respirator completely w/ both hands, and exhale sharply. If air blows on your face or eyes, readjust the respirator according to Steps 3 & 4. Do not use respirator until you pass the seal-check (no leakage).	

5) To remove the respirator, hold the respirator with one gloved hand. With the other hand, pull the bottom strap over your head, and then pull the top strap off. ***If respirator was used in a medical facility or if there is any evidence that respirator may be contaminated, dispose of it as a bio-hazardous waste.***

If you have any questions regarding N95 respirators, contact OSHS at safety@vbgov.com

G. QUALitative fit tester training material



3M Science. Applied to Life.™

Quick Reference Guide: Qualitative Fit Testing

3M™ FT-10 (sweet) and 3M™ FT-30 (bitter) fit test kits are suitable for disposable respirators, half facepiece fitted with particulate filters, and full facepieces fitted with particulate filters.[1]

Wearers must be clean-shaven to get a proper fit with a respirator.

Please note, in order to carry out a full fit test, all the steps detailed below must be followed (Parts 1 & 2).

Part 1 - Sensitivity Testing (The "Taste Test")

1. Add 1/2 teaspoon of sensitivity solution (in red labeled bottle) into the sensitivity nebulizer (marked in red). Visually confirm that the nebulizer produces a cloud of aerosol when the bulb is squeezed.
2. Place test hood on participant. A respirator should not be worn during the sensitivity test.
3. Ask the participant to breathe through their mouth with their tongue slightly extended and ask them to indicate immediately when they taste the solution.
4. Squeezing the bulb completely and aiming the nebulizer to the side rather than directly at the subject, squeeze solution into the hood and count the number of squeezes it takes for the solution to be tasted.
5. If desired, participant may drink some water.

Stop the test if solution is not tasted after 30 squeezes. Try an alternative solution from below.

Sweet taste	3M-FT11 (sensitivity solution) 3M-FT12 (test solution)
Bitter taste	3M-FT31 (sensitivity solution) 3M-FT32 (test solution)

[1]Quantitative fit testing must be used when an assigned protection factor higher than 10 is needed for a full facepiece used in negative pressure mode, per 29 CFR 1910.134

Personal Safety Division
3M Center, Building 235-2W-70
St. Paul, MN 55144-1000

In United States of America
Technical Service: 1-800-243-4630
Customer Service: 1-800-328-1687
3M.com/worksafety

In Canada
Technical Service: 1-800-267-4414
Customer Service: 1-800-364-3577
3M.ca/Safety

Part 2 - Fit Testing

1. Add 1/2 teaspoon of test solution (in black labeled bottle) into the test nebulizer (marked in black). Visually confirm that the nebulizer produces a cloud of aerosol when the bulb is squeezed.
2. Don the respirator and make sure respirator is fitted correctly. Refer to the 3M fitting instructions or poster for correct procedure. After the respirator is correctly donned, wait five minutes before beginning the next step.
3. Place test hood on participant.

Number of Squeezes Needed in Part 1	Number of Squeezes for Initial Dose	Number of Squeezes for a Replenishing Dose Every 30 Seconds
1-10	10	5
11-20	20	10
21-30	30	15

4. Introduce solution in an initial dose and start the exercises. Add a replenishing dose after every 30 second per the table below.
5. After the initial dose, ask the participant to carry out the 7 exercises shown in turn for 1 minute each and indicate immediately if solution is tasted. Remember to add a replenishing dose every 30 seconds. **Throughout the test, remind the participant to breathe through their mouth and visually confirm that the nebulizer is not clogged.**
6. Record all results.
   If solution is not tasted after all 7 exercises. they have passed the test with that specific respirator. If **solution is tasted, stop the test, rinse mouth, face, and hands, refit respirator and restart at Part 1 - Sensitivity Testing.**
   If solution is still tasted on the second attempt, stop the test, rinse hands, mouth, and face, and consider trying an alternative 3M respirator.
7. Discard all unused solution.

7 Exercises

1. Breathe normally
2. Breathe deeply
3. Head side-to-side
4. Head up and down
5. Talking
6. Bend over at waist
7. Breathe normally

This product is part of a system that helps reduce exposures to certain airborne contaminants. Before use, the wearer must read and understand these User Instructions. Follow all local regulations. In the U.S., a written respiratory protection program must be implemented meeting all the requirements of 29 CFR 1910.134, including training, fit testing and medical evaluation. In Canada, CSA standard Z94.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. Misuse may result in injury, sickness or death. For correct use, consult supervisor and User Instructions, or call 3M Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.

For a demonstration video, visit the link below.

go.3M.com/Fit

THE RAINBOW PASSAGE TEST

"When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow."

H. Plan evaluation survey form

Emergency Medical Services
Respiratory Protection Program Evaluation Questionnaire

Training Program Evaluation Questions

	Strongly Agree	Agree	No Position	Disagree	Strongly Disagree
The EMS Respiratory Protection training was well organized and well structured.					
The educational materials were easily understood.					
The trainer was knowledgeable about the material, kept the training on target and was sensitive to group dynamics.					
Participation in this program is appropriate for someone in my position.					
The environment in which the training was held was conducive to learning.					

Overall Respiratory Protection Program Evaluation

	Strongly Agree	Agree	No Position	Disagree	Strongly Disagree
The respirator assigned to me is an appropriate selection for the hazards to which I am exposed.					
I am able to don and doff my respirator correctly.					
I am able to adequately store my respirator as appropriate.					
The Program Administrator is accessible for my questions and needs regarding the program.					
I feel that I have been adequately trained to use the respirator appropriately and understand the conditions when a respirator may need to be used as outlined in the written program or standard operating procedures.					

What changes would you make to improve the EMS Respiratory Protection Program?

_____
_____
_____
_____

I. Department resources available online

- **Annual training material**
  OSHA Refresher Course
  https://learn.vbems.com/course/index.php?categoryid=13

- **QUANTitative fit tester training material**
  QUANTitative FIT TESTER TRAINING: Using the TSI PortaCount to test respirator fit
  https://learn.vbems.com/course/index.php?categoryid=17

- **vbems.com infection control web page**
  Infection Control
  https://vbems.com/infection-control

J. CDC recommendations

Elastomeric Respirators: Strategies During Conventional and Surge Demand Situations

Conventional, Contingency, and Crisis Strategies

Updated Apr. 20, 2020

Who this guidance is for: Federal, state, and local public health officials, respiratory protection program managers, occupational health service leaders, infection prevention and control program leaders, and other leaders in healthcare settings who are responsible for developing and implementing policies and procedures for preventing pathogen transmission in healthcare settings.

Purpose: This webpage offers guidance for the use of reusable elastomeric particulate respirators to provide respiratory protection to healthcare practitioners (HCP) against pathogens as a component of a formally developed and implemented written respiratory protection program.

On This Page

This guidance is based on what is currently known about the transmission and severity of coronavirus disease 2019 (COVID-19).

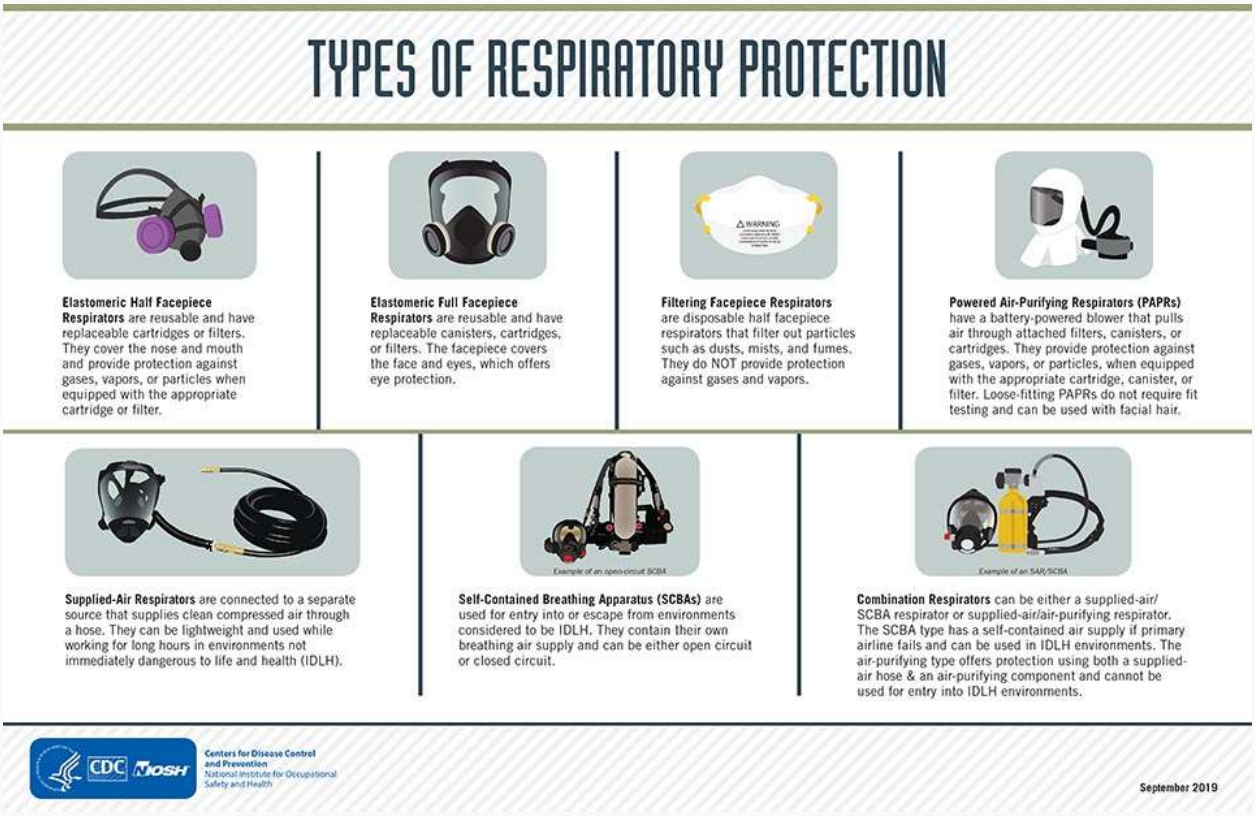
The US Centers for Disease Control and Prevention (CDC) will update this guidance as needed and as additional information becomes available. Please check the CDC COVID-19 website periodically for updated guidance.

alert icon

Conventional guidance is not applicable during the COVID-19 response when supplies are short. HCP should follow the contingency and crisis strategies.

Conventional Strategies During Non-Surge Demand Situations

Elastomeric Respirators



resize iconView Larger

Elastomeric respirators, such as half facepiece or full facepiece tight-fitting respirators where the facepieces are made of synthetic or natural rubber material, can be repeatedly used, cleaned, disinfected, stored, and re-used. They are available as alternatives to disposable half mask filtering facepiece respirators (FFRs), such as N95 FFRs, for augmenting the total supply of respirators available for use by HCP. While elastomeric respirators are not cleared by FDA for fluid resistance, based on their NIOSH approval, they can provide at least equivalent protection to N95 FFRs. Some types of elastomeric respirators can offer higher assigned protection factors (APFs) than N95 FFRs. They are equipped with replaceable filter cartridges or flexible, disc or pancake-style filters, which are not housed in a cartridge body. All elastomeric respirators equipped with the proper air-purification filters, cartridges, or canisters would also have utility in this application. Elastomerics may also have sealing surfaces and adjustable straps that accommodate a better fit.

Because they can be re-used, elastomeric particulate respirators provide an alternative respiratory protection option to FFRs for protection against pathogens. While this document focuses on respiratory protection for exposure to pathogens, these respirators may also serve as protection against other airborne hazards in healthcare settings. However, they require maintenance and a supply of replaceable components including straps, inhalation and exhalation valves, valve covers, and filters, cartridges, or canisters.

This webinar provides an overview of respiratory protection and guidance surrounding supply shortages. This webinar also provides information on infection prevention measures, strategies for optimizing the supply of N95 respirators, and a broad overview of the use of elastomeric respirators in healthcare. Guidance on elastomeric respirators is currently in development.

Elastomeric respirators have the same basic requirements for an OSHA-approved respiratory protection program as filtering facepiece respirators, including medical evaluation, training, and fit testing. However, they have additional maintenance requirements which also include cleaning and disinfection of the facepiece components such as straps, valves, and valve covers. While it is often possible to decontaminate the hard outer casing of filters, the filter material itself typically cannot be cleaned or disinfected for reuse. Instead, filter components should be discarded when they become damaged, soiled, or clogged.

There are several types of elastomeric respirators, half-facepiece or half mask (APF = 10)[1] and full facepiece (APF = 50). The specific cautions, limitations, and restrictions of use should be

understood when determining whether to use these respirators in healthcare facilities. Respirators with full facepieces have the same filter considerations but provide greater protection because of better sealing characteristics and less face seal leakage and also provide protection to more of the face and very importantly, the eyes. Elastomeric respirators with exhalation valves should not be used in surgical settings due to concerns that unfiltered air coming out of the exhalation valve may contaminate the surgical field.

OSHA-Compliant Written Respiratory Protection Program Requirements

When respirators are used to protect against hazardous airborne exposures in the workplace, OSHA requires employers to develop and implement a written respiratory protection program that conforms to OSHA 29CFR1910.134 including initial and annual fit testing.[1] The use of a NIOSH-approved respirator is required by OSHA. OSHA also requires that respirators be used in conformance with the conditions of their NIOSH certification. Hence, a NIOSH-approved respirator assembly cannot be modified, and only those replacement parts specified and provided by the manufacturer must be used. The manufacturer's instructions are specific to its respirator materials and specifications. Manufacturer instructions are generally provided with the respirator facepiece packaging.

Appendix B-2 to OSHA's Respiratory Protection standard (29CFR1910.134external icon) provides general procedures for employers to use when cleaning respirators. OSHA also permits employers to use the cleaning recommendations provided by the respirator manufacturer, if such procedures are as effective as those listed in Appendix B- 2, meaning that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm such as skin irritation to the user.

Cleaning, Disinfection, and Use

Generally, it is recommended that respirators be cleaned and disinfected immediately after doffing (i.e., removing). To avoid contact transmission, precautions should be taken during doffing and use. Training on appropriate donning and doffing procedures should be provided to all employees expected to wear respirators. Both CDC and OSHA have videos illustrating proper donning and doffing of the respirator.[16] Elastomeric components vary among manufacturers and react differently to cleaning and disinfection solutions and procedures. The respirator facepiece components such as facepiece, valves, and straps require maintenance including cleaning, disinfection and inspection prior to reuse. OSHA only requires replacing filters "where necessary," for example, when soiled, contaminated, or clogged.

Viruses and bacteria that cause acute respiratory infections can survive on respirator components for variable periods of time, from hours to weeks. Consequently, contaminated respirators must be handled, cleaned, and disinfected carefully and properly to reduce the possibility of the device carrying infection and contributing to disease transmission.[2] Manufacturers recommend cleaning and disinfection procedures for their elastomeric respirator components such as facepiece, valve covers, valves, and straps. The materials that comprise the elastomeric components of NIOSH-

approved respirators vary among manufacturers; consequently, cleaning and disinfection solutions and procedures recommended by manufacturers may also vary. Manufacturers typically recommend that filter cartridges be discarded after each use when cleaning an elastomeric respirator. Following manufacturer recommendations may be possible for some employers, but others may find discarding the filter component with each cleaning of an elastomeric respirator to be a cost factor when selecting between FFRs and elastomeric respirators, but especially in times of shortage, users may find it difficult to replace the filter cartridges due to supply difficulties. OSHA only requires replacing filters "where necessary," for example, when soiled, contaminated, or clogged. Additionally, cleaning and disinfecting respirators can damage or deteriorate respirator facepiece component materials and adversely affect their performance when re-using after disinfection.

Filter Types

Three types or series of filters are available for use with reusable elastomeric respirators. Filters are classified by their resistance to degradation by oil-based aerosols.

- N-Series filters are not oil-resistant.
- R-Series are somewhat oil-resistant, and, in industrial use, typically have an 8-hour time-use limitation.
- P-Series are oil-resistant and rarely have use-time limitations.

Manufacturers provide use-time limitations and other limitations or restrictions depending on the respirator's intended use. If the healthcare setting does not have any oil-based aerosols present, any filter series can be used. Filters are available in three efficiency levels – 95, 99, 100. Thus, a wide selection is potentially available for use to augment the overall supply of respirators in healthcare settings. The half mask or facepiece type respirator with N-Series 95% efficiency level filters (N-95) has been determined to provide adequate protection in combination with other healthcare practice interventions such as hand washing, isolation, and spatial distance for the risks associated with the transmission of tuberculosis, influenza, and novel coronaviruses.[3] [4]

Generally, in industrial settings, filters are replaced when soiled or contaminated, damaged, and when breathing resistance increases. However, in healthcare settings breathing resistance will unlikely be a reason for filter replacement since filters should seldom if ever become loaded with heavy concentrations of dust. Depending on use, one manufacturer recommends the filter be discarded after each use, while another recommends the filter cartridge be disposed no later than 30 days after the first use if no oil mists are present.[5] [6] The respirator's other elastomeric components should not be cleaned with solvents (e.g., acetone, ethanol) or exposed to temperatures greater than 50°C (122°F).

Disinfection Procedures

Cleaning and disinfection must be done using either the procedures in OSHA's Respiratory Protection Standard or the procedures recommended by the respirator manufacturer, provided

they are at least as effective as OSHA's procedures. The employer must consult with the manufacturer for the proper disinfectants/procedures and their potential impact upon its respirator facepiece components.

If it is determined that the disinfection solution and procedures do not degrade the facepiece components, it is possible the components can be re-used, subject to inspection by a qualified individual to determine whether the components need to be repaired or replaced.

Filter cartridges should be removed from the facepiece prior to cleaning and disinfecting the elastomeric facepiece components. Generally, the facepiece components are removed from the facepiece to be cleaned and disinfected. There are several basic steps to clean and disinfect a respirator – remove, clean, disinfect, rinse and dry, inspect and repair or replace, and store. The order and details of each step are important. And it is very important that respirators are *thoroughly* air dried prior to storage.

Some disinfectants are powerful germicides and their use requires special precautions such as adequate ventilation, use of clean non-sterile gloves, gowns, and/or face shields. Therefore, cleaning and disinfection must be done by competent, trained individuals. Centralizing this activity might help ensure that it is being properly executed.

Maintenance must be performed only by those individuals who have been trained in the task and are knowledgeable of the models being serviced. Specially trained individuals (ideally the same people who clean and disinfect respirators) should also be employed to carefully inspect respirators after cleaning with attention to valves and straps. Inspections should follow the manufacturer's recommendations. Only the original respirator manufacturer's component parts should be stocked and available to replace damaged components when necessary.

Contingency Capacity Strategies During Surge Demand Situations

Who this guidance is for: Those responsible for developing and implementing policies and procedures for preventing pathogen transmission in healthcare settings. This includes federal, state, and local public health officials, respiratory protection program managers, occupational health service leaders, and infection prevention and control program leaders.

Purpose: This webpage describes options for deploying air-purifying reusable elastomeric particulate respirators to provide respiratory protection to healthcare practitioners (HCP) when supplies of N95 filtering facepiece respirators (FFRs), including surgical N95s, are limited or not available.

Strategies for reusable elastomeric respirator use in healthcare settings in conventional, non-surge demand situations, are discussed in Conventional Strategies**.** Conventional use should adhere to OSHA requirements and manufacturer-specific recommended instructions.

Contingency capacity strategies are for emergency situations in which each elastomeric respirator is issued for the exclusive use of an individual employee. The respirators are cleaned and disinfected as often as necessary to remain unsoiled and sanitary. Their description and use should be part of a written OSHA respiratory protection program (RPP). If there is deviation from the standard RPP, it should be authorized and documented by the program's administrator.

Crisis capacity strategies are for emergency use, limited respirator and/or respirator component supplies such as filters, cartridges, or canisters, and valves, and situations in which it is impossible for individual HCP to have a dedicated elastomeric respirator, for example when the same respirator must be used by multiple HCP. When used by more than one HCP, respirators must be cleaned and disinfected before being worn by different individuals. The use of elastomeric respirators should be part of a written OSHA RPP. If there is any deviation from the conventional RPP, it should be authorized and documented by the program's administrator.

Elastomeric Respirators as an alternative to NIOSH-approved N95 respirators

NIOSH-certified reusable elastomeric particulate respirators provide at least the same level of protection as N95 FFRs, and some types of elastomeric respirators can offer higher assigned protection factors than N95 FFRs.

The most significant difference between reusable elastomeric respirators and disposable FFRs is that reusable respirators must be maintained and inspected after each use, including cleaning and disinfection of the elastomeric components such as facepiece valves, valve covers, and straps. When used in conventional workplace conditions, the filter, cartridge, or canister of a reusable elastomeric respirator is not cleaned or disinfected; it is discarded once damaged, soiled, or clogged. Elastomeric respirators are equipped with replaceable filters. Some replaceable filters are cartridge style in which the filtration media is housed inside of a cartridge. Others consist of flexible, disc or pancake-style filters, in which the filter media are not housed within a cartridge body.

This document provides considerations for disinfecting the outside of a filter cartridge during contingency and crisis scenarios to increase the supply of respirators for protection during the Coronavirus Disease 2019 (COVID-19) pandemic. However, there is an increased risk of contact transmission or damage to the filter cartridge that must be considered.

General Reusable Elastomeric Respirator Considerations

Reusable respirators described in this document include tight-fitting half-facepiece or full-facepiece elastomeric respirators that use replaceable filters, cartridges, or canisters and have facepieces made of synthetic or natural rubber material permitting repeated cleaning, disinfection, storage, and reuse. They contain an exhalation valve and should not be used in surgical settings when there is concern that unfiltered air coming out of the exhalation valve may contaminate the surgical field. As with N95 FFRs, reusable respirators require an RPP including, but not limited to, initial and annual fit testing, and a user seal check each time the respirator is

used. However, on March 14, 2020 OSHA issued Temporary Enforcement Guidanceexternal icon permitting OSHA field offices to exercise enforcement discretion regarding the annual fit testing requirements until further notice.[7]

NIOSH-approved, elastomeric respirators provide an alternative respiratory protection option capable of decreasing the total number of respirators required because they may be cleaned, disinfected, and reused numerous times, which should reduce the number of respirators needed when supplies are limited.[8] However, a supply of elastomeric respirator facepiece components should be held in reserve to replace damaged or deteriorated parts, and supplies of replacement filters, cartridges, or canisters are also needed. The filters of these respirators are at least as protective as the N95 FFRs and surgical N95 FFRs typically used in healthcare settings. They are not cleared by FDA for fluid resistance and require maintenance including cleaning, disinfection, and inspection.

There are several types of filter media for use with NIOSH-approved reusable, half -facepiece elastomeric respirators. All are sufficient at removing droplet and viral size particles when worn correctly for the duration of the exposure. Filters are available in three efficiency levels – 95, 99, 100. Thus, a wide selection is potentially available for use to augment the overall supply of respirators in healthcare settings.

- **On an emergency basis during contingency and crisis emergency use,**
    - **Filters (except for unprotected disc type, i.e., pancake style) may be used for an extended period, if the filter housing of cartridge types is disinfected after each patient interaction provided the disinfectant or cleaning agent does not come in contact with the filter media.**
    - **Filters, even cartridge types, must not be dipped or immersed in a cleaning or disinfection solution because this may damage or render the filter material ineffective. When using a cleaning or disinfectant wipe on the external surface of a filter cartridge, users should avoid contact with the filter media on the inside of the cartridge.**
- The specific cautions, limitations, and restrictions of use should be understood when determining whether to use these respirators in healthcare facilities.
    - Respirators with full facepieces have the same filter considerations but provide greater protection because of better sealing characteristics and less face seal leakage and also provide protection to more of the face and very importantly, the eyes.
    - Elastomeric respirators with exhalation valves should not be used in surgical settings due to concerns that unfiltered air coming out of the exhalation valve may contaminate the surgical field.

Half-facepiece or half mask (APF = 10)[1] and full facepiece (APF = 50) elastomeric respirators have specific cautions, limitations, and restrictions of use that need to be understood when determining whether to use these respirators in a healthcare facility. Respirators with full facepieces have the same filter considerations but provide greater protection because of better

sealing characteristics and less face seal leakage and also provide protection to more of the face and very importantly, the eyes.

Effective Elastomeric Respirator Use

During contingency and crisis capacity strategies, when shortages are predicted, but supplies are still available, each elastomeric respirator is issued for the exclusive use of an individual employee. Elastomeric respirators must be cleaned as often as necessary to remain unsoiled and sanitary.

- As with N95 FFRs, achieving an adequate seal to the face is essential. OSHA regulations require a written respiratory protection program requiring workers to undergo an initial and annual fit test and conduct a user seal check each time the respirator is donned (put on). Workers must pass an initial and annual fit test to confirm a proper seal before using a tight-fitting respirator in the workplace. Any exception to the program during emergency use should be authorized and documented by the program administrator. On March 14, 2020 OSHA issued Temporary Enforcement Guidanceexternal icon permitting OSHA field offices to exercise enforcement discretion regarding the annual fit testing requirements until further notice.[7]

- When properly fitted and worn, minimal leakage occurs around the edges of the tight-fitting respirator where it seals to the user's face when the user inhales. This means almost all the air is directed through the filter media.
- A respirator with an exhalation valve provides the same level of protection to the wearer as one that does not have a valve. The presence of an exhalation valve reduces exhalation resistance, which makes it easier to breathe (exhale). Some users feel that a respirator with an exhalation valve keeps the face cooler and reduces moisture build up inside the facepiece. However, respirators with exhalation valves are generally not be used in situations when a sterile field must be maintained, such as during an invasive procedure in a surgical or procedural setting, because the exhalation valve allows unfiltered air exhaled by the wearer, potentially contaminated with microbes, to escape and possibly contaminate the sterile field. There may be other healthcare activities where respirators with exhalation valves are appropriate.
- During contingency or crisis scenarios, HCPs may receive elastomeric respirators they are not accustomed to using. The JETFIT Study provides information about how quickly the healthcare workers can be trained on using elastomeric respirators when switching from N95 FFRs to elastomerics.[9]
- The Bessesen et al. protocol describes a simple approach to cleaning and disinfecting elastomeric respirators in healthcare settings.[10] The CDC webinar on *Elastomeric Respirators for U.S. Healthcare Delivery* describes the Bessesen protocol and additional information about the use of elastomeric respirators in healthcare settings.[11]

General Cleaning and Disinfection Information

Viruses and bacteria that cause acute respiratory infections can survive on respirator components for variable periods of time, from hours to weeks. Consequently, contaminated elastomeric respirators must be handled, cleaned, and disinfected properly to reduce the possibility of the device carrying infectious particles and contributing to disease transmission.[2]

Each respirator manufacturer identifies the appropriate cleaning procedures, which typically involves 1) using soap and warm water or chemical disinfectants authorized for use with their specific elastomeric facepiece components and 2) discarding the filter cartridge.

For conventional use: Employers must consult with the manufacturer concerning the effectiveness and uncertainties of alternative cleaning and disinfectant solutions and procedures used for reuse of the facepiece, straps, and filter components.

- The solutions and procedures must be effective for disinfection but 1) not damage the respirator, including causing damage to the filter media, which conventionally is discarded and 2) not cause harm such as skin irritation to the wearer.
- Prolonged or repeated use of disinfectants may damage or degrade respirator elastomeric components (facepiece, valves, valve covers, straps), causing components to discolor, swell, harden, and crack.

For contingency and crisis use: Because of necessity, elastomeric facepiece components and filter cartridges may be treated differently for their cleaning and disinfection. Whereas conventional practice is to discard the filter component, contingency practices may necessitate cleaning and disinfecting the filter housing, but care must be taken to not exposed the filter media to any cleaning solutions. The performance of filter media can be degraded by contact with the disinfectant.

- During surge situations, when manufacturer instructions are not available, and supply shortages exist, interim cleaning and disinfection procedures may be necessary and effective to reuse scarce or unavailable replacement components. However, interim procedures could increase the risk of contact transmission or damage to the filter media if not done properly. Alternate procedures and risks must be considered to protect HCP and meet healthcare needs.

- First clean the surface of each component except for the filter media after each use. Removing organic and inorganic materials from the component surfaces will help achieve maximally effective disinfection.[12]

- Some disinfectants are powerful germicides, so their use requires special precautions such as adequate ventilation, use of clean non-sterile gloves, gowns, and face shields. As such, cleaning and disinfection must be done by competent, trained individuals.

- Additional guidelines for cleaning and disinfecting elastomeric respirators are available from the CDC/NIOSH-sponsored JETFIT study, conducted in 2019-2020 at two academic medical centers to better understand the feasibility of rapidly fit testing and training HCP to use elastomeric respirators.[9]
- Care needs to be taken during cleaning and disinfection to ensure the trained respirator cleaning staff does not contaminate or injure themselves. Centralizing this activity might be helpful for ensuring that it is being properly executed. Recent studies demonstrate that some elastomeric respirators continue to function and perform as expected after 150 cleaning and disinfection cycles.[13]

Basic Steps to Clean and Disinfect an Elastomeric Respirator

There are several basic steps to clean and disinfect an elastomeric respirator – remove, clean, disinfect, rinse and dry, inspect and repair or replace, and store. Bessesen et al. provide useful guidelines for cleaning and disinfecting elastomeric respirators in healthcare environments.[10] These methods have been used successfully in several healthcare settings in the United States. The order and details of each step are important.

If available and appropriate, the respirator facepiece components should be cleaned using OSHA or manufacturer protocols.[7 14–15] Filter cartridge components would conventionally be discarded. However, during periods of surge capacity, a careful wipe of the filter cartridge, avoiding contact with the filter media, and using a common hospital disinfectant wipe has low risk of damaging the filter. The filter cartridge should never be dipped or submerged in disinfectant or excessively wetted with disinfectant.

Generally, it is recommended that respirators be cleaned and disinfected immediately after doffing (i.e., removing). To avoid contact transmission, precautions should be taken during doffing and use. Training on appropriate donning and doffing procedures should be provided to all employees expected to wear respirators. Both CDC and OSHA have videos illustrating proper donning and doffing of the respirator.[16] Elastomeric components vary among manufacturers and react differently to cleaning and disinfection solutions and procedures. The respirator facepiece components such as facepiece, valves, and straps require maintenance including cleaning, disinfection and inspection prior to reuse. OSHA only requires replacing filters “where necessary,” for example, when soiled, contaminated, or clogged. The alternate cleaning and disinfection method, described by Bessesen et al. for use in healthcare when conventional practices are not practical, has been used successfully.[10]

Cleaning

- When removing organic and inorganic matter from the respirator, trained personnel should wear nitrile gloves to protect their hands and limit the potential for self-infection. Additional protective equipment such as gowns and face shields, as well as ventilation, may be required during cleaning and disinfection procedures. Cleaning solution contact with the filter media must be avoided.

- A detergent or soap and warm water could be used to clean the surface of the filter cartridge prior to disinfection. Carefully avoid contact with the filter media. Cleaning can be done using a clean, soft cloth dampened with warm water approximately 49°C (120°F) containing a mild pH neutral (pH 6-8) detergent and using a mechanical wiping action. Other elastomeric facepiece components may be cleaned using the manufacturer's recommended procedures.

Disinfecting

The effectiveness of an alternate filter cartridge disinfection solution and procedure may be uncertain:

- All crevices of many filter cartridge housings may not be reached with sufficient disinfection solution or be contacted for the period of time required to be effective.
- The filter media may be degraded from contact with the disinfectant.

Some elastomeric respirators have filter cartridges that prevent disinfectant contact with the filter media. If available, these filter cartridges should be used in the contingency capacity strategies approach. These filter cartridges provide added assurance that the filter media will not be contacted with the cleaning and disinfectant solutions. These cartridges may be wiped down repeatedly.

NOTE: P-series filters can generally be re-used until they are soiled, damaged, or difficult to breathe through. Caution should be used when using the filter for a live virus, and thorough disinfection of the filter cartridge should be completed.

Practices not approved by the manufacturer can increase the risk and uncertainty of re-using damaged or degraded components. This must be balanced against other available HCP protection options to sustain effective HCP protection and patient care.

Modified procedures used during emergencies should be assessed and documented in the written RPP, including alternate cleaning and disinfection practices.

For disinfection, diluted household bleach solutions, alcohol solutions with at least 70% ethyl alcohol, and EPA-registered household disinfectants should be effective against coronaviruses.

For use of diluted household bleach solutions, follow disinfectant manufacturer's instructions for proper disinfectant application, PPE, and ventilation.

- Check to ensure the bleach is not past its expiration date.
- Never mix household bleach with ammonia or any other cleanser. Unexpired household bleach will be effective against coronaviruses when properly diluted.
- Most Household bleach solutions vary in concentration from 5.25% sodium hypochlorite (~50,000 ppm available chlorine) to up to 12.5% sodium hypochlorite (~125,000 ppm). It

is important to check the product label and follow the disinfection directions for use, dilution, and contact time. Adjust the ratio of bleach to water as needed to achieve appropriate concentration of sodium hypochlorite.
    - Based on the EPA List N: Disinfectants for Use Against SARS-CoV-2 products, 2500 ppm (0.25%) for 5 minutes is effective. Most readily available bleach is approximately 6% so 2/3 cup of bleach per gallon of cold tap water (1:24 dilution) for 5 minutes is appropriate.
    - For bleach preparations containing 5.25% sodium hypochlorite, use ¾ cup of bleach per 1 gallon of cold tap water for 5 minutes.
    - If a lower concentration of bleach is desired, the EPA standard disinfection rate for hypochlorite products is 600 ppm for 10 minutes. That is, use 3 tablespoons of bleach per 1 gallon of cold tap water for 10 minutes.
- Prepare a fresh bleach solution each day in a well-ventilated area. Always add bleach to cold water, not water to bleach.

CAUTION: The following may degrade or damage the respirator components.

- Strong solutions such as hypochlorite, iodine, and high concentrations of alcohol may degrade, deteriorate or extract chemical additives from certain respirator materials.
- Healthcare sterilization processes including ethylene oxide should not be used unless authorized by the respirator manufacturer, as they may degrade and alter the shape of the facepiece.
- Steam sterilization equipment should not be used unless authorized by the respirator manufacturer.

Some EPA-approved disinfectants are also available as ready to use at 2700 ppm for 1 minute; however, these strong solutions could impact the integrity of the respirator components. Products with EPA-approved emerging viral pathogens claims external iconare expected to be effective against SARS-CoV-2. Follow the manufacturer's instructions for all cleaning and disinfection products (e.g., concentration, application method and contact time, etc.).

Disinfectants listed on the EPA's Registered Antimicrobial Products for Use Against Novel Coronavirus SARS-CoV-2, the virus that causes COVID-19, could be used to inactivate the virus.[18] Those intended for use with soft surfaces may be preferred.

Inspection

All respirators used in routine situations must be inspected by properly trained individuals before each use and during cleaning. This includes a check of respirator function, tightness of connections, and the condition of the various parts, such as the facepiece, head straps, valves, cartridges, and canisters or filters.

Inspect elastomeric parts for pliability and signs of deterioration. Respirators that fail an inspection or are otherwise found to be defective should be removed from service and discarded, repaired, or adjusted in accordance with the following procedures:

- Repairs or adjustments to respirators must be made only by persons appropriately trained to perform such operations, and only using the respirator manufacturer's NIOSH-approved parts designed for the respirator.
- Repairs must be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.
- Reducing and admission valves, regulators, and alarms must be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

Particulate Filter Replacement

Discard filter cartridges if they become visibly soiled or wet, if they are visibly damaged, or if the respirator becomes notably harder to breathe through. Otherwise, change out the filters periodically. Provided the cartridge integrity and filter have not been compromised, current practice shows that conservatively, the filters could be used for at least one year.[18]

Training

Workers must be educated and trained on how to safely use their elastomeric respirator. Employers should follow the respirator manufacturer's instructions and OSHA guidance to the greatest extent possible; and consider training recommendations described in the Bessesen protocol. The NIOSH JETFIT study provides excellent training for contingency situations.

To ensure respirator maintenance is conducted properly, employers should establish disinfection and cleaning procedures and train staff to perform the required maintenance including storage, inspection, distribution, repair or replacement, cleaning, disinfection, and disposal. Employers may identify a central location for disinfection or train individual users to clean and disinfect their respirators. Initial surface cleaning should be done at point of use before moving to a central location for disinfection. [19, 20, 21]

Respirator storage

Respirators must be stored in a clean, non-contaminated location in a manner that does not distort the facepiece or straps. Respirators need to be thoroughly air dried prior to storage.

Crisis Capacity Strategies During Surge Demand Situations

During periods of crisis surge capacity, several strategies in addition to the contingency strategies may be followed.

Sharing elastomeric respirators

If it is impossible for individual HCP to have dedicated elastomeric respirators, the same elastomeric respirator may be used by multiple HCP. Elastomeric respirators issued to more than one employee should be cleaned, disinfected, and inspected before being worn by different individuals. One option is to label the respirator, conduct surface cleaning at the point of use, and return to a central location to be disinfected by central staff before reissuing the respirator to a different user.

Machines may be used to expedite the cleaning, sanitizing, rinsing, and drying of large numbers of elastomeric respirators. In general, the respirator's elastomeric components should not be cleaned with solvents (e.g., acetone, ethanol) or exposed to temperatures greater than 50°C (122°F). Post-cleaning inspection by personnel trained in the necessary maintenance tasks should still be conducted to assure respirator functionality has not been degraded.

Extreme care should be taken to limit tumbling, agitation, or exposure to temperatures above those recommended by the manufacturer, as these conditions may result in damage to the respirators.

Ultrasonic cleaners, clothes washing machines, dishwashers, and clothes dryers have been specially adapted and successfully used for cleaning and drying elastomeric respirators. [22]

Waiving the fit testing requirements

OSHA has issued temporary enforcement guidance about switching from quantitative to qualitative fit testing, and OSHA is waiving the annual fit testing requirements as described above.[7] If fit testing is not possible, leakage at the face seal could occur and the protection provided to the wearer may be significantly reduced. For any tight-fitting respirator, such as FFRs and elastomeric respirators, a successful user seal check must be performed with each donning.

Under serious outbreak conditions in which respirator supplies are severely limited, HCP may not have the opportunity to ever be fit tested on a respirator before needing to use it. While this is not ideal, in this scenario, HCP should work with their employers to choose the respirator that fits them best, as, even without fit testing, a respirator will provide better protection than using no respirator at all or using a surgical mask.

If possible, the HCP should start with the size used previously for fit testing, but as size can vary by manufacturer and model, a different size may be needed to achieve a good fit.

If fit testing has never been done, the following recommendations are still useful.

- If using a half facepiece respirator, it should fit over the nose and under the chin. If a good face seal cannot be achieved when performing a user seal check, try a different model or size.
- OSHA has developed videos in English and Spanish to assist users with donning, doffing, and user seal checks.[23],[24]
- If respirators are received during a crisis, and they need to be used right away without fit testing, ask the employer for additional product training videos and literature on proper donning (putting on) and doffing (taking off), and content on how to conduct a user seal checkexternal icon.[25]
- Practice putting on the respirator and doing a user seal check at least several times.
- Check the fit in a mirror or ask a colleague to look to be sure the respirator is touching your face and appears to be on properly.

Fit testing is necessary to confirm if a respirator does or does not fit. During a crisis, however, when conventional requirements cannot be implemented, healthcare professionals should be able to determine if they have obtained a reasonable fit if they have had training and they perform a successful user seal check prior to each use of the respirator.

Considerations for Users of Corrective Lenses

- Conventionally, workers who wear a full facepiece respirator and need corrective lenses would have prescription inserts. In a surge situation, where multiple employees share respirators, the use of prescription inserts might not be feasible.
- Employees who use glasses could wear half facepiece respirators, with glasses worn over the respirator to avoid a situation where the arms of the glasses interfere with the respirator seal.
- The risks of contamination by solvent vapors do not apply in most healthcare settings. Therefore, individuals who wear contact lenses should be able to wear either full facepiece or half facepiece respirators. However, the use of contact lenses in general could present additional risks where SARS-CoV-2 exposures are known or suspected.

Footnotes

[1] An Assigned Protection Factor (APF) is the workplace level of respiratory protection that a respirator is expected to provide to employees when used in conjunction with an effective RPP.

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Last Updated Apr. 20, 2020

Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases

K. Manufacturer documentation: Respirators

3M Science. Applied to Life.™

Technical Specification Sheet

3M™ Particulate Respirator 8511, N95

Key Features
- NIOSH approved N95 rating
- Adjustable M-noseclip
- Braided headbands
- Dual point stapled headband attachment
- Cool Flow™ Exhalation Valve

Material Composition
- Straps – Braided Polyisoprene
- Staples – Steel
- Nose Clip – Aluminum
- Filter – Polypropylene
- Shell – Polyester
- Valve – Polypropylene & Polyisoprene
- This respirator contains no components made from natural rubber latex
- Approximate weight of product: 0.55 oz.
- See the 3M Technical Bulletin - Cellulose Certification - Filtering Facepiece Respirators for information about which 3M respirators contain cellulose

Country of Origin
Made in the USA with globally sourced materials

Use For
- Use for solid particulates and liquid mists in concentrations not exceeding 10X PEL/OEL
- Always follow User Instructions and use in manners as indicated

Do Not Use For
- DO NOT use for gases and vapors, oil aerosols, asbestos, arsenic, cadmium, lead, 4,4-methylene dianiline (MDA), or abrasive blasting
- DO NOT use for particulate concentrations exceeding 10X PEL/OEL
- DO NOT use in any manner not indicated in the User Instructions

Approvals and Standards
- NIOSH approved N95 particulate respirator
- Meets NIOSH 42 CFR 84 N95 requirements for a minimum 95% filtration efficiency against solid and liquid aerosols that do not contain oil.
- NIOSH approval number: TC-84A-1299
- Assigned Protection Factor (APF 10) per US OSHA and Canada CSA

Time Use Limitation
Replace the respirator when it becomes dirty, damaged, or difficult to breathe through.

Shelf Life and Storage

- 5 years from the date of manufacture
- Use By date on box in MM/YYYY format
- Store respirators in the original packaging, away from contaminated areas, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals
- Store in temperatures between -4°F (-20°C) and +86°F (+30°C) and not exceeding 80% RH

WARNING! ⚠
This respirator helps reduce exposures to 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 1910.134, including training, fit testing and medical evaluation. In Canada, CSA standard Z94.4 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 the User Instructions or call 3M PSD Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.

3M

Personal Safety Division
3M Center, Building 0235-2W-70
St. Paul, MN 55144-1000
3M.com/worksafety

3M PSD products are occupational use only.

Acceptable Fit Test Protocols

Fit Test Protocol*		Acceptable with this product?
Qualitative Protocols	Saccharin	☒
	BitrexTM	☒
	Irritant Smoke	☐
	Isoamyl Acetate	☐
Quantitative Protocols		☒

*Refer to OSHA 1910.134

For More Information
Technical Assistance 1-800-243-4630
Hours of Operation: M-Th 8am - 6pm, Fri 8am - 4:30 pm CST

3M Science. Applied to Life.™

Technical Specification Sheet

3M™ Particulate Respirator 8210V, N95

Key Features
- NIOSH approved N95 rating
- Adjustable nose clip
- Nose foam
- Stapled headbands
- Cool Flow™ Exhalation Valve

Material Composition
- Straps – Polyisoprene
- Staples - Steel
- Nose Clip – Aluminum
- Nose foam - Polyurethane
- Filter – Polypropylene
- Shell – Polyester
- Coverweb - Polypropylene
- Valve - Polypropylene & Polyisoprene
- This respirator contains no components made from natural rubber latex
- Approximate weight of product: 0.55 oz.
- See the 3M Technical Bulletin - Cellulose Certification - Filtering Facepiece Respirators for information about which 3M respirators contain cellulose

Country of Origin
Made in the USA with globally sourced materials

Use For
- Use for solid particulates and liquid mists in concentrations not exceeding 10X PEL/OEL
- Always follow User Instructions and use in manners as indicated

Do Not Use For
- DO NOT use for gases and vapors, oil aerosols, asbestos, arsenic, cadmium, lead, 4,4-methylene dianiline (MDA), or abrasive blasting
- DO NOT use for particulate concentrations exceeding 10X PEL/OEL
- DO NOT use in any manner not indicated in the User Instructions

Approvals and Standards
- NIOSH approved N95 particulate respirator
- Meets NIOSH 42 CFR 84 N95 requirements for a minimum 95% filtration efficiency against solid and liquid aerosols that do not contain oil.
- NIOSH approval number: TC-84A-5410

- Assigned Protection Factor (APF 10) per US OSHA and Canada CSA

Time Use Limitation
Replace the respirator when it becomes dirty, damaged, or difficult to breathe through.

Shelf Life and Storage

- 5 years from the date of manufacture
- Use By date on box in MM/YYYY format
- Store respirators in the original packaging, away from contaminated areas, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals
- Store in temperatures between -4°F (-20°C) and +86°F (+30°C) and not exceeding 80% RH

WARNING! ⚠
This respirator helps reduce exposures to 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 1910.134, including training, fit testing and medical evaluation. In Canada, CSA standard Z94.4 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 the User Instructions or call 3M PSD Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.

Acceptable Fit Test Protocols

Fit Test Protocol*		Acceptable with this product?
Qualitative Protocols	Saccharin	☒
	BitrexTM	☒
	Irritant Smoke	☐
	Isoamyl Acetate	☐
Quantitative Protocols		☒

*Refer to OSHA 1910.134

3M

Personal Safety Division
3M Center, Building 0235-2W-70
St. Paul, MN 55144-1000
3M.com/worksafety

3M PSD products are occupational use only.

For More Information
Technical Assistance 1-800-243-4630
Hours of Operation: M-Th 8am - 6pm, Fri 8am - 4:30 pm CST

3M Science. Applied to Life.™

Helping You Wear it Right

Wearing Your 3M™ Half Facepiece Reusable Respirator 6000 Series

Always read and follow User Instruotions.

1

Place the respirator over your nose and mouth with bottom straps unfastened.

2

Pull the top strap over your head, placing the head cradle on the crown of your head.

3

Hook the bottom straps together behind your neck.

4

Adjust strap tension to achieve a secure fit. Pull the ends of the straps to adjust the tightness beginning with the adjustment points at the top of the respirator and then moving to the adjustment points at the back of the neck. Do not over-tighten. Strap tension may be decreased by pushing out on back side of buckles.

Perform a User Seal Check

Before assigning any respirator to be worn in a contaminated area, a qualitative or quantitative fit test must be performed per U.S. OSHA standard 29CFR 1910.134 or local requirements.

Positive Pressure User Seal Check

Place the palm of your hand over the exhalation valve cover and *exhale gently.* The facepiece should bulge slightly. If air leaks between the face and the facesеal of the respirator, reposition it and adjust the straps for a more secure seal."

Negative Pressure User Seal Check

Using Particulate Filters

Place your thumbs over the center of the filters and *inhale gently.* The facepiece should collapse slightly. If air leaks between the face and the facesеal of the respirator, reposition it and adjust the straps for a more secure seal."

Using Cartridges

Place the palms of your hands over the cartridges and *inhale gently.* The facepiece should collapse slightly. If air leaks between the face and the facesеal of the respirator, reposition it and adjust the straps for a more secure seal."

Using Hard Case Particulate Filters

Squeeze filter covers with hands toward facepiece to restrict airflow. Be careful not to disturb the position of the respirator. *Inhale gently.* The facepiece should collapse slightly. If air leaks between the face and the facesеal, reposition it and adjust the straps for a tighter seal."

*If you cannot achieve a proper seal, do not enter contaminated area. See your supervisor.

⚠WARNING

These 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. A written respiratory protection program must be implemented meeting all the requirements of OSHA 1910.134 including training, fit testing and medical evaluation. In Canada, CSA standards Z94.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. Misuse may result in sickness or death. For correct use, see supervisor and User Instructions, or call 3M PSD Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.

Personal Safety Division
3M Center, Building 235-2W-70
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USA
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Web www.3M.com/reusable

3M PSD products are occupational use only.

3M

Full Facepiece Respirator 6000 Series — *User Instructions*

GENERAL SAFETY INFORMATION

Intended Use

The 3M™ Full Facepiece Respirators 6000 Series are NIOSH approved and designed to help provide respiratory protection against certain airborne contaminants when used in accordance with all use instructions and limitations and applicable safety and health regulations.

The Full Facepiece 6000 Series meets the requirements of the ANSI Z87.1-2010 standard for face and eye protection. These products help provide limited eye and face protection against flying particles.

This product contains no components made from natural rubber latex.

⚠ WARNING

This respirator helps protect against certain airborne contaminants. **Misuse may result in sickness or death.** For correct use, consult supervisor and *User Instructions* or call 3M in U.S.A. at 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

These *User Instructions* provide information about facepiece use only. Important information is provided in the *User Instructions* with each of the air filtration/supplied air systems that are NIOSH certified to be used with the 3M™ Full Facepiece Respirator 6000 Series. Failure to follow *User Instructions* for the air filtration/supplied air systems being used **may result in sickness or death.**

Do not clean respirator with solvents. Cleaning with solvents may degrade some respirator components and reduce respirator effectiveness. Inspect all respirator components before each use to ensure proper operating conditions. **Failure to do so may result in sickness or death.**

When in supplied air mode, your employer must provide breathing air that meets at least the requirements of the specification for Grade D breathing air, as described in the Compressed Gas Association Commodity Specification G-7.1-1997 in the United States. In Canada, breathing air systems must be supplied with air, which meets at least the requirements of CSA Standard Z180.1. **Failure to do so may result in sickness or death.**

In Brazil breathing air systems must be supplied with air, which meets ANSI Z86.1-1989/CGA G-7.1, Grade D breathing air.

USE INSTRUCTIONS AND LIMITATIONS

Important

Before use, the wearer must read and understand these *User Instructions*. Keep these *User Instructions* for reference.

Use For

Respiratory protection from certain airborne contaminants according to United States NIOSH approvals, OSHA limitations, in Canada CSA standard Z94.4 requirements, applicable local government regulations and 3M instructions. In Brazil follow the Respiratory Protection Program of the Ministry of Labor.

Do Not Use For

Do not use for concentrations of contaminants which are immediately dangerous to life or health, are unknown or when concentrations exceed 10 times the permissible exposure limit (PEL) in air-purifying mode when qualitatively fit tested, 50 times the PEL in air purifying mode when quantitatively fit tested, 1000 times the PEL when used in supplied air mode, or according to specific OSHA standards or applicable government regulations, whichever is lower.

In Brazil, according to the Respiratory Protection Program of the Ministry of Labor, do not use quantitatively fit tested full facepiece respirators when concentrations of contaminants are greater than 100 times the permissible exposure limit in air-purifying mode.

Use Instructions

1. Failure to follow all instructions and limitations on the use of this respirator and/or failure to wear this respirator during all times of exposure can reduce respirator effectiveness and **may result in sickness or death.**
2. Before occupational use of this respirator a written respiratory protection program must be implemented meeting all the local government requirements. In the United States employers must comply with OSHA 29 CFR 1910.134 which includes medical evaluation, training and fit testing and applicable OSHA substance specific standards. In Canada, follow the recommendations of CSA Z94.4 and/or requirements of the applicable jurisdiction, as appropriate. In Brazil, follow the Respiratory Protection Program of the Ministry of Labor requirements. When used in supplied air mode, your employer must supply breathing air that meets at least the requirements of Grade D breathing air in Compressed Gas Association Commodity Specifications G-7.1-1997. In Canada, breathing air systems must be supplied with air which meets at least the requirements of CSA Standard Z180.1.
3. The airborne contaminants, which can be dangerous to your health, include those that are so small you may not be able to see or smell them.
4. If respirator becomes damaged; if you smell or taste contaminants; or if dizziness, irritation, or other distress occurs; leave contaminated area immediately and repair or replace respirator, or contact supervisor.

5. Store respirator away from contaminated areas when not in use.
6. Dispose of used product in accordance with applicable regulations.

In Brazil, breathing air systems must be supplied with air which meets ANSI Z86.1-1989/CGA G-7.1, Grade D breathing air.

Use Limitations

1. This respirator does not supply oxygen when used in air-purifying mode. Do not use in atmospheres containing less than 19.5% oxygen.
2. Do not use when concentrations of contaminants are immediately dangerous to life or health, are unknown or when concentrations exceed 10 times the permissible exposure limit (PEL) in air-purifying mode when qualitatively fit tested, 50 times the PEL in air-purifying mode when quantitatively fit tested, 1000 times PEL in supplied air or powered air purifying modes, or according to specific OSHA standards or applicable government regulations, whichever is lower.
3. Do not alter, abuse or misuse this respirator.
4. Do not use with beards or other facial hair or other conditions that prevent a good seal between the face and the face seal of the respirator.

In Brazil, according to the Respiratory Protection Program of the Ministry of Labor, do not use quantitatively fit tested full facepiece respirators when concentrations of contaminants are greater than 100 times the permissible exposure limit in air-purifying mode.

Time Use Limitations

1. Cartridges and filters must be used before expiration date on packaging.
2. Particle filters must be replaced if they become damaged, soiled or if an increase in breathing resistance occurs. N-series filters should not be used in environments containing oils. R-series filters may be limited to 8 hours of continuous or intermittent use if oil aerosols are present. In environments containing only oil aerosols, P-series filters should be replaced after 40 hours of use or 30 days, whichever is first.
3. Service life of gas/vapor cartridges will depend upon activity of wearer (breathing rate); specific contaminant and concentration; and environmental conditions such as humidity, pressure, and temperature. Cartridges must be replaced in accordance with an end of service life indicator, established change schedule or earlier if smell, taste or irritation from contaminants is detected. Please see 3M Service Life Software at www.3M.com/sls.
4. The 6007 and 60927 mercury vapor cartridges must be discarded within 50 hours of use against mercury vapor; or according to organic vapor, chlorine, hydrogen sulfide or sulfur dioxide service life, or when odors of vapors or gases become noticeable, whichever occurs first. Mercury vapor has no odor.

NIOSH Cautions and Limitations

The following restrictions may apply. See NIOSH Approval Label.

A - Not for use in atmospheres containing less than 19.5 percent oxygen.
B - Not for use in atmospheres immediately dangerous to life or health.
C - Do not exceed maximum use concentrations established by regulatory standards.
D - Air-line respirators can be used only when the respirators are supplied with respirable air meeting the requirements of CGA G-7.1 Grade D or higher quality.
E - Use only the pressure ranges and hose lengths specified in the *User's Instructions.*
F - Do not use powered air-purifying respirators if airflow is less than four cfm (115 lpm) for tight fitting facepieces or six cfm (170 lpm) for hoods and/or helmets.
G - If airflow is cut off, switch to filter and/or cartridge or canister and immediately exit to clean air.
H - Follow established cartridge and canister change schedules or observe ESLI to ensure that cartridges and canisters are replaced before breakthrough occurs.
J - Failure to properly use and maintain this product could result in injury or death.
L - Follow the manufacturer's *User's Instructions* for changing cartridges, canister and/or filters.
M - All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations.
N - Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.
O - Refer to *User's Instructions*, and/or maintenance manuals for information on use and maintenance of these respirators.
S - Special or critical *User's Instructions* and/or specific use limitations apply. Refer to *User's Instructions* before donning.

S - Special or Critical *User's Instructions*

3M™ Organic Vapor Service Life Indicator Cartridges (6001i and 60921i) are equipped with a passive 3M™ End of Service Life Indicator (ESLI). The indicator must be readily seen when wearing the respirator. If you cannot readily see the ESLI, use a mirror to observe the ESLI; rely on a co-worker who can see the ESLI; or go to a clean area, remove the respirator and view the ESLI. Do not rely solely on the organic vapor ESLI unless your employer has determined that it is appropriate for your workplace. See 6001i or 60921i *User Instructions* for more information, including Special Instructions regarding the ESLI.

3M™ Mercury Vapor, Organic Vapor and Acid Gas Cartridges (6007 and 60927) must be discarded within 50 hours of use against mercury vapor.

3M™ Particulate Filter P95, Hydrogen Fluoride, with Nuisance Level Acid Gas Relief, 2076HF and 3M™ Particulate Filter P100, Hydrogen Fluoride, with Nuisance Level Acid Gas Relief, 7093C are recommended for relief against nuisance levels of acid gases or organic vapors. Nuisance level refers to concentrations not exceeding OSHA PEL or applicable government occupational exposure limits, whichever is lower. Do not use for respiratory protection against acid gases or organic vapors, except hydrogen fluoride.

To assemble 3M™ Dual Airline Combination Breathing Tubes with 3M™ Cartridges/Filters, the facepiece inhalation valves must be removed.

If the facepiece is to be used in air-purifying mode (without using the 3M™ Breathing Tubes SA-1600 or SA-2600), the inhalation valves must be replaced in the facepiece before use.

Use of the 3M™ Nose Cup Assembly 6894 with the 3M™ Full Facepieces 6000 Series must be in accordance with the NIOSH approval for the system being used.

- Nose cup is not to be used with the 3M™ Powerflow™ Face-Mounted PAPR.
- Nose cup use is optional with 3M™ GVP and Breathe Easy™ Belt-Mounted PAPR systems.
- Nose cup must be used for all other 6000 facepiece applications.

Refer to the specific 3M product *User Instructions* for more information.

Cartridge and Filter Selection and Approvals

Before using any of these products, the user must read the specific use for, use limitations and warning information in the *User Instructions* and product documentation or call 3M Technical Service at 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.
Do not exceed maximum use concentrations established by local regulatory agencies. Cartridges/filters are approved as assemblies for use with 3M™ Full Facepiece 6000 Series. For NIOSH approval, refer to approval label.

LIST OF PRODUCTS

3M™ Full Facepiece 6000 Series Replacement Parts and Accessories

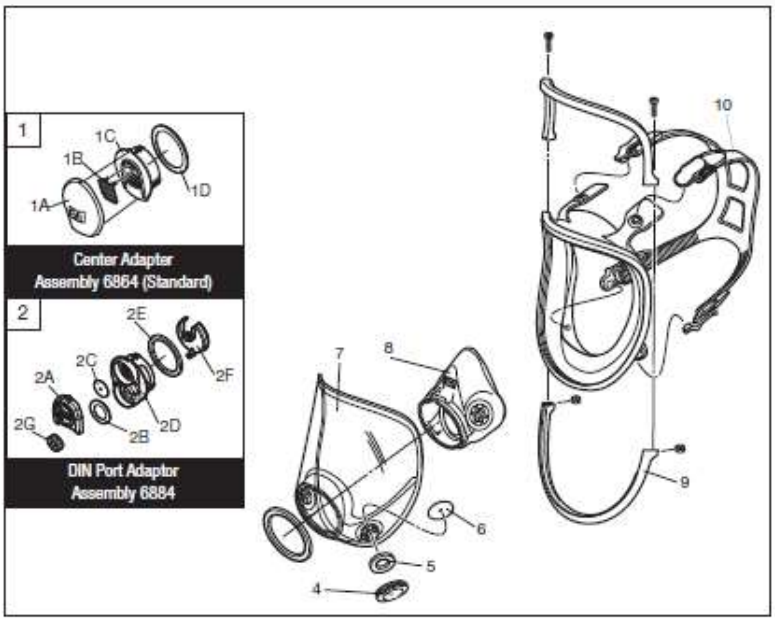
Full Facepiece with 3M™ Center Adapter Assembly 6864

Number	****AAD	Description
6700	07138	Small
6800	07139	Medium
6900	07140	Large

**** AAD part numbers are catalog numbers only. NIOSH approved as PSD part numbers.

Fig.	Number	****AAD	Description
1	6864		Center Adapter Assembly (Standard)
1A			Center Adapter Cover*
1B	7583 or 6583		Exhalation Valve
1C			Center Adapter Base*
1D	6896		Center Adapter Gasket
2	6884		DIN Port Adapter Assembly
2A	6882		DIN Cover
2B	6876		Breathing Tube Gasket
2C	6889		Exhalation Valve
2D	6883		DIN Port Base
2E	6896		Center Adapter Gasket
2F	6881		DIN Air Director
2G	7980		Full Face Plug
4	6880		Bayonet Cap
5	6895	07145	Inhalation Gasket
6	6893	07144	Inhalation Valve
7	6898	37006	Lens Assembly
8	6894	37004	Nose Cup Assembly
9	6899	37007	Frame Assembly w/ Screws
10	6897	37005	Head Harness Assembly

* Not available separately
**** AAD part numbers are catalog numbers only. NIOSH approved as PSD part numbers.



3M™ Accessories and Parts

Number	****AAD	Description
504	07065	Respirator Cleaning Wipes
601		Quantitative Fit Test Adapter
6878	07141	Spectacle Kit
6885	07142	Lens Cover
6886		Tinted Lens Cover
7883		Neck Strap Assembly

**** AAD part numbers are catalog numbers only. NIOSH approved as PSD part numbers. In Brazil, the 3M™ Filter 5935BR is approved as a NIOSH N95 filter and as a BMOL P3 filter. It can be used with the filter adaptor 603 and the filter retainer 501 on the 3M™ Half Facepiece 6000 Series.

⚠ CAUTION

Failure to properly dispose of spent cartridges, filters, or respirators contaminated by hazardous materials can result in personal exposures as well as environmental harm. Handling, transportation and disposal of spent cartridges, filters, or respirators must comply with all applicable federal, state, and local laws and regulations.

3M™ Cartridges 6000 Series

Number	****AAD	Description	NIOSH Approval for respiratory protection against the following contaminants up to ten times the permissible exposure limit (PEL) when qualitatively fit tested, up to fifty times the PEL when quantitatively fit tested, and up to 1000 times the PEL in powered air-purifying or supplied air mode
6001	07046	Organic Vapor	Certain organic vapors
6001i		Organic Vapor with Service Life Indicator	Certain organic vapors
6002		Acid Gas	Chlorine, hydrogen chloride, and sulfur dioxide or chlorine dioxide or hydrogen sulfide
6003	07047	Organic Vapor/Acid Gas	Certain organic vapors, chlorine, hydrogen chloride, and sulfur dioxide or hydrogen sulfide or hydrogen fluoride
6004		Ammonia/Methylamine	Ammonia and methylamine
6005		Formaldehyde/Organic vapor	Formaldehyde and certain organic vapors
6006		Multi-Gas/Vapor	Certain organic vapors, chlorine, hydrogen chloride, chlorine dioxide, sulfur dioxide, hydrogen sulfide, ammonia/methylamine, formaldehyde or hydrogen fluoride
6007		Mercury Vapor/Organic Vapor/Acid Gas	Mercury vapor, certain organic vapors, sulfur dioxide, hydrogen sulfide or chlorine gas
60921		Organic Vapor/P100	Certain organic vapors and particulates
60921i		Organic Vapor with Service Life Indicator/ P100	Certain organic vapors and particulates
60922		Acid Gas/P100	Chlorine, hydrogen chloride, and sulfur dioxide or chlorine dioxide or hydrogen sulfide and particulates
60923		Organic Vapor/Acid Gas/P100	Certain organic vapors, chlorine, hydrogen chloride, and sulfur dioxide or hydrogen sulfide or hydrogen fluoride and particulates
60924		Ammonia/Methylamine/P100	Ammonia and methylamine and particulates
60925		Formaldehyde/Organic Vapor/P100	Formaldehyde and certain organic vapors and particulates
60926		Multi-Gas/Vapor/P100	Certain organic vapors, chlorine, hydrogen chloride, chlorine dioxide, sulfur dioxide, hydrogen sulfide, ammonia/methylamine, formaldehyde or hydrogen fluoride and particulates
60927		Mercury Vapor/Organic Vapor/Acid Gas/ P100	Mercury vapor, certain organic vapors, sulfur dioxide, hydrogen sulfide or chlorine gas and particulates
60928		Organic Vapor/Acid Gas/P100	Certain organic vapors, chlorine, hydrogen chloride, and sulfur dioxide or hydrogen sulfide or hydrogen fluoride and particulates[1]

****AAD part numbers are catalog numbers only. NIOSH approved as PSD part numbers.

[1] 3M recommended for use against methylbromide or radioiodine up to 5 ppm with daily cartridge replacement. **NOTE: Not NIOSH approved for use against methylbromide or radioiodine.**

3M™ Filters, Adapters, Retainers

Number	****AAD	Description
501	07054	Filter Retainer for Filters 5N11 and 5P71
502		Filter Adapter for Filters 2000 Series and 7093/7093C
603		Filter Adapter for Filters 5N11, 5P71 with Filter Retainer 501
2071		Particulate Filter, P95
2076HF		Particulate Filter, P95, hydrogen fluoride, with nuisance level acid gas relief[1]
2078		Particulate Filter, P95, 3M recommended ozone protection[2], with nuisance level organic vapor/acid gas relief[1]
2091	07000	Particulate Filter, P100
2291		Advanced Particulate Filter, P100
2096		Particulate Filter, P100, with nuisance level acid gas relief[1]
2296		Advanced Particulate Filter, P100, with nuisance level acid gas relief[1]
2097	07184	Particulate Filter, P100, 3M recommended for ozone protection[2], with nuisance level organic vapor relief[1]
2297		Advanced Particulate Filter, P100, 3M recommended for ozone protection[2], with nuisance level organic vapor relief[1]
5N11		Particulate Filter, N95
5P71	07194	Particulate Filter, P95
7093		Particulate Filter, P100
7093C	37173	Particulate Filter, P100, hydrogen fluoride, with nuisance level organic vapor/acid gas relief[1]

**** AAD part numbers are catalog numbers only. NIOSH approved as PSD part numbers.

[1] 3M recommended for relief against nuisance levels of acid gas and/or organic vapors. Nuisance level refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against acid gas/organic vapors.

[2] 3M recommended for ozone protection up to 10 times the OSHA PEL or applicable government occupational exposure limits, whichever is lower. **NOTE: Not NIOSH approved for use against ozone.**

In Brazil, the 3M™ Filter 5935BR can be used with the Filter Adaptor 603 and the Filter Retainer 501 on the 3M™ Half Facepiece 6000 Series.

ASSEMBLY INSTRUCTIONS

NOTE: Make certain 3M™ Inhalation Port Gaskets 6895 are in place on the facepiece bayonet connectors before installing filters, cartridges or breathing tubes.

3M™ Cartridge 6000 Series, Filter 7093 and Cartridge/Filter 7093C

1. Align the cartridge notch with the small solid bayonet lug on facepiece and push together.
2. Turn cartridge clockwise to stop (1/4 turn).
3. Repeat with second cartridge (Fig. 1).

Fig. 1

3M™ Filters 2000 Series

1. Align opening of filter with filter attachment on facepiece.
2. Turn filter clockwise until it is firmly seated and cannot be further turned.
3. Repeat for second filter (Fig. 2).

Fig. 2

3M™ Filters 5N11 and 5P71

1. Place filter into 3M™ Retainer 501 *(07054) so printed side of filter faces the cartridge.
2. Press cartridge into filter retainer. It should snap securely into filter retainer. When correctly installed, filter should completely cover face of cartridge (Fig. 3).
3. To replace filter, remove retainer by lifting on TAB.

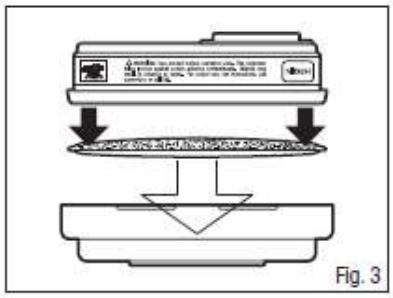


Fig. 3

In Brazil, the 3M™ Filter 5935BR is assembled following the same procedures as the 5N11 and 5P71.

3M™ Filter Adapter 502 Assembly and Filter Attachment

1. Align adapter over cartridge. Engage front snap by squeezing front of cartridge and adapter together, placing thumbs of both hands over top of adapter and fingers along bottom sides of cartridge (Fig. 4).
2. Engage back snap by squeezing back side of cartridge and adapter together using the same hand positions. An audible click should be heard as each snap is engaged (Fig. 5).
3. Place filter onto the filter holder so that filter comes into even contact with gasket. Twist clockwise a quarter turn until it is firmly seated and filter cannot be turned further. Repeat for second filter.

NOTE: The 3M™ Filter Adapter 502, once installed on a 3M™ Cartridge 6000 Series, is not to be removed or reused. **Removal or reuse may result in leakage, overexposure, sickness or death.**

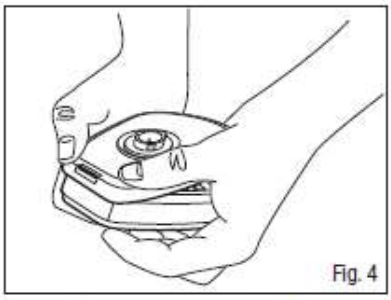


Fig. 4

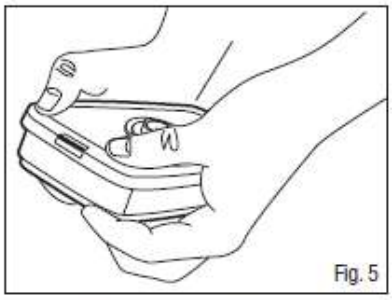


Fig. 5

3M™ Filter Adapter 603 Assembly and Filter Attachment 5N11 or 5P71

1. Align notch on edge of 603 adapter with facepiece mark as shown (Fig. 6).
2. Turn adapter 1/4 turn clockwise to stop. To remove adapter, turn 1/4 turn counterclockwise (Fig. 7).
3. Place filter into 501 retainer with filter printing facing towards the 603 adapter. Snap together and ensure the filter seal is free from creases or gaps (Fig. 8).

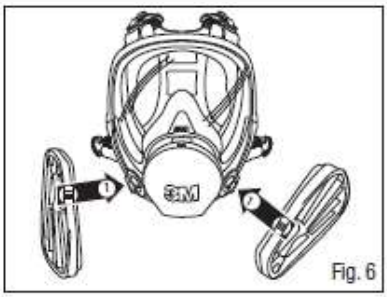


Fig. 6

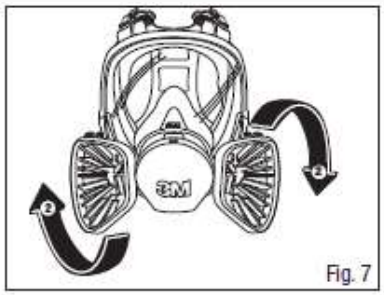


Fig. 7

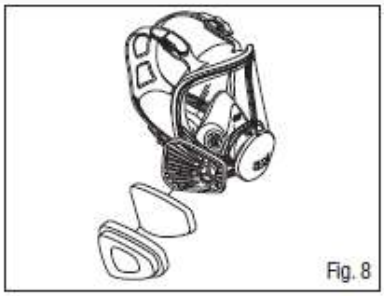


Fig. 8

In Brazil, the 3M™ Filter 5935BR used with the 3M™ Adaptor 603 is assembled following the same procedures as the 5N11 and 5P71.

3M™ Supplied Air Systems

⚠ WARNING

To meet the U.S. National Institute for Occupational Safety and Health (NIOSH) requirement for minimum (4 CFM/115 lpm) and maximum (15 CFM/424 lpm) air flow, the air control valves approved for use with the 3M™ Full Facepiece Respirators 6000 Series must be operated within the correct supply pressure ranges and hose lengths. **Failure to do so may result in sickness or death.**

In Brazil, the Brazilian Association of Technical Standards (ABNT) NBR 14372 requires a minimum of 120 lpm and maximum of 280 lpm air flow for breathing air for half and full facepiece respirators.

⚠ WARNING

Your employer must provide breathing air that meets at least the requirements of the specification for Grade D breathing air, as described in the Compressed Gas Association Commodity Specification G-7.1-1997 in the United States. In Canada, breathing air systems must be supplied with air, which meets at least the requirements of CSA Standard Z180.1. **Failure to do so may result in sickness or death.**

In Brazil, breathing air systems must be supplied with air which meets ANSI Z86.1-1989/CGA G-7.1, Grade D breathing air.

3M™ Dual Airline Respirator Assembly

User must follow Dual Airline Supplied Air Respirator *User Instructions* provided with the 3M™ Dual Airline Supplied Air Respirators.

Assembly of 3M™ Combination Dual Airline Respirator with Cartridges and/or Filters

The SA-1600 (front-mounted) and SA-2600 (back-mounted) versions of the 3M™ Dual Airline Breathing Tubes allow use of selected, NIOSH-approved 3M™ Cartridges 6000 Series and Filters 2000 Series. For the listing of approved cartridges and filters, reference the NIOSH Approval Label included with 3M dual airline adapter kits.

To assemble 3M™ Dual Airline Combination Breathing Tubes with 3M™ Cartridges/Filters, the facepiece, inhalation valves must be removed.

IMPORTANT: If the facepiece is to be used in air-purifying mode (without using the SA-1600 or SA-2600 breathing tubes), the inhalation valves must be replaced in the facepiece before use.

Using the 3M™ Combination Dual Airline Breathing Tubes without Cartridges and/or Filters

To use the 3M™ Combination Dual Airline Breathing Tubes (SA-1600 and SA-2600) without cartridges or filters, attach a 3M™ Bayonet Cap 6880 to each outer bayonet mount on the dual airline breathing tube. When used as a Type C, continuous flow supplied air full facepiece respirator, the Assigned Protection Factor is 1000 times the PEL or other occupational exposure limit.

⚠ WARNING

The 3M™ Dual Airline is NIOSH approved only with the 3M™ Nose Cup 6894 in place. **Failure to do so may result in sickness or death.**

FITTING INSTRUCTIONS

Must be followed each time respirator is worn.

NOTE: Do not use with beards or other facial hair or other conditions that prevent a good seal between the face and the faceseal of the respirator. Standard eyeglasses cannot be worn with full facepiece respirators. If corrective eyeglasses are required a 3M™ Spectacle Kit must be used inside the respirator. To help maintain a good seal between the face and the faceseal all hair, hoods, or other equipment must be kept out of respirator faceseal area at all times.

Donning Respirator

1. Fully loosen all four head straps. With one hand pull hair back out of facepiece sealing area. Place chin in the respirator chin cup. While holding the facepiece in place, pull the head harness to back of head (Fig. 9).
2. Pull the ends of the four straps to adjust tightness, starting with the neck straps first, then the forehead straps. Do not over tighten the straps (Fig. 10).
3. Perform a positive and/or negative pressure user seal check each time the respirator is donned.

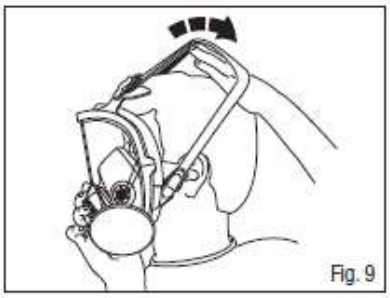


Fig. 9

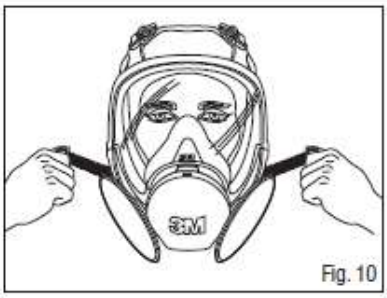


Fig. 10

User Seal Checks

Always check the seal of the respirator on your face before entering a contaminated area.

Positive Pressure User Seal Check

1. Place the palm of your hand over the opening in the exhalation valve cover and exhale gently.
2. If the facepiece bulges slightly and no air leaks are detected between the face and the facepiece, a proper seal has been obtained (Fig. 11).
3. If faceseal air leakage is detected, reposition the respirator on your face and/or readjust the tension of the straps to eliminate leakage and recheck seal.

If you cannot achieve a proper seal, DO NOT enter contaminated area. See your supervisor.

Negative Pressure User Seal Check with 6000 Series Cartridges

1. Place palms of hands to cover face of cartridge or open area of 3M™ Filter Retainer 501 and inhale gently. If you feel the facepiece collapse slightly and pull closer to your face with no leaks between the face and facepiece, a proper seal has been obtained (Fig. 12).
2. If faceseal air leakage is detected, reposition the respirator on your face and/or readjust the tension of the straps to eliminate leakage and recheck seal.

If you cannot achieve a proper seal, DO NOT enter contaminated area. See your supervisor.

NOTE: Use of 3M™ Filter Retainer 501 may aid respirator wearer in conducting a negative pressure user seal check.


Fig. 11

Fig. 12

Fig. 13

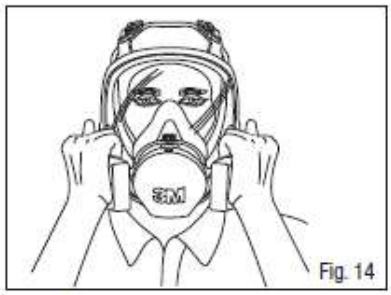


Fig. 14

Negative Pressure User Seal Check with 2000 Series Filters

1. Place your thumbs onto the center portion of the filters, restricting airflow through filters and inhale gently. If you feel the facepiece collapse slightly and pull closer to your face with no leaks between the face and facepiece, a proper seal has been obtained (Fig. 13).
2. If faceseal air leakage is detected, reposition the respirator on your face and/or readjust the tension of the straps to eliminate the leakage and recheck seal.

If you cannot achieve a proper seal, DO NOT enter contaminated area. See your supervisor.

Negative Pressure User Seal Check with Filters 7093/7093C

1. Using hands press or squeeze filter covers toward facepiece and inhale gently. If you feel the facepiece collapse slightly and pull closer to your face with no leaks between the face and facepiece a proper seal has been obtained (Fig. 14).
2. If faceseal air leakage is detected, reposition the respirator on your face and/or readjust the tension of the straps to eliminate the leakage and recheck seal.

If you cannot achieve a proper seal, DO NOT enter contaminated area. See your supervisor.

Negative Pressure User Seal Check with Dual Airline

1. Disconnect airline hose from air control valve.
2. With breathing tube still connected to the air control valve inhale gently. If you feel facepiece collapse slightly and pull closer to your face with no leaks between the face and facepiece, a proper seal has been obtained.
3. For 3M™ Combination Dual Airline where cartridges or filters are attached, perform user seal check as described under the appropriate cartridge or filter that is being used.
4. If faceseal air leakage is detected, reposition the respirator on your face and/or readjust the tension of the straps to eliminate the leakage and recheck seal.

If you cannot achieve a proper seal, DO NOT enter contaminated area. See your supervisor.

NOTE: Before assigning any respirator to be worn in a contaminated area, a qualitative or quantitative fit test must be performed per OSHA 29 CFR 1910.134, or CSA Standard Z94.4.

RESPIRATOR REMOVAL

1. Fully loosen all four head straps by lifting up on buckles.
2. Remove respirator by pulling straps over head.

FIT TESTING

The effectiveness of a respirator will be reduced if it is not fitted properly. Therefore, either qualitative or quantitative fit testing must be conducted prior to the respirator being used.

NOTE: Fit testing is a U.S. Occupational Safety and Health Administration (OSHA), a Canadian CSA and a Brazilian BMOL requirement.

Quantitative Fit Testing

Quantitative Fit Testing (QNFT) can be conducted using a 3M™ Fit Test Adapter 601 and P100 filters such as the 3M™ Particulate Filters 2091 or 7093.

Qualitative Fit Testing

Qualitative Fit Testing (QLFT) with the 3M™ Qualitative Fit Test Apparatus FT-10 or FT-30 can be conducted using any of the NIOSH approved particulate filters.

Respirators should also be fit tested while wearing any personal protective equipment (PPE) the wearer may use in their work environment that may affect the fit of the respirator (e.g. hoods, hardhats, safety glasses, hearing protections, etc.).

NOTE: For further information concerning fit testing, contact 3M Technical Service at 1-800-243-4630 or a 3M location in your region. In Canada call Technical Service at 1-800-267-4414.

INSPECTION, CLEANING, AND STORAGE

Inspection Procedure

This respirator must be inspected before each use to ensure that it is in good operating condition. Any damaged or defective parts must be replaced before use. Do not enter a contaminated area with damaged or defective parts. The following inspection procedure is recommended.

1. Check facepiece for cracks, tears and dirt. Be certain facepiece, especially faceseal area, is not distorted.
2. Examine inhalation valves for signs of distortion, cracking or tearing.
3. Make sure that head straps are intact and have good elasticity.
4. Examine all plastic parts for signs of cracking or fatiguing. Make sure filter gaskets are properly seated and in good condition.
5. Remove exhalation valve cover and examine exhalation valve and valve seat for signs of dirt, distortion, cracking or tearing. Replace exhalation valve cover.
6. Inspect lens for any damage that may impair respirator performance or vision.

Cleaning and Storage

Cleaning is recommended after each use.

⚠ WARNING

Do not clean respirator with solvents. Cleaning with solvents may degrade some respirator components and reduce respirator effectiveness. Inspect all respirator components before each use to ensure proper operating condition. **Failure to do so may result in sickness or death.**

1. Remove cartridges, filters and/or breathing tubes. The center adapter, lens and faceseal can also be removed if necessary.
2. Clean facepiece (excluding filters and cartridges), by immersing in warm cleaning solution, water temperature not to exceed 120°F (49°C), and scrub with soft brush until clean. Add neutral detergent if necessary. Do not use cleaners containing lanolin or other oils.

3. Disinfect facepiece by soaking in a solution of quaternary ammonia disinfectant or sodium hypochloride (1oz. [30ML] household bleach in 2 gallons [7.5L] of water), or other disinfectant.
4. Rinse in fresh, warm water and air dry in non-contaminated atmosphere.
5. Respirator components must be inspected prior to each use. A respirator with any damaged or deteriorated components should be repaired or discarded.
6. The cleaned respirator should be stored away from contaminated areas when not in use.

REPLACEMENT PART INSTRUCTIONS

3M™ Facepiece Assemblies for 6700/6800/6900

The facepiece consists of the head harness assembly, nose cup assembly, center adapter assembly, lens assembly, faceseal (small, medium or large), and frame assembly (top, bottom, nuts and screws).

To disassemble lens assembly from faceseal, remove the two Phillips screws from top frame. Then, pull the frame top and frame bottom away from the faceseal. The frame top, frame bottom, faceseal and the lens assembly have vertical line markings that indicate their positions relative to one another. Make certain these markings are aligned for reassembly.

3M™ Center Adapter Assembly 6864 Replacement

The center adapter assembly consists of center adapter base, cover, exhalation valve, and adapter gasket. It is secured to the center port of the lens with a bayonet style twist lock connection, which compresses the sealing gasket.

To remove the center adapter from the facepiece:

1. Remove nose cup assembly by pulling away from center adapter inside facepiece (Fig. 15).
2. Grasp center adapter at cover and twist counter-clockwise 1/4 turn to disengage bayonet from facepiece lens.
3. Withdraw center adapter from lens center port.

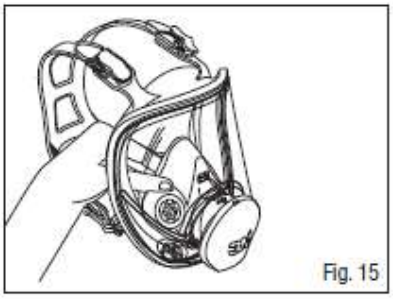


Fig. 15

To install the center adapter into the facepiece:

1. Align tabs on center adapter base with notches in center port of facepiece lens.
2. Slide adapter into lens port (Fig. 16).
3. Grasp center adapter at cover and twist clockwise 1/4 turn to stop. Be certain center adapter gasket is properly in place and sealed, and that the adapter assembly is fully engaged.
4. Replace nose cup assembly.

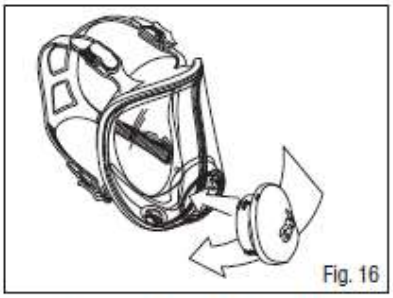


Fig. 16

Converting from the Standard Center Adapter 6864 to the DIN Port Adapter 6884

Any 3M™ Full Facepiece 6000 Series can be converted to the desired center adapter assembly by following the instructions in 3M™ Center Adapter Assembly Replacement and installing the Bayonet Caps 6880 with Inhalation Port Gaskets 6895 or the Full Face Plug 7800 with Breathing Tube Gasket 6876 as appropriate.

3M™ Nose Cup Assembly 6894 Replacement

The nose cup assembly replacement 6894 consists of a nose cup and inhalation valves. It is designed to install onto the center adapter and comfortably fit over the respirator wearer's mouth and nose to aid in purging exhaled breath and prevent lens fogging.

1. Remove the nose cup assembly by pulling away from center adapter inside facepiece (Fig. 15).
2. To replace, position nose cup assembly onto center adapter aligning arrows (Fig. 17).

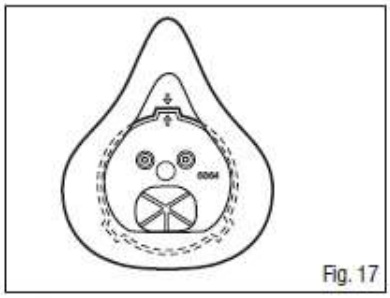


Fig. 17

3M™ Center Adapter Gasket 6896 Replacement

The center adapter gasket replacement is designed to seal the interface between the center adapter and the lens of the Full Facepiece 6000 Series.

1. Remove nose cup assembly by pulling away from center adapter inside facepiece (Fig. 15).
2. Grasp center adapter at cover and twist counter-clockwise 1/4 turn to disengage from facepiece lens. Withdraw center adapter from lens center port.
3. Remove old gasket 6896 from center adapter and replace with new replacement gasket 6896.
4. Re-install center adapter into facepiece lens (Fig. 16).
5. Replace nose cup assembly.

3M™ Inhalation Valve 6893 Replacement

Inhalation valves are located on posts at the inside of the facepiece inhalation ports and inside the nose cup inhalation ports. These valves should be inspected before each respirator use and replaced whenever valves become damaged or lost.

1. Remove existing valve(s) by lifting from post(s).
2. Install new valve(s) onto post(s). Be certain valve(s) is fully engaged under all three lugs on post(s), lays flat, and moves freely (spins) on post.

3M™ Exhalation Valve 6583 or 7583 Replacement

1. Remove center adapter cover by pulling out from bottom latch.
2. Grasp valve and pull each valve stem out from valve seat (Fig. 18).
3. Inspect valve seat making certain it is clean and in good condition.
4. Place new exhalation valve replacement over the exhalation port by inserting stems and pulling through from the opposite side until they are both snapped in place (Fig. 19 and 20). Push laterally on valve stems to ensure they are properly seated.
5. Replace valve cover by aligning and inserting the top opening in the valve cover with the top tab on the center adapter base. Rotate the cover down until it snaps to the center adapter base. An audible click should be heard.

NOTE: Conduct a negative pressure user seal check to ensure exhalation valve is functioning properly.

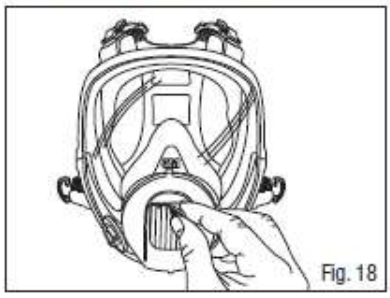


Fig. 18

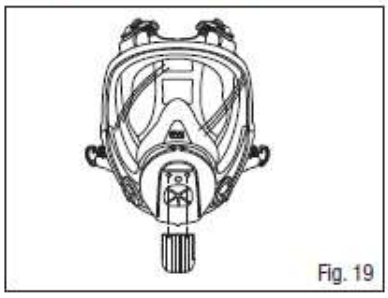


Fig. 19

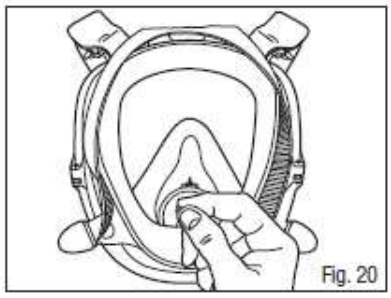


Fig. 20

3M™ Inhalation Port Gasket 6895 Replacement

The inhalation port gasket 6895 replacement is designed to seal the interface between the bayonet attachment inhalation ports on the facepiece and filters/cartridges, or dual airline breathing tubes installed on the facepieces. The gaskets should be inspected with each filter/cartridge change and replaced whenever damaged or seal integrity is questionable.

1. Remove gaskets from facepiece inhalation port bayonet fittings.
2. Install new gaskets onto facepiece inhalation port bayonet fittings. Be certain gaskets are in proper position under all three bayonet lugs (Fig. 21).

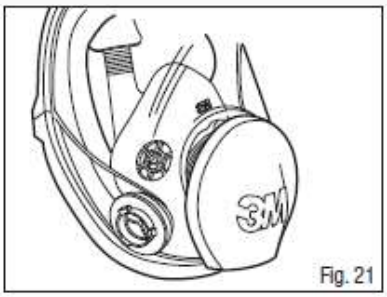


Fig. 21

3M™ Head Harness Replacement 6897

Read and follow head harness assembly 6897 replacement instructions included with replacement head harness for instructions on removing and replacing the head harness.

3M™ Lens Assembly 6898

The lens assembly 6898 consists of a hard-coated polycarbonate lens with installed bayonet attachment inhalation port fittings, inhalation valves, and inhalation port filter/cartridge gaskets. The lens assembly 6898 is replaceable by following these steps:

1. Remove nose cup assembly from inside facepiece (Fig. 15).
2. Remove center adapter assembly by turning counter-clockwise 1/4 turn and withdrawing from lens center port.
3. Remove the (2) Phillips screws from the lens/faceseal frame. Pull the frame top and frame bottom away from faceseal.
4. Remove faceseal from lens.
5. Place new lens and faceseal together aligning marks at top and bottom. Position top and bottom frame, again aligning marks top and bottom. Install and securely tighten screws. Make certain alignment marks are properly aligned top and bottom with all components (Fig. 22).
6. Install center adapter assembly (Fig. 16).
7. Replace nose cup assembly (Fig. 17).

3M™ Frame Kit 6899

The frame kit 6899 includes a frame top, frame bottom, (2) Phillips head screws and (2) hex head nuts. The frame kit secures and seals the 3M™ Full Facepiece 6000 Series faceseal to the 3M™ Lens Assembly 6898.

1. After assembling the faceseal onto the lens, matching top and bottom alignment marks, position top frame, over lens and faceseal, aligning center vertical marks, then press in place.
2. Position bottom frame, aligning center vertical mark, and press in place (Fig. 22).
3. Insert and tighten Phillips head screws. Make certain parts are properly aligned and sealed together.

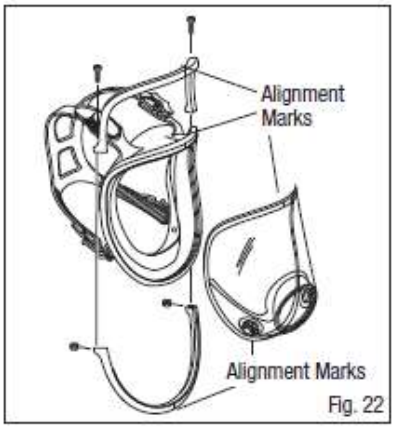


Fig. 22

For Compliance in Brazil NOTE:

1. In Brazil, according to the Respiratory Protection Program of the Ministry of Labor, do not use when concentrations of contaminants are greater than 100 times the permissible exposure limit in air-purifying mode when facepiece has been quantitatively fit tested.
2. Do not use in deficient or enriched oxygen atmospheres.
3. Storage, Transportation and Care: store in a clean and dry place and away from contaminants and extreme temperature and humidity.
4. The components of this respirator are made of materials which are not expected to cause adverse health effects.
5. It is necessary to have special care to use this product in explosives atmospheres.
6. In Brazil do not use powered air-purifying respirators if airflow is less than 120 lpm for tight fitting facepieces or 170 lpm for hoods and/or helmets.

Product Manufacturing Date

The parts of the product show markings that bring information of manufacturing date, and its reading is described as in the example below:

Date Code = 12th month 2019 (12/19)

FOR MORE INFORMATION
In United States, contact:
Website: www.3m.com/workersafety
Technical Assistance: 1-800-243-4630
For other 3M products:
1-800-3M-HELPS or 1-651-737-6501

RENSEIGNEMENTS SUPPLÉMENTAIRES
Aux États-Unis :
Site Web : www.3m.com/workersafety
Assistance technique : 1 800 243-4630
Autres produits 3M :
1 800 364-3577 ou 1 651 737-6501

PARA MAYORES INFORMES
En Estados Unidos:
Sitio Web: www.3m.com/workersafety
Soporte técnico: 1-800-243-4630
Para otros productos 3M:
1-800-3M-HELPS o 1-651-737-6501

PARA MAIS INFORMAÇÕES
Nos Estados Unidos, entre em contato com:
Website: www.3m.com/workersafety
Assistência Técnica: 1-800-243-4630
Para outros produtos 3M:
1-800-3M-HELPS ou 1-651-737-6501

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98-0060-0035-4_8
34-8723-7552-1

L. Manufacturer documentation: Filters & cartridges

3M

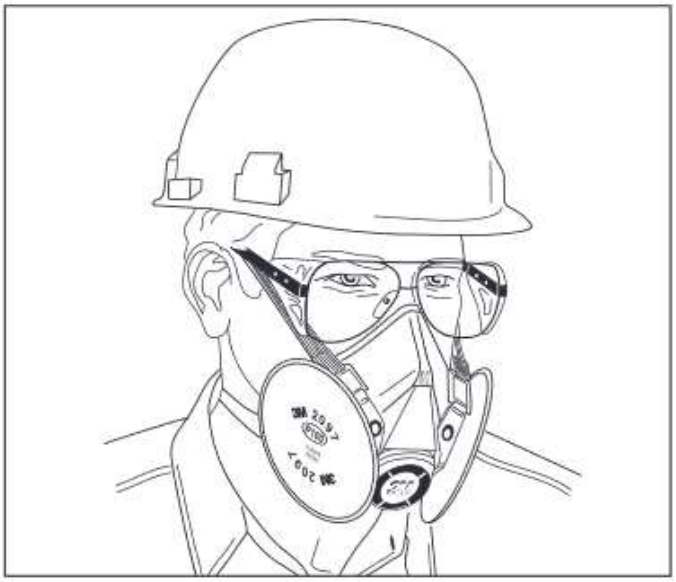
4016
page 1 of 3

Filters 2000 Series

Issue Date 9/1/09

The 3M™ Filters 2000 Series have been developed with your respiratory protection needs in mind. Specially designed carbon layers and advanced filtration technology provide comfort and convenience.

When you're interested in performance as well as simplicity of use and comfort, the 2000 Series filters are just what you're looking for. Used in conjunction with 3M™ 5000, 6000, 7000 and Ultimate FX FF-400 Series Facepieces, these filters help provide respiratory protection in a variety of industrial settings. Depending on the conditions and contaminants in your work area, one of these filters should suit your needs.



Each of the 2000 Series filters can be used as stand-alone filters with 3M™ 6000, 7500, 7800 and Ultimate FX FF-400 Series Facepieces or as prefilters with 3M™ 5000 Series Respirators and 6000 Series Cartridges (use with 502 adapter).

Features/Benefits

- **Comfort.** 3M's Advanced Electret Media (AEM) provides a lightweight protection not found in filters containing fiberglass.[1]
- **Approved protection.** All of the 2000 Series filters are NIOSH approved.
- **Versatile protection.** The 2000 Series filters are well suited for a wide range of particulate contaminants found in oil and non-oil environments.
- **Simplicity.** The versatility of these filters reduces your inventory and training requirements.
- **Compatibility.** The 2000 Series filters can be used with 3M's wide variety of half and full facepiece designs.[2]
- **Durability.** Unique flexible filter material enables the product to be worn in close quarters. Its rugged construction resists abrasion and wetting. Filters are flame and water resistant.
- **Economy.** The 2000 Series filters are economical to use compared to traditional filters and cartridges.

⚠ WARNING

These filters help protect against certain particles. **Misuse may result in sickness or death.** Before use, the wearer must read and understand *User Instructions* provided as a part of product packaging. Time use limitations may apply. For proper use, see package instructions, supervisor or call 3M OH&ESD Technical Service in U.S.A., 1-800-243-4630. In Canada, call 1-800-267-4414.

Additional use instructions, product limitations, approval labels, and warnings are included with each facepiece and filter package.

References:
1. The 2000 Series filters contain no components made from fiberglass.
2. The 2000 Series filters can be used as a stand-alone filter with 3M™ 6000, 7500, 7800 and Ultimate FX FF-400 Series Facepieces or as a prefilter with 3M™ 5000 Series Respirators and 6000 Series Cartridges (use with 502 adapter).

4016

3M™ Filters 2000 Series

Selection

Filter	Use with Respirator Series	Use for these Contaminants	Suggested Applications
 **2071** Rating: P95	5000 Series 6000 Series 7000 Series Ultimate FX FF-400	Certain particles. Certain paint and pesticide mists (when used as a prefilter with the 3M™ 5000 or 6000 Series OV cartridge).	Grinding, welding, sanding, sawing, sweeping, bagging, torch cutting, brazing, soldering and other dusty, oily operations.
 **2076HF** Rating: P95	6000 Series 7000 Series Ultimate FX FF-400	Certain particles and hydrogen fluoride gas. 3M recommended for nuisance level relief of acid gases.*	Aluminum smelting, glass etching and chemical manufacturing.
 **2078** Rating: P95	6000 Series 7000 Series Ultimate FX FF-400	Certain particles. 3M recommended for nuisance level relief of organic vapors and acid gases.** 3M recommended for ozone.***	Utilities operations, chemical manufacturing, welding, torch cutting, brazing, soldering and aluminum smelting.
 **2091** Rating: P100	5000 Series 6000 Series 7000 Series Ultimate FX FF-400	Dusts, fumes, mists and radionuclides. Paint and pesticide mists (when used as a prefilter with the 5000 or 6000 Series OV cartridge).	Welding, brazing, torch cutting, metal pouring, soldering, and pharmaceutical manufacturing and OSHA substance specific particle exposures.1
 **2096** Rating: P100	6000 Series 7000 Series Ultimate FX FF-400	Dusts, fumes, mists and radionuclides. 3M recommended for nuisance level relief of acid gases.*	Utility operations, chemical manufacturing, aluminum smelting, pharmaceutical manufacturing, welding, brazing, soldering, torch cutting, and metal pouring and OSHA substance specific particle exposures.1
 **2097** Rating: P100	6000 Series 7000 Series Ultimate FX FF-400	Dusts, fumes, mists and radionuclides. 3M recommended for nuisance level relief of organic vapors.****	Chemical manufacturing, undercoating, welding, brazing, soldering, torch cutting, metal pouring, and pharmaceutical manufacturing and OSHA substance specific particle exposures.1

***3M recommended** for relief against nuisance levels of acid gases. Nuisance level refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against acid gases.

****3M recommended** for relief against nuisance levels of certain organic vapors and acid gases. Nuisance level refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against organic vapors or acid gases.

*****3M recommended** for ozone protection up to 10 x OSHA PEL. Not NIOSH approved for ozone.

******3M recommended** for relief against nuisance levels of certain organic vapors. Nuisance level refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against organic vapors.

1. OSHA substance specific particle exposures: -Lead, -Asbestos, -Cadmium, -Arsenic, 4,4'-Methylenedianiline (MDA).

IMPORTANT: Before using these filters, the user must read the instructions included with the 5000, 6000, 7000 and Ultimate FX FF-400 Series facepieces for use instructions and limitations, approval labels and warnings.

3M™ Filters 2000 Series

Filters Per Bag	Filters Per Case
2	100

Do Not Use For:

- Gases and vapors above the OSHA PEL, including those present in paint spraying operations, unless combined with approved chemical cartridges.
- Aerosol concentrations that exceed:
  - 10 times the permissible exposure limit (PEL) with half facepiece, or
  - 10 times the PEL with full facepiece qualitatively fit tested, or
  - 50 times the PEL with full facepiece quantitatively fit tested, or
  - applicable government regulations, whichever is lower.

Important

Before using these filters, you must determine the following:

1. The type of contaminant(s) for which the respirator is being selected.
2. The concentration level of contaminant(s).
3. Whether the respirator can be properly fitted on the wearer's face. Do not use with beards, on other facial hair, or other conditions that prevent a good seal between the face and the faceseal of the respirator.
4. Before use of these respirators, a written respiratory protection program must be implemented, meeting all the requirements of OSHA 29 CFR 1910.134, including training, medical evaluation and fit testing.

Time Use Limitation

If filter becomes damaged, soiled, or breathing becomes difficult, leave the contaminated area immediately and dispose of the filter. If used in environments containing only oil aerosols, dispose of filter after 40 hours of use or 30 days, whichever is first.

For more information, please contact:

3M Occupational Health and Environmental Safety Division (OH&ESD)

In the U.S., contact:

Customer Service
1-800-328-1667
Technical Assistance
1-800-243-4630
Website
www.3M.com/OccSafety
For other 3M products
1-800-3M HELPS

In Canada, contact:

3M Canada Company, OH&ESD
P.O. Box 5757
London, Ontario N6A 4T1
Customer Care
1-800-364-3577
Technical Assistance (Canada only)
1-800-267-4414
Website
www.3M.ca/safety

Technical Assistance in Mexico
01-800-712-0646
5270-2255, 5270-2119 (Mexico City only)
Technical Assistance in Brazil
0800-132333

3M

Occupational Health and Environmental Safety Division
3M Center, Building 235-2E-91
St. Paul, MN 55144-1000

3M

Combination Cartridge/Filter P100 User Instructions

⚠ WARNING

These cartridge/filters help protect against certain airborne contaminants. **Misuse may result in sickness or death.** For correct use, consult supervisor and *User Instructions*, or call 3M in U.S.A., 1-800-243-4630. In Canada, call Technical Service at 1-800-267-4414.

Use cartridge before expiration date.

IMPORTANT

Before use, the wearer must read and understand these *User Instructions*, and the *User Instructions* for the 3M™ Half and Full Facepiece Respirators 6000 Series, 7000 Series and FF-400 Series to be used with these combination cartridges. These combination cartridges are NIOSH approved only for use with 3M™ Half and Full Facepiece Respirators 6000 Series, 7000 Series and FF-400 Series. Keep these *User Instructions* for reference.

Use For

Respiratory protection from certain airborne contaminants according to local applicable regulations and approvals, NIOSH approvals, in the U.S. OSHA limitations, in Canada CSA standard Z94.4 requirements, in Brazil the Respiratory Protection Program of the Ministry of Labor, other applicable regulations and 3M instructions. In the U.S., for additional information on 3M use recommendations please consult the 3M Respirator Selection Guide found on the 3M PSD website at www.3m.com/workersafety or call 1-800-243-4630. In Canada call 1-800-267-4414.

Do Not Use For

Sandblasting.

Biological Particles

These cartridge/filters can help reduce inhalation exposures to certain airborne biological particles (e.g. mold, *Bacillus anthracis*, avian influenza, *Mycobacterium tuberculosis*, etc.) but cannot eliminate the risk of contracting infection, illness or disease. OSHA and other government agencies have not established safe exposure limits for these contaminants.

Use Instructions

1. Failure to follow all instructions and limitations on the use of these cartridge/filters and/or failure to wear the respirator during all times of exposure can reduce respirator effectiveness and **may result in sickness or death.**
2. Before occupational use of these cartridge/filters, a written respiratory protection program must be implemented meeting all the local applicable requirements. In the U.S., follow OSHA 29 CFR 1910.134 which includes medical evaluation, training and fit testing. In the U.S. users must also comply with applicable OSHA substance specific standards. In Canada, CSA standard Z94.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. In Brazil, follow the requirements of the Respiratory Protection program of the Ministry of Labor.
3. The airborne contaminants which can be dangerous to your health include those so small that you cannot see them.
4. Leave the contaminated area immediately and contact supervisor if you smell or taste contaminants or if dizziness, irritation, or other distress occurs.
5. Store the cartridge/filters and respirator away from contaminated areas when not in use. Store unopened combination cartridges in a cool dry place.
6. Dispose of used product in accordance with applicable regulations.

Use Limitations

1. These cartridge/filters do not supply oxygen. Do not use in atmospheres containing less than 19.5% oxygen.
2. Do not use when concentrations of contaminants:
   - are immediately dangerous to life or health (IDLH),
   - are unknown,
   - are greater than 10 times the permissible exposure limit (PEL) with half facepiece respirators and full facepiece respirators when qualitatively fit tested,
   - are greater than 50 times the PEL with full facepiece respirators when quantitatively fit tested, or
   - exceed specific local applicable government regulations (such as OSHA standards in the U.S.) or applicable government regulations, whichever is lower.
3. Do not alter, clean (e.g. vacuum, wash, use compressed air), abuse or misuse these cartridge/filters and/or respirator.
4. Do not use with beards or other facial hair or other conditions that prevent a good seal between the face and the sealing surface of the respirator.

In Brazil, according to the Respiratory Protection Program of the Ministry of Labor, do not use when concentrations of contaminants are greater than 10 times the permissible exposure limit when using a half facepiece or 100 times the permissible exposure limit when using a full facepiece that has been quantitatively fit tested.

Assembly on Facepiece

1. Align cartridge notch with facepiece mark, as shown, and push together (Fig. 1).
2. Turn cartridge clockwise one quarter turn until it is firmly seated and cannot be further turned (Fig. 2).
3. Repeat for second cartridge.

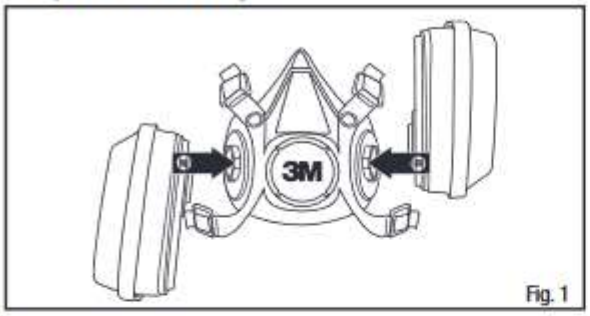


Fig. 1

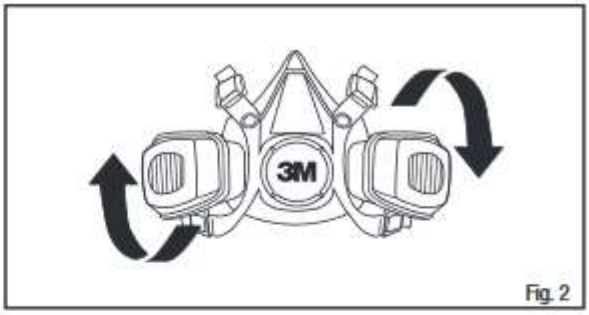


Fig. 2

Time Use Limitations

1. Replace cartridge/filters in accordance with an established change schedule or earlier if smell, taste or irritation from contaminants is detected. Please see 3M Service Life Software at www.3M.com/sls.
2. If cartridge/filter becomes damaged, soiled, or breathing becomes difficult, leave the contaminated area immediately and replace the cartridges.
3. If used in environments containing only oil aerosols, dispose of cartridge/filter after 40 hours of use or 30 days, whichever is first.

Special Instructions

3M™ Mercury Vapor, Organic Vapor and Acid Gas Cartridge, P100 60927 must be discarded within 50 hours of use against mercury vapor; or according to organic vapor, chlorine, hydrogen sulfide or sulfur dioxide service life; or when odors of vapors or gases become noticeable, whichever occurs first. Mercury vapor has no odor.

NIOSH Approval: See NIOSH Approval Label Insert

For Compliance in Brazil NOTE:

Combination Cartridge/Filter 6000 Series – Class 1, P3 SL

The cartridges assembly in the facepieces is done by bayonet lug, aligning cartridge with facepiece.

3M™ 60921: Respiratory protection against Organic Vapors – Class 1 and Particulate

3M™ 60922: Respiratory Protection against Acid Gases (chlorine gas, hydrogen chloride/sulfur dioxide or chlorine dioxide or hydrogen sulfide) – Class 1 and Particulate

3M™ 60923: Respiratory Protection against Organic Vapors/ Acid Gases – Class 1 and Particulate

3M™ 60924: Respiratory Protection against Ammonia and Methylamine – Class 1 and Particulate

3M™ 60925: Respiratory Protection against Formaldehyde and Organic Vapors – Class 1 and Particulate

3M™ 60926: Respiratory Protection against some organic vapors, chlorine gas, hydrogen chloride, sulfur dioxide, chlorine dioxide, hydrogen sulfide, ammonia/methylamine, formaldehyde or hydrogen fluoride (multi-gas) – Class 1 and Particulate

3M™ 60927: Respiratory Protection against Organic Vapors, Mercury Vapor, Chlorine Gas, Hydrogen Sulfide or Sulfur Dioxide Gas – Class 1 and Particulate

3M™ 60928: Respiratory Protection against Organic Vapors/ Acid Gases – Class 1 and Particulate

NOTE:

1. Do not use in deficient or enriched oxygen atmospheres.
2. Storage, Transportation and Care: store in a clean and dry place and away from contaminants and extreme temperature and humidity.
3. The components of this respirator are made of materials which are not expected to cause adverse health effects.
4. It is necessary to have special care to use this product in explosives atmospheres.

FOR MORE INFORMATION
In United States, contact:
Website: www.3m.com/workersafety
Technical Assistance: 1-800-243-4630
For other 3M products:
1-800-3M-HELPS or 1-651-737-6501

RENSEIGNEMENTS SUPPLÉMENTAIRES
Aux États-Unis :
Internet : www.3m.com/workersafety
Assistance technique : 1 800 243-4630
Autres produits 3M :
1 800 364-3577 ou 1 651 737-6501

PARA MAYORES INFORMES
En Estados Unidos:
Sitio Web: www.3m.com/workersafety
Soporte técnico: 1-800-243-4630
Para otros productos 3M:
1-800-3M-HELPS o 1-651-737-6501

PARA MAIS INFORMAÇÕES
Nos Estados Unidos, entre em contato com:
Website: www.3m.com/workersafety
Assistência Técnica: 1-800-243-4630
Para outros produtos 3M:
1-800-3M-HELPS ou 1-651-737-6501

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