

MICHIGAN DEPARTMENT OF COMMUNITY HEALTH

# Respiratory Protection Program

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Communicable Disease Division

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## **Division of Communicable Disease**

### **Respiratory Protection Program**

#### **Purpose:**

This program is intended to protect staff from respiratory exposure to a biological agent in the event of an identified/potential risk.

#### **Responsibilities:**

The employer, the State of Michigan Department of Community Health, Division of Communicable Disease, will determine the need for respiratory protection, establish and maintain a Respiratory Protection Program in compliance with the requirements of 1910.134 of the Michigan Occupational Health Standard, and provide all personnel in the program with respirators appropriate to the intended purpose.

The employees will wear assigned respirators when and where they are required and in the manner in which they were trained, care for and maintain their respirators as instructed, store them in a clean and sanitary location, inform a supervisor if the respirator no longer fits well (and request a new respirator that fits properly), and inform a supervisor or program administrator of any respiratory hazards that are not adequately addressed in the workplace and/or any other concerns regarding the program. Additionally, when new employees are hired, or when newly assigned job duties require respiratory protection there will be additional responsibilities.

#### **Program Administrator:**

The program administrator will be the Communicable Disease Division Director.

#### **Duties of Administrator Include:**

Administration of the respiratory program, evaluation of effectiveness, development and maintenance of written standard operating procedures governing the selection and use of respirators. The administrator may designate other personnel, such as the Communicable Disease Infection Prevention Consultant, to carry out specific functions including but not limited to:

- Arrange for and/or conduct training
  - Training to include proper cleaning, storage, and maintenance of respiratory protection equipment
- Administer the medical surveillance program
- Conduct qualitative fit testing for respirators using either saccharine or Bitrex

- Ensure that respirators fit well and do not cause discomfort
- Maintain records required by law

**Respirators in Use:**

Staff deployed to the field are required to wear and use only NIOSH certified respirators and filters as part of their duties when indicated/required. The following respirators have been certified and will be utilized only in the proper environment\*:

N-95 filter masks (negative pressure, tight face fitting seal)

Powered Air-Purifying Respirators (PAPR) (loose fitting) (HEPA Filter)

**\*Note: Neither the N-95 respirators nor the PAPR shall be used in atmospheres that are explosive nor flammable, or that has less than 19.5% oxygen content. Do not wear a respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.**

**Requirements for Selection of N-95 Filter Masks:**

1. All staff, who as part of their job description may be deployed to the field and come in contact with persons that have, claim to have, or are suspected of having an infectious disease that is transmitted through airborne droplet nuclei, such as, but not limited to, TB or SARS (\*see list below) shall wear the N-95 mask. For unknown threats see Requirements for Selection of PAPR below.
2. The medical authority at the scene shall determine if the N-95 mask is sufficient to protect against the suspected agent.
3. Prior to use, a safe zone or area will be determined as an area of refuge should conditions change that make the use of the respirator unsafe.
4. Staff shall be trained in the proper use and care of this mask with annual review.
5. The respirator shall be worn the entire time that the employee is in a hazardous environment.

**Requirements for Selection of Powered Air-Purifying Respirator (PAPR) “Breathe Easy Turbo PAPR”:**

1. Any staff who may come in contact with an unknown biological agent shall wear a Powered Air-Purifying Respirator (PAPR) with appropriate filters and appropriate personal protective equipment (PPE).
2. The PAPR shall be worn the entire time that the employee is in an area at risk for contraction of respiratory pathogens.
3. Prior to use, a safe zone or area will be established determined as an area of refuge should conditions change that make the use of the PAPR unsafe.

4. The PAPR will be used when in contact with persons who have or are suspected to have of been victims of a bio-terrorist attack in which the specific agent of use has not been determined. A listing of communicable diseases requiring airborne isolation and the use of a PAPR or N-95 are listed below.\*
5. Employees expected to use this equipment will be trained annually in the proper use and care of their respirator.
6. The respirator shall be worn the entire time that the employee is in a hazardous environment.

**\*Measles (rubeola virus), chickenpox (varicella virus), *M. tuberculosis*, smallpox, aerosolized *Bacillus anthracis* (anthrax), viral hemorrhagic fevers (i.e., Lassa, Ebola, Marburg, Crimean-Congo), avian influenza, monkeypox, SARS, MERS Co-V or any other new, emerging respiratory illness in situations when CDC/WHO has not issued recommendations for isolation and PPE.**

#### **Medical Evaluation:**

##### 1. Initial:

All staff who may be deployed to the field must complete a confidential medical questionnaire, Appendix A (taken from the MIOSHA Respirator Medical Evaluation Questionnaire<sup>1</sup>), to determine the employee's physical ability to use the above listed respirators. This evaluation will be given to all new employees *before* respiratory fit testing can occur and deployment to hazardous scenes. Employees must complete the confidential medical questionnaire (short form) and place the completed form in a sealed envelope and deliver to Infection Prevention Consultant in the Communicable Disease Division at MDCH. A physician or other licensed healthcare professional (PLHCP) will review the confidential questionnaire and determine the employees' medical ability to be fit tested and wear the respirator. The Infection Prevention Consultant will deliver sealed envelopes to the designated PLHCP for evaluation. The PLHCP will clear staff to be fit tested and wear a respirator. Follow-up medical examination may be required (i.e. further medical tests, consultations, or diagnostic procedures) to determine the medical capacity for the employee to use the respirators. The employee and PLHCP will arrange an appropriate time for any follow-up appointments. All of the above exams are paid for by MDCH. The employee will be able to discuss the evaluation results with the PLHCP, if requested. Currently, Sparrow Occupational Health Clinic is the organization designated to evaluate the questionnaire and do follow up testing if needed. A list of all

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<sup>1</sup> Appendix C of MIOSHA Standard- 1208.  
[http://www.michigan.gov/documents/CIS\\_WSH\\_part451\\_54075\\_7.pdf](http://www.michigan.gov/documents/CIS_WSH_part451_54075_7.pdf)

occupational health clinics designated by the Office of the State Employer can be found here: [http://www.michigan.gov/ose/0,1607,7-143-6097\\_6274---,00.html](http://www.michigan.gov/ose/0,1607,7-143-6097_6274---,00.html)

## 2. Continuing Evaluation:

Additional medical evaluations will be given when:

- a. An employee reports problems associated with using respirators, such as shortness of breath, dizziness, chest pains or wheezing.
- b. A physician or supervisor informs the administrator that an employee needs to be re-evaluated.
- c. A change occurs in the workplace that results in increased physical stress or burden on the employee.

## Fit Testing:

### 1. N-95 Respirator Fit test:

- a. Each medically cleared employee needing respiratory protection will be issued a N-95 respirator. The respirator will be fit tested to the employee to make sure the employee receives the correct mask size, and that the mask forms an air tight seal with the employee's face. The test will conform to MIOSHA Fit Testing Procedures<sup>2</sup>.
- b. Factors that may affect a correct mask fit are:
  - Significant weight change
  - Significant facial scarring in the area of the face piece seal
  - Major dental changes
  - Reconstructive or cosmetic facial surgery
  - Beards or facial hair that extends beyond the borders of the respirator on the face
  - Any other condition that would interfere with a proper fit
- c. The employee will be fit tested with the same make, model, style and size of respirator that will be issued to them for use.

### 2. PAPR Fit Test

- a. The PAPR does not require fit testing.

### 3. Trained MDCH staff or other competent vendor will conduct the fit test using MIOSHA accepted qualitative methods, and will complete the proficiency checklist found in Appendix B in this plan.

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<sup>2</sup> Appendix A of MIOSHA Standard- 1208

[http://www.michigan.gov/documents/CIS\\_WSH\\_part451\\_54075\\_7.pdf](http://www.michigan.gov/documents/CIS_WSH_part451_54075_7.pdf)

4. Staff with facial hair that extends beyond the borders of the respirators on the face will not be fit tested and will be instructed to use the PAPR.

#### **Procedures for Proper N-95 Respirator Use, Cleaning and Storage:**

1. Staff will use their respirators under conditions specified by this program and in accordance with the training they receive on the use of each particular model. In addition, any respirator will not be used in a manner for which it is not certified by NIOSH or the manufacturer.
2. Procedures for applying the N-95 are found in Appendix C of this Plan.
3. All employees shall conduct user seal checks each time they apply their N-95 respirator in accordance with the manufacturer's recommendations or in compliance with MIOSHA User Seal Check Procedures<sup>3</sup>
4. Employees are not permitted to wear N-95 respirators if they have any condition such as facial scars, beards, or other facial hair or missing dentures that may prevent them from achieving a good seal.
5. Employees are not permitted to wear headphones, jewelry, or other articles that may interfere with the face piece-to-face seal.
6. These respirators are single use masks that are not to be shared or reused by others.
7. If breathing becomes difficult or the unit becomes saturated, damaged or soiled, leave the area immediately and replace the unit.
8. Unused respirators should be stored in a clean dry area, protected from contaminants.
9. Use Standard Precautions when disposing of used masks.

#### **Procedures for Proper "Breathe Easy Turbo PAPR" Use, Cleaning, Storage, Inspection and Repair**

1. Procedures for assembling, applying, and operation of the PAPR are found in Appendix D of this Plan.
2. Hoods are single issue and should not be shared between employees.
3. Solvents and detergents should not be used to clean the clear face piece or hood. Use a damp cloth. Solvents should not be used to clean the PAPR blower unit or battery case. Wipe the PAPR blower unit and battery pack with a mild cleaning solution. Do not immerse the PAPR blower unit or battery pack.
4. Store your respirator at room temperature in a dry area that is protected from exposure to hazardous contaminants.

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<sup>3</sup> Appendix B-1 of MIOSHA Standard- 1208  
[http://www.michigan.gov/documents/CIS\\_WSH\\_part451\\_54075\\_7.pdf](http://www.michigan.gov/documents/CIS_WSH_part451_54075_7.pdf)

5. Inspecting the PAPR includes
  - Remove the filters/cartridges or canisters
  - Examine the blower housing for cracks. Replace if cracked or damaged.
  - Examine the inside of the blower intake manifold (note the red and white wires). The presence of dust or other particulate matter inside the manifold or on the wires may indicate a damaged filter, improper seating of the filter/cartridge/canister or incorrect filter/cartridge/canister selection.
  - Examine the outside of the battery pack for cracks. Replace if damaged.
  - Inspect the breathing tube, bend to verify that it is flexible and replace if punctured, cracked or worn.
6. Units shall be inspected prior to each use and prior to storage after use to ensure that they are in good working order, clean and properly secured.
7. Appendix B-2 of CFR 1910.134 (attached as appendix E) shall be used if manufacturers recommendations for safe cleaning, storing and use, are not available.
8. When not in use, units should be inspected at least quarterly.
9. A log of inspection (Appendix F) shall be kept in the storage container for each PAPR.
10. Units found to be inoperable or that appear to be in need of repair should be taken out of service, decontaminated, tagged as such, and turned over to the program administrator for repair or replacement.
11. The "Breathe Easy Turbo PAPR" shall only be used by persons that have been trained to the manufacturers recommended level of proficiency and certified as such by the Program Administrator.

### **Respirator Equipment Training:**

1. MDCH or their designee shall provide training in the proper use and care of the respirator to those employees who are required to use them on the job. Each employee must be able to demonstrate knowledge of at least:
  - a. When the respirator is needed
  - b. How improper fit, usage, or maintenance can compromise the protectiveness of the unit
  - c. The capabilities and limitations of the respirator
  - d. How to efficiently use the respirator in emergency situations, including when the N-95 does not seal
  - e. How to inspect, put on, use and remove the respirator and check the face piece for a proper, tight fitting seal
  - f. How to clean and store respirators
  - g. The procedure for proper maintenance and/or disposal



- h. General medical signs or symptoms that may limit or prevent the effective use of the respirator
- 2. Re-training shall be done at least annually, or when any of the following occur:
  - a. Changes in the workplace or a change in equipment makes previous training obsolete.
  - b. Inappropriate use of the respirator equipment indicates an employee has not retained the required understanding or skill to safely use the equipment.
  - c. Any situation that requires retraining to ensure safe respirator use.

**Voluntary Use of Respirators by Employees:**

Employees who wish to voluntarily deploy to situations in which a respirator may be needed shall adhere to this policy and its entire requirement for, but not limited to, medical evaluation, fit testing, training and annual training.

**Evaluation of the Respiratory Program:**

- 1. Each year the administrator shall review the Respiratory Protection Program. All employees who wear or service N-95 or "Breathe Easy Turbo PAPR" respirators and/or their supervisors shall be asked to provide information on:
  - a. The adequacy of the respiratory equipment being used.
  - b. Knowledge of accidents or incidents where the N-95 or "Breathe Easy Turbo PAPR" respirator failed to provide adequate protection.
  - c. Adequacy of training in the use of, and maintenance of the N-95 or "Breathe Easy Turbo PAPR" respirator equipment.
- 2. The Administrator shall make recommendations on changes or improvements needed in this program and provide additional and/or refresher training annually.

**Record Keeping:**

As part of this Respiratory Protection Program, the Administrator shall keep records regarding employee fit testing results. All documentation is kept in a confidential, locked file on the locked floor of the Communicable Disease Division. The Infection Prevention Consultant shall keep employee training records and the schedule.

Review Date and Signature: \_\_\_\_\_  
\_\_\_\_\_

## **Appendix A- Respirator Medical Evaluation Questionnaire (Mandatory)**

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

**Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).**

1. Today's date: \_\_\_\_\_

2. Your name: \_\_\_\_\_

3. Your age (to nearest year): \_\_\_\_\_

4. Sex (circle one): Male/Female

5. Your height: \_\_\_\_\_ ft. \_\_\_\_\_ in.

6. Your weight: \_\_\_\_\_ lbs.

7. Your job title: \_\_\_\_\_

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): \_\_\_\_\_

9. The best time to phone you at this number: \_\_\_\_\_

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No

11. Check the type of respirator you will use (you can check more than one category):
- a. \_\_\_\_\_ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
  - b. \_\_\_\_\_ Other type (for example, half- or full-face piece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one): Yes/No

If "yes," what

type(s): \_\_\_\_\_  
\_\_\_\_\_

**Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").**

1. Do you *currently* smoke tobacco, or have you smoked tobacco in the last month:  
Yes/No

2. Have you *ever had* any of the following conditions?

- a. Seizures: Yes/No
- b. Diabetes (sugar disease): Yes/No
- c. Allergic reactions that interfere with your breathing: Yes/No
- d. Claustrophobia (fear of closed-in places): Yes/No
- e. Trouble smelling odors: Yes/No

3. Have you *ever had* any of the following pulmonary or lung problems?

- a. Asbestosis: Yes/No
- b. Asthma: Yes/No
- c. Chronic bronchitis: Yes/No
- d. Emphysema: Yes/No
- e. Pneumonia: Yes/No
- f. Tuberculosis: Yes/No
- g. Silicosis: Yes/No
- h. Pneumothorax (collapsed lung): Yes/No
- i. Lung cancer: Yes/No
- j. Broken ribs: Yes/No
- k. Any chest injuries or surgeries: Yes/No
- l. Any other lung problem that you've been told about: Yes/No

4. Do you *currently* have any of the following symptoms of pulmonary or lung illness?

- a. Shortness of breath: Yes/No
- b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline:  
Yes/No
- c. Shortness of breath when walking with other people at an ordinary pace on level ground:  
Yes/No
- d. Have to stop for breath when walking at your own pace on level ground:  
Yes/No
- e. Shortness of breath when washing or dressing yourself: Yes/No
- f. Shortness of breath that interferes with your job: Yes/No
- g. Coughing that produces phlegm (thick sputum): Yes/No
- h. Coughing that wakes you early in the morning: Yes/No
- i. Coughing that occurs mostly when you are lying down: Yes/No
- j. Coughing up blood in the last month: Yes/No
- k. Wheezing: Yes/No
- l. Wheezing that interferes with your job: Yes/No
- m. Chest pain when you breathe deeply: Yes/No
- n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you *ever had* any of the following cardiovascular or heart problems?

- a. Heart attack: Yes/No
- b. Stroke: Yes/No
- c. Angina: Yes/No
- d. Heart failure: Yes/No
- e. Swelling in your legs or feet (not caused by walking): Yes/No
- f. Heart arrhythmia (heart beating irregularly): Yes/No
- g. High blood pressure: Yes/No
- h. Any other heart problem that you've been told about: Yes/No

6. Have you *ever had* any of the following cardiovascular or heart symptoms?

- a. Frequent pain or tightness in your chest: Yes/No
- b. Pain or tightness in your chest during physical activity: Yes/No
- c. Pain or tightness in your chest that interferes with your job: Yes/No
- d. In the past two years, have you noticed your heart skipping or missing a beat:  
Yes/No
- e. Heartburn or indigestion that is not related to eating: Yes/No
- d. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you *currently* take medication for any of the following problems?
- a. Breathing or lung problems: Yes/No
  - b. Heart trouble: Yes/No
  - c. Blood pressure: Yes/No
  - d. Seizures: Yes/No
8. If you've used a respirator, have you *ever had* any of the following problems? (If you've never used a respirator, check the following box  and go to question 9:)
- a. Eye irritation: Yes/No
  - b. Skin allergies or rashes: Yes/No
  - c. Anxiety: Yes/No
  - d. General weakness or fatigue: Yes/No
  - e. Any other problem that interferes with your use of a respirator: Yes/No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

## Appendix B- Proficiency Checklist

EMPLOYEE: \_\_\_\_\_

RESPIRATOR: \_\_\_\_\_ SIZE: \_\_\_\_\_

- |   |     |    |
|---|-----|----|
| 1. Selected proper face piece                     | Yes | No |
| 2. Attained complete seal                         | Yes | No |
| 3. Conducted negative pressure test               | Yes | No |
| 4. Is aware of sensory indicators for exposure    | Yes | No |
| 5. Conducted a fit test with Saccharine or Bitrex | Yes | No |

PASSED

FAILED

\_\_\_\_\_  
Signature of Trainer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

## **Appendix C- N-95 Fitting Instructions**

### **For N-95 3M Models 8110S, 8210, 8260, and 8260S**

Cup the respirator in your hand, with the nosepiece at your fingertips, allowing the headbands to hang freely below your hand.

Position the respirator under your chin with the nosepiece up. Pull the top strap over your head resting it high at the top back of your head. Pull the bottom strap over your head and position it around the neck, below the ears.

Place your fingertips from both hands at the top of the metal nosepiece. Using two hands mold the nose area to the shape of your nose by pushing inward while moving your fingertips down both sides of the nosepiece. NOTE: pinching the nosepiece using one hand may result in improper fit and less effective respirator performance. Use two hands.

Perform a User Seal Check prior to each wearing.

Place both hands completely over the respirator and exhale. Being careful not to disturb the position of the respirator.

If air leaks around the nose, readjust the nosepiece as described in Step 3.

If air leaks at the respirator edges, work the straps back along the sides of your head.

**IF YOU CANNOT ACHIEVE A PROPER FIT, DO NOT ENTER THE HAZARDOUS AREA. SEE YOUR SUPERVISOR.**

### **For Kimberly Clark TECHNOL FLUIDSHIELD PFR95 Sizes Regular and Small**

Wear orange side out

Separate the edges of the respirator to fully open

Slightly bend the nose wire to form a gentle curve

Hold the respirator upside down to expose the two headbands

Using index fingers and thumbs, separate the two headbands

While holding the headbands index fingers and thumbs, cup the respirator under your chin

Pull the headbands up and over the head

Release the lower headband from thumbs and position it at the base of neck

Position the remaining headband on the crown of the head

Conform the nosepiece across the bridge of the nose by firmly pressing down with fingers

Continue to adjust the respirator and secure the edges until a good facial fit is achieved

Perform a Fit Check

Place both hands completely over the respirator and exhale

Be careful not to disturb the position of the respirator

If air leaks around the nose, readjust the nosepiece as described in Step 10

If air leaks at the respirator edges, work the straps back along the sides of the head

**IF YOU CANNOT ACHIEVE A PROPER FIT, DO NOT ENTER THE HAZARDOUS AREA. SEE YOUR SUPERVISOR.**



## **Appendix D- Procedures for assembly, applying and operating the Breathe Easy PAPR unit**

### **Assembly**

#### **Battery Charging:**

A completely exhausted battery pack should be charged for 16 to 24 hours. To use the smart charger, place the charging station horizontally on a flat surface and plug the station AC power cord into a regulate 120v-60Hz outlet. The green LED light will turn on. Insert the charging lead into the battery pack. The LED light will turn off, indicating that the battery pack attached is being charged in a high rate mode. After approximately eight hours (depending on the amount of charging required) the LED will turn back on, indicating that the charger has switched to a trickle rate mode, preventing damage to the battery from overcharge. 3M batteries provide up to 500 charge/discharge cycles. However, the life of 3M batteries will be significantly reduced when they are exposed to high heat over an extended period of time. To maximize battery life, these guidelines should be followed:

- Charge 3M battery packs before they are completely discharged. Damage may occur if the battery pack is completely discharged (“deep discharge”) frequently.
- 3M battery packs may be charged any time during the discharge cycle. Voltage depression (AKA memory) is not a significant factor for 3M battery packs. Whether it has been used 20 minutes or 8 hours, the battery pack may be charged.
- Always charge batteries at a temperature of 77<sup>0</sup>F (25<sup>0</sup>C) or less. At higher temperatures, the battery pack may not accept a full charge. If a battery pack feels hot, let it cool for ½ hour before charging.
- Batteries may be left on trickle rate mode to maintain optimum capacity for up to 30 days. Without periodic charging a NiCad battery in storage loses approximately 1% of its charge each day. Infrequently used battery packs should be fully charged, initially, then charged overnight once per week, or one hour each day to maintain a full charge. Allowing a battery to self-discharge during extended storage will not harm the battery pack. Batteries subjected to prolonged storage (longer than 6 months) may lose capacity to hold a full charge. Battery capacity can be checked by running the PAPR motor/blower unity for eight hours and checking that airflow is maintained at six CFM or greater. Several charge/run-down cycles may restore battery capacity.
- Do not charge multiple battery packs in an enclosed cabinet without ventilation.
- When using the Lithium battery pack, refer to the *User Instructions* provided with the lithium battery pack (part number 520-04-57R01)

**Attaching Filters/Cartridges/Canisters:**

Remove three filters/cartridges/canisters from their packaging and verify that they are the appropriate type for the application by examining the label attached to the filter/cartridge/canister housing. Remove screw caps from each filter/cartridge/canister and retain them for future use. Ensure that the air inlet insert is sealed inside each of the three rubber air inlets on the Turbo unit and that the threads and sealing surfaces are free of dirt and debris. Screw a filter/cartridge /canister loosely into each of the three threaded inlets. When all three filters/cartridges/canisters are in place, hand-tighten so that an airtight seal is achieved between the neck of each filter/cartridge/canister and the rubber molding inside the threaded inlet. Dispose of used filter/cartridge/canister in accordance with applicable regulations.

**WARNING:** Do not over-tighten filters/cartridges/canisters. Over-tightening may result in distortion or displacement of the seal and may allow contaminated air to enter the respirator headpiece and may result in sickness or death.

**Connecting the 3M Breathe Easy Turbo Powered Air/Blower Filtration Unit:**

Place the hose clamp onto the free end of the breathing tube. Slide that end of the breathing tube over the Turbo PAPR blower unit outlet, and tighten the clamp. Ensure that the breathing tube is secured to the Turbo PAPR blower unit outlet and that the end of the breathing tube is visible between the Turbo PAPR blower unit and the hose clamp.

**Donning the 3M Breathe Easy Turbo Powered Air Blower/Filtration Unit:**

To apply the Turbo PAPR blower unit, place the unit back cover against your lower back (along your spinal column) with the breathing tube extending upward. Fasten the belt around your waist at the front so the Turbo unit rests comfortably and securely against your lower back. Plug the Turbo PAPR blower unit into a fully charged battery pack, and attach the battery pack to the belt.

**Adjusting the Belt Length:**

Pull the whole belt to the right or left through the Turbo PAPR blower unit's bracket so the buckle centers at your waist (in front) and the Turbo PAPR blower unit is behind you.

**User Performance Check:**

After assembling the system in accordance with the Assembly Section, complete a user performance check as follows:

1. Prior to beginning each work shift, check that the system is providing adequate airflow as follows: with the breathing tube assembly disconnected from the blower unit, and the system running, insert the base of the flow meter into the outlet. Be sure that the blower unit and flow belt are resting in a vertical position.

The blower unit may need to be propped up so that the lower cartridge opening is not blocked. Check that the center of the float rests at or above the appropriate mark. The PAPR must maintain at least 6 cfm. If the flow rate is below 6 cfm, replace filters/cartridges/canisters and check flow again. If the flow rate is still below 6 cfm, refer to the Troubleshooting section for further instructions before using.

2. Verify that the respirator headpiece is connected to the blower/filtration unit and that air is flowing before donning the respirator headpiece.
3. With the respirator system in operation and donned according to the instructions in the Assembly Section, enter the contaminated area, breathing normally. Keep the PAPR assembly away from equipment, vehicles and other physical and chemical hazards.
4. Remove the respirator system in an uncontaminated area. Refer to the Cleaning and Inspection section of these User Instructions for cleaning, inspection and storage information.

Warning: Do not remove the respirator system while in a hazardous atmosphere. Doing so may result in sickness or death. Contaminants, which are dangerous to your health, include those which you may not be able to see or smell. Leave the contaminated area immediately if:

- Any part of the system becomes damaged
- Airflow into the respirator headpiece decreases or stops
- Breathing becomes difficult
- You feel dizzy or your vision is impaired
- Your taste or smell is impaired
- Your face, eyes, nose or mouth becomes irritated
- You suspect that the concentration of contaminants may have reached levels at which this respiratory system may no longer provide adequate protection

## Appendix E- PAPR Respiratory Cleaning Procedures

These procedures are provided from employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in Appendix E. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix E, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

### I. Procedures for Cleaning PAPRs

- A. Remove filters, cartridges, or canisters. Disassemble face-pieces by removing speaking diaphragms, demand and pressure- demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
- D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
  1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
  2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,
  3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on

Face-pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

- F. Components should be hand-dried with a clean lint-free cloth or air-dried.
- G. Reassemble face-piece, replacing filters, cartridges, and canisters where necessary.
- H. Test the respirator to ensure that all components work properly.

## Appendix F- Breathe Easy PAPR Inspection Log

Year 20__				
	Q1	Q2	Q3	Q4
Flow Meter Test CFM (>6)				
Bend breathing tube check for cracks, holes or tears				
Examine the inside of the blower motor for dust				
Unit is stored at room temperature				
Examine the outside of the battery packs for cracks				
Charge rechargeable batteries of have them on trickle charge				