RESPIRATORY PROTECTION PROGRAM FOR AIR-PURIFYING RESPIRATORS

COMPLETED: SEPTEMBER, 2013

1 PREFACE

This *Respiratory Protection Program* (hereafter known as the, “RPP” or the “Program”) has been created by a working group of Occupational Health & Safety Professionals from each of the Health Authorities in the Province of British Columbia.

The purpose of this Program is to harmonize the way respiratory protection programming is administered in Health Authorities across the province. A principal objective is to ensure that appropriate respiratory protection is secured and provided to employees in a timely way, considering best-practice safe-work procedures for the selection, use, and maintenance of these products. This Program follows practice recommended by the Canadian Standards Association (CSA) and required by WorkSafeBC through the Occupational Health & Safety Regulation

Because this Program has been harmonized between Health Authorities, significant Program, modifications should not be attempted unilaterally. Instead, application for additions/modifications should be made only by OH&S Managers through the Provincial Prevention Managers or Occupational Safety and Health Directors meetingvenues.

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2 INTRODUCTION

2.1 Purpose

The Respiratory Protection Program outlines the necessary responsibilities, procedures, and tools to ensure the health and safety of all staff when utilizing respiratory protection against airborne contaminants.

2.2 Scope

The scope of this Program has been limited to the safe use of air-purifying respirators. This includes:

a. Elastomeric ½-face and full-face models;
b. Disposable face-filtering models (e.g. N-95)
c. Powered Air Purifying Respirators (PAPRs).

The Program addesses the following items:

a. Respirators (their use and limitations)
b. Procedures for the use of respirators for personal protection against airborne contaminants. Compliance with the program is mandatory and will be monitored by the responsible department manager with administrative oversight by Workplace Health. fit-testing methods,
c. Areas not covered by the RPP (like SCBA and airline respirators).

Note: Prior to implementing the Respiratory Protection Program, department managers and/or supervisors must consult with Workplace Health to ensure that appropriate protection is selected and determine which elements (e.g. education/training) of the Program are required.

2.3 Workplace Health Policy

A copy of the Provincial Health Services Authority (PHSA) *Workplace Health Policy* can be found on PHSA on Demand (POD) intranet page.

2.4 Applicable Regulations and Standards

This Program (and any associated forms/tools/documentation) complies with requirements presented in:

a. The *Occupational Health & Safety Regulation* (WorkSafeBC)
   i. Regulations 5.48 – 5.59 of Part 5 (“Chemical Agents & Biological Agents”); and
   ii. Regulations 8.32 -8.44 of Part 8 (“Personal Protective Clothing & Equipment”).
   iii. The WorkSafe BC policies & guidelines associated with respiratory protection

b. Standard Z94.4-11: “Selection, Use, and Care of Respirators” (Canadian Standards Association)

Note: Where there is a discrepancy between the requirements outlined by “a” and “b” above, Health Authority OH&S Departments will default to that requirement that meets with WorkSafeBC regulatory compliance expectations.

All forms, tools, and documentation associated with the *Respiratory Protection Program* will be maintained on the Workplace Health section of the intranet.

3 PROGRAM ADMINISTRATION

Although Workplace Health has the responsibility to develop and oversee administration of the Respiratory Protection Program, various individuals have specific responsibilities to ensure its ongoing success.

3.1 Executive Team and Directors

The Executive Team and Directors must ensure:

- Managers and supervisors are familiar with contents of the Respiratory Protection Program and its requirements (e.g. annual respirator fit-testing requirements).
- Resources required for the implementation/administration of the Respiratory Protection Program are made available. This may include (but is not limited to):
    - Respirators;
    - Fit-testing equipment/supplies;
    - Education/training resources; and
    - Policies/procedures aimed at minimizing the risks associated with known airborne contaminant hazards.

3.2 Managers and Supervisors

Managers and supervisors must ensure that:

- Risk identification/assessment pertaining to potential airborne contaminant exposure is conducted in a timely fashion (and where applicable, in consultation with a Health Authority recognized Workplace Health Professional).
  Note: Whenever work procedures involving potential airborne contaminants (e.g. chemicals, dust, etc.) are modified/introduced to the workplace, Workplace Health must be consulted.
- Appropriate respiratory protection, as well as education/training in the safe use of that equipment (e.g. fit-testing) is provided to an employee before s/he is assigned any work where respiratory protection is required.
- Where N95 respirators are required, designate a staff person to become a fit-tester if feasible.
- Staff are informed before commencing work of any airborne contaminant hazards and all subsequent exposure control methods (e.g. respirator usage requirements).
- The policy regarding Respiratory Protection and annual fit-testing is communicated to staff.
- Staff use and maintain/store (where applicable) assigned respiratory protection as outlined in the education/training and instructions provided by the employer.

- Problems and issues associated with the use of respiratory protection are documented and corrected as soon as possible.
- The guidelines for N95 respirators, Elastomeric respirators, and PAPRs provided in this Program are used as applicable.
- Where assigned respiratory protection requires cartridges/filters, an appropriate "change-out schedule" is designed in consultation with Workplace Health.

3.3 Employees

An employee who is required to use a respirator must:

- Attend a respirator fit-testing session as required by regulation or as agreed upon with the employer (Note: Currently, fit-testing is required at least once per year).
- Be clean shaven where the respirator comes in contact with the face whenever fit-testing is to be completed and/or a tight-fitting respirator is required.
  Note: When an employee is exempted from shaving due to religious or medical considerations, alternate respiratory protection may be provided by the employer).
- Use, handle, store and dispose of personal protective equipment (including respiratory protection) in accordance with the education/training and instructions provided by the Employer.
  Note: When necessary, refer to the manufacturer's instructions. Use only respirators for which the user has been successfully fit-tested and/or been trained to use.
  Note: In certain cases, fit-testing may not be required (e.g. loose-fitting, powered air purifying respirators (PAPR)). In these cases, education/training in the safe use of these respirators is still required.
- When wearing respiratory protection, inspect for defects and/or conduct a user seal check, according to the manufacturer's guidelines, prior to each use and as required during use.
- Only wear respiratory protective equipment in the work area where it is required.
- Report any equipment malfunctions to the supervisor or employer immediately.
- Ensure that no personal or health conditions, clothing or other equipment/accessories interfere with the fit/usage of the respirator (e.g. hair, makeup, eyeglasses/dentures, head coverings, jewellery, etc.)
- Request to have fit-test repeated as soon as possible if user experiences any physical/psychological changes which may affect his/her ability to wear a respirator. This may include, but is not limited to, substantial changes in weight, reconfiguration of facial morphology (e.g. due to the use of dentures), etc.
- Leave a contaminated area and report concerns to supervisor if unsure of effectiveness of respirator. Examples of concerns include but are not limited to,the detection of odour or difficulty breathing while wearing the respirator.

3.4 Workplace Health

Workplace Health will:

- Maintain the Respiratory Protection Program and all related components.
- Ensure that chemical and biological respiratory hazards are identified, assessed and evaluated in conjunction with relevant stakeholders.. Wherever practicable, engineering controls (e.g. local exhaust ventilation), will be utilized rather than solely relying on the use of personal protective equipment.
- Upon request and/or in consultation with departmental leaders, determine which situations require respiratory protection, as well as the level/type of protection.
- Assist managers in reviewing the suitability of selected respiratory protective devices.
- Provide technical support to stakeholders as required—this includes, but is not limited to, working with groups such as HSSBC in the selection and procurement of respiratory protective devices.
- Educate and train selected staff to become Fit-Testers if feasible.
- Refer staff, when required, for medical assessment by a health care professional.
- Oversee the education/training program for respiratory protective devices.Provide education and training to staff regarding the use, care and maintenance of respirators when required.
- Provide education and training to staff chosen to be fit-testers.
- Provide fit-testing services (scheduled or otherwise) where applicable.
- Maintain education/training and fit-testing documentation/records
- Where fit-testing and/or respiratory protective equipment is owned by Workplace Health, maintain this equipment in good working condition, including calibration, maintenance and repairs.
- Ensure records of equipment maintenance, calibration and/or repair are maintained.
- Provide advice and guidelines to leaders/staff to ensure compliance with this Program.
- Liaise with internal learning and development department and post-secondary school administration regarding fit-testing requirements.
- Conduct evaluations of the Respiratory Protection Program as applicable.

3.5 Joint Occupational Health and Safety Committees (JOHSCs)

Joint Occupational Health and Safety Committees (JOHSCs) will:

- Receive concerns and make recommendations for improvement of the RPP to site leadership.
  Provide input for annual and ongoing program review in collaboration with site leadership and Workplace Health.

3.6 Health Shared Services BC (HSSBC)

HSSBC Buyers or Purchasing Contract Coordinators will:

- Engage Workplace Health and other applicable stakeholders (e.g. Infection Prevention & Control Departments) when reviewing and/or considering a change in any respirator purchasing contracts.
- Ensure appropriate types and quantities of respirators are stocked and available.

3.7 Infection Control

Infection Control Departments will:

- Ensure that situations requiring the use of respirators for protection against airborne infectious microorganisms or bioaerosols are identified and procedures involving the use of the respirator are developed as part of the appropriate level of precaution. Where applicable, this decision-making process will be conducted in collaboration with other stakeholders, including Workplace Health.)
- Specify when respiratory protection is required for protection against airborne infectious microorganisms and communicates to the departments affected.
- Provide educational materials and information to leaders, staff, and possibly other external stakeholders regarding infectious diseases, including information on the routes of exposure.

3.8 Physicians

Physicians will:

- Comply with all relevant elements of the Respiratory Protection Program, including fit-testing requirements where potential or confirmed exposure to airborne contaminants may exist.
- Be clean shaven where the respirator comes in contact with the face whenever fit-testing is to be completed and/or a respirator must be utilized.

Note: Where being clean shaven is not possible (e.g. for religious or medical reasons) , other options may be utilized after discussion with the department manager and other relevant stakeholders (e.g. Workplace Health and Infection Control Departments).

3.9 Contractors

Contractors will:

- Comply with all regulatory requirements outlined in the *Occupational Health and Safety Regulation*.

- Comply with this Respiratory Protection Program and any other respiratory protection policies/protocols provided by the PHSA's Infection Control and/or Workplace Health.
- Wear and properly utilize respiratory protection for situations identified (by their leadership or an appropriate Health Authority-based advocate such as Workplace Health as requiring its use.)
- This includes being fit-tested by a qualified person and using a NIOSH-approved respirator which meets the requirements of the *Occupational Health and Safety Regulation*.

3.10 Post-Secondary Students

When working in areas that require respiratory protection, post-secondary students will:

- Comply with the *Occupational Health and Safety Regulation*.
- Where required, receive fit-testing, through his/her post-secondary academic institution, on a model of respirator currently utilized by the PHSA prior to placement in a healthcare facility.
- Carry proof of fit-testing that details the fit-test date, respirator brand, model and size at all times during the placement experience.
- Inform his/her supervisor if s/he is required to wear a respirator and have not received fit-testing.
- Wear, and properly utilize, a respirator for those situations identified by his/her supervisor as requiring its use.
- Comply with Infection Control and Workplace Health policies, protocols, and/or procedures regarding respirator use.

3.11 Internal Fit-Testers (Health Authority Employees Trained to Conduct Fit-Testing)

PHSA employees trained to conduct fit-testing will:

- Keep up-to-date with any Respiratory Protection Program information provided by Workplace Health.
- Be qualified through a Health Authority-recognized fit-tester education/training course.
- Attend the train-the-fit-tester session (and refresher) coordinated through Workplace Health.
- Become familiar with the material discussed in the session.
- Follow all steps and address all points outlined in the fit-test procedures and education/training documents.
- Provide fit-testing to:
  - new hires within their department required to wear a respirator to safely perform their job duties,
  - staff, as required, to meet surge demands,
  - if urgent fit-testing is required within their department.
- Maintain fit test kits in good working condition

- Refer worker to Workplace Health if medical assessment may be required
- Consult with department management, staff and Workplace Health regarding any issues or concerns that arise.
- Provide all required fit-test records to Workplace Health.
- Provide fit-test records and other applicable documentation to department management.
- Ensure that all staff within their specified department are fit-tested within the timeframe discussed with Workplace Health and department management.

3.12 External Fit-Testers (i.e. Agencies contracted to conduct fit-testing)

Where PHSA fit-testing (all or a portion) has been contracted to an external agency, that group will (as applicable):

- Ensure that fit-tests are completed in accordance with the Occupational Health & Safety Regulation and CSA Standard Z94.4-11.
- Ensure that fit-testing and any other relevant education/training is conducted in a manner relevant to healthcare.
- Utilize respirator models currently used by the PHSA.
- Provide proof of fit-testing completion that details the fit-test date, respirator brand, model and size and name of fit-tester and company (as applicable).

4 HAZARD ASSESSMENT

4.1 Purpose

The purpose of conducting a hazard assessment is to identify/evaluate the health risk(s) posed by suspected airborne contamination. Based on the "occupational hygiene hierarchy of controls," approrpriate mitigation strategies (potentially including the use of respiratory protection) will be identified.

4.2 Conducting the Hazard Assessment

The hazard assessment process will be conducted with the assistance of an Occupational Health and Safety Professional (most often, from PHSA Workplace Health). The process will include:

1. Hazard Identification
2. Characterization of the Group
3. Exposure Assessment
4. Evaluation
5. Assignment of Control Options

The process, including any recommendations will be documented on a Hazard Assessment Form (see Appendix B), Job Classifications (Appendix C), Respiratory Protection Options (Appendix D) and Infectious Respiratory Hazards Assessment (Appendix E) will be also considered when conducting a hazard assessment.

4.3 Identification of Other Control Options

When considering control options, the hierarchy of control model should be utilized:

1. Elimination
2. Substitution
3. Isolation
4. Engineering Controls
5. Administrative Controls
6. Personal Protective Equipment

The exclusive use of respiratory protection (or other personal protective equipment), should only be considered when no other control options are possible/practicable.

4.4 Immediately Dangerous to Life and Health Environments

Under no circumstances will an employee enter an Immediately Dangerous to Life and Health (IDLH) environment without first establishing a comprehensive entry plan with a qualified person (most likely, a Safety Advisor assigned by PHSA Workplace Health).

The following environments/situations must be treated as IDLH:

a. Environments:
   - Containing a known chemical at an unknown and/or IDLH concentration;
   - Containing an unknown chemical with the potential to be at an airborne IDLH concentration;
   - Considered to be untested confined spaces;
   - Containing deficient or unknown oxygen concentrentrations;
   - Containing contaminants at or 20% of their lower explosive limit; and
   - Where active fire-fighting is occurring.

4.5 Requirement for Respiratory Protection

If, as the result of the hazard assessment, respiratory protection is identified as an acceptable means of controlling exposure, this Program must be implemented and followed.

5 HEALTH SURVEILLANCE

Prior to fit-testing and respirator use, individuals must be deemed to be physically and psychologically capable of wearing any assigned respiratory protection. The *Respirator Fit-Test Form* (see Appendix F) can be used to assess whether any adverse conditions are immediately present.

Although research indicates that most individuals with lung disease can use a respirator at moderate exertion levels without any restrictions (Martyny et al,2002) prior to commencing a fit-test, individuals will be asked to identify whether they have any health conditions that could be aggravated by respirator use. Conditions may include, but are not limited to:

- Chronic Bronchitis;
- Emphysema;
- Shortness of breath; and/or
- Other diagnosed lung disease.

If any concerns are identified by the employee, fit-testing should not be conducted; instead, the staff member will be referred to Workplace Health for review. Where applicable, the employee should be provided with a copy of his/her the *Respirator Fit-Test Form (Appendix F) and a Medical Evaluation for Respirator Use Form (Package)Appendix* G). These documents should be brought to their physician for assessment.

Following assessment by a physician, an employee should return the completed documentation to the assigned Disability Management Advisors. The physician assessment must include an indication of whether the employee can:

- Use a respirator without any limitations,
- Use a respirator with specific limitations, or
- Not wear a respirator.

The Disability Management Consultant will discuss the limitations regarding respirator use with the Safety Advisor; direction and guidance will subsequently be provided to the staff member and his/her manager.

Where an employee's health status changes following the screening process, that person must inform his/her manager or contact the PHSA Workplace Health to schedule a follow-up assessment.

Health surveillance and completion of the *Respirator Fit-Test Form* will be completed on an annual basis prior to the fit-testing of the respirator. No confidential medical information is necessary to complete the fit test form or should be included on it.

6 RESPIRATOR & CARTRIDGE / FILTER SELECTION

Selection of appropriate respirator, cartridge(s) and or filter(s) can only be achieved following the completion of a detailed hazard assessment (see Section 3).

Refer to Appendicies H, I and J for N95, Elastomeric and PAPR guidelines.

6.1 Selection and Purchase of Respirators

Appendicies H, I and J outline the specific models of respirators that meet the standards for PHSA and their corresponding order numbers. Although other models of respirators may be in use, purchases of new respirators must be from the list of standards below. Models other than those listed on the following pages must be approved by Workplace Health.

New respiratory protection must not be brought into the health authority without consultation with Workplace Health.

6.1.1 Type of Respirators

There are two main categories of respirators:

- *Air-purifying respirators*
- *Air-supplying respirators – not addressed in this program.*

Air-purifying respirators are categorized into two primary groups:

Non-Powered Air Purifying Respirators
These tight-fitting respirators seal to the user's face. As the wearer inhales, air is drawn from the environment through a filtration system, removing contaminants. Examples of this type of respirator include:

a. Filtering facepiece style (e.g. N95 respirator) (refer to N95 guidelines Appendix H)
b. Elastomeric - Half-facepiece style (refer to Elastomeric guidelines Appendix I)
c. Elastomeric - Full-facepiece style

Powered Air-Purifying Respirators (PAPR)
This type of respiratory protection can be tight fitting (i.e. sealed to the user's face) or loose-fitting (i.e. worn as a hood). In both cases, a battery operated fan moves air from the environment through a filter (to remove contaminants) and then to the wearer's mouth/nose.

- Although tight-fitting PAPR is available and used for specific applications by non-healthcare providers (e.g. asbestos abatement), generally, front-line healthcare providers use loose-fitting ("hood") PAPR's.

Refer to PAPR guidelines Appendix J.

i. Use of Loose Fitting PAPR's by Healthcare Providers

The use of PAPR's by frontline care staff is normally restricted to those individuals/situations where one or more of the following conditions exist:

- An employee is performing a high risk procedure (e.g. intubation, bronchoscopy, etc.) and visual acuity may be impaired/obstructed by wearing a tight-fitting respirator.
- An employee is providing care to chemically contaminated patients.
- An employee is not able to be fitted for any of the tight-fitting respirators provided through his/her Health Authority.
- An employee has facial hair that can not be shaved for religious reasons.
- The employee's manager or another stakeholder (e.g. Infection Prevention & Control and/or Workplace Health) indicates that the use of a PAPR is appropriate.

ii. Use of Tight Fitting PAPRs

- Only use tight fitting PAPRs after consulting with Workplace Health

6.2 Assigned Protection Factors

Respirators are given an assigned protection factor according to the level of protection the respirator can be expected to provide. Appendicies H, I and J identify the assigned protection factors recognized by WorkSafeBC for air purifying respirators used.

6.3 Cartridges and Filters for Elastomeric Respirators

Elastomeric ("re-usable") respirators use filters and/or cartridges to clean the air that a wearer is inhaling. It is important to know what airborne contaminants are present in the immediate environment so that the proper filter/cartridge can be chosen. Failure to do so may result in staff exposure to a harmful substance.

Cartridges are marked with a specific colour code to identify which contaminant(s) they are designed to remove (see Table F for a list of common colour codes). It is important to note that these colour codes should be used as a guide only.

In addition to the above, the chosen filter/cartridge must match the chosen respirator brand (for example, 3M respirators must only be used with 3M cartridges; North respirators must only be used with North cartridges).

Prior to implementing respiratory protection (and/or changing the type of cartridge utilized), managers/employees should request that an Workplace Health Safety Advisor from PHSA Workplace Health review the situation.

6.3.1 Filters

Filters are made of fibrous material that contain an electrostatic charge They are designed to provide protection against particulate contaminants such as viruses, bacteria and dust. They do not provide protection against chemicals.

6.3.1.1 Particulate Filter Classifications

There are nine classes of particulate filters with NIOSH approval for non-powered air purifying respirators. The classifications are based on filtration efficacy of 0.3 micron-sized particulate and resistance to airborne oil mists.

a. Resistance to Oil Mist

All particulate respirators are categorized into one of three classes:

"N": **N**ot oil-resistant. May only be used in environments free of oil mist.

"R": **R**esistant to oil. May be used in environments with or without oil mist. If used in an environment containing oil mist, they may only be used for one 8-hour shift, whether used continuously or intermittently.

"P": Oil-**P**roof. May be used in environments with or without oil mist. If used in an environment containing oil mist, they may be used for more than one 8-hour shift. In order to determine when the filter must be changed, a change-out schedule must be completed.

b. Filtration Efficacy

The "N", "R", and "P" classifications are further categorized according to their levels of filter efficiency.

"95": At least 95% efficient in removing particles 0.3 microns in diameter.

"99": At least 99% efficient in removing particles 0.3 microns in diameter.

"100": At least 99.97% efficient in removing particles 0.3 microns in diameter.

The result is filters with ratings as such: N95, R95, P100, etc. The most common filters used in healthcare are N95 and P100.

Within PHSA, filters used for elastomeric respirators (non-powered air purifying) will be P-100 unless otherwise approved by that organization's Workplace Health

6.4 Powered Air Purifying Respirator (PAPR) Cartridges, Canisters & Filters

Refer to PAPR guidelines (Appendix K).

7 CHANGE-OUT PROCEDURES AND SCHEDULES

Respirator filters and cartridges do not function indefinitely and their service life can be affected by a number of parameters, including the:

- Environment (i.e. temperature, humidity, pressure);
- Level and type of contamination;
- Physical characteristics (e.g. size/volume) of the air-purifying element;
- Level of exertion of the wearer (i.e. breathing rate and volume); and
- Respirator useage pattern (i.e. continuous or intermittent).

Respirator users should never rely on a chemical contaminant's warning properties as the primary means of determining whether a filter/cartridge should be replaced.

Instead, a proper change-out schedule should be developed. This may mean following the cartridges' built-in end-of-service-life indicator (ESLI); however, if this feature is not present, a change-out schedule must be calculated by a Safety Advisor utilizing the template provided in Appendix K.

The method for calculating the change-out schedule is based on the model developed by Wood (1994). This mathematical model is outlined in Appendix L for reference.

Where a worker detects odour or experiences any contaminant induced irritation prior to the end of the change out schedule, that person must notify his/her supervisor. The supervisor should consult with Workplace Health regarding re-evaluating the change-out schedule

Finally, as opposed to cartridges that filter chemical contamination, particulate filters shall be replaced if they become damaged or significantly contaminated, it becomes difficult to breath through the filter or per the employer's change out schedule e.g. infection control practices.

8 FIT-TESTING

An employee must not utilize a respirator unless s/he has been first fit-tested. Once fit-tested, an employee must only use respirator model to which they have been fit-tested within the past year. Under no circumstances shall a staff member be issued, or be required to wear, a respirator model which he/she has not been fit-tested on, or for which the fit-test failed.

Departments with job classifications mentioned in Appendix C, high risk occupations will be prioritized for fit testing. During non-outbreak situations, to determine a need for fit testing for occupations not included in the appendix, please refer to the hazard assessment form (Appendix B).

Fit testing frequency will take place according to WSBC regulations and CSA standards.

Fit-testing will be provided by:

- Fit testers having successfully completed the Workplace Health respirator fit-tester training session, or
- Workplace Health
- External contractors approved/recognized by Workplace Health

Students working in healthcare facilities will be fit tested by their educational institutions as per the practice guidelines.

8.1 Fit-Test Methods

All health authorities follow fit testing methodologies outlined in CSA standard and referenced in WSBC regulations.

a. *Qualitative F*it-Tests rely on a person's ability to detect a particular test agent (Bitrex and Saccharine) while wearing a respirator.

b. *Quantitative* fit-tests involve the use of specialized equipment that measures the amount of the ambient air leaking into the facepiece.
Quantitative fit-tests will be utilized for any tight-fitting respirator with an assigned protection factor greater than 10. In addition, quantitative fit-tests may also be utilized for N95 respirators where required (i.e. after an unsuccessful/uncertain fit-testing result using qualitative fit-test methodologies).

8.2 Qualitative Fit-Testing

Qualitative fit-tests will utilize a 3M™ FT-30 Qualitative Fit-Test Apparatus (Bitter) as the primary option. This type of fit-test apparatus is commonly referred to as the "Bitrex" fit-test kit, because of the use of Bitrex as the test agent.

In situations where the Bitrex fit-test kit cannot be utilized (e.g. worker is not sensitive to the solution or had an adverse reaction to Bitrex in the past), alternate qualitative fit test agents or a quantitative method may be used.

8.2.1 Procedure

The procedure for qualitative fit-testing is contained in Appendix M**.**

8.2.2 Record Keeping

Fit test information will be recorded on the *Respiratory Fit-Test Record* form (Appendix C), Fit Test Card (Appendix O) and/or directly in the Fit-test Database.

8.3 Quantitative Fit-Testing

Quantitative fit-testing will be accomplished through the use of a Portacount.

Quantitative fits tests are conducted when:

- The qualitative fit-test agent cannot be detected by the staff member.
- When a staff member was not successfully fit tested via qualitative testing.
- Special situations arise, such as where a staff member has a health condition that prevents qualitative fit test methodology eg.is sensitive to the qualitative fit test agents or claustrophobic.

The procedures for conducting a quantitative fit-test with the TSI Portacount are outlined in Appendix N.

8.4 Failed Fit-Tests

Where an employee fails a fit-test on a particular respirator model, appropriate adjustments (if applicable) will be made with the respirator and a second fit-test will be attempted. If the second fit-test is not successful, an additional fit test will occur using a different respirator style (where available).

When all options to fit test an employee are exhausted,the employee will not be permitted to perform tasks requiring the use of a tight-fitting respirator. Instead, the use of an alternate means of protection will be evaluated with management, the staff member, and any relevant stakeholder (e.g. PHSA Workplace Health). Potentially, this will involve the use of a loose-fitting Powered Air Purifying Respirator (PAPR) or re-assignment of duties.

9 USER SEAL CHECKS

When wearing a a tight-fitting respirator, the user must perform a “user seal check” (also known as a, “fit check”) to ensure that there is an adequate seal between the respirator and his/her face. User seal checks must be performed each time a respirator is donned.

Note: User seal/fit checks are not substitutes for fit-tests.

9.1 User Seal/Fit Checks for Elastomeric Half-Facepiece or Full-Facepiece Respirators

Wearers must complete both a positive and negative pressure check as described in Appendicies H and I.

9.2 Failure of Negative or Positive Pressure Seal/Fit Checks

If either the positive or negative pressure seal/fit checks fail, the user must not enter the contaminated area(s). Instead, s/he should notify his/her supervisor/manager.

Where the seal/fit check provides the user concerns (i.e. excessive leakage), s/he should not use the respirator. Instead, s/he should inform his/her supervisor/manager who will then consult withWorkplace Health.

10 EDUCATION AND TRAINING

10.1 Health Authority Employee Fit-Testers

The fit-testing of half- and full-facepiece elastomeric respirators as well as any associated education/training will be conducted by PHSA Workplace Health. No other individual or group shall provide these services without first receiving written approval from Workplace Health.

PHSA employees may be trained to provide N-95 respirator qualitative fit-testing.

Candidates selected to conduct fit-testing must first complete a "Train-the-Fit-Tester" session administered by the PHSA Workplace Health Refresher education and/or training will be offered at least annually to ensure that trained employees maintain appropriate fit-testing skills/abilities.

10.2 Departments that May Employ N-95 Respirator Fit-Testers

Departments that may utilize employees trained as fit-testers include, but are not limited to:

- Emergency Departments,
- Respiratory Departments,
- Medical Imaging Departments,
- Laboratories, and
- Units with negative pressure isolation rooms.

10.3 Content for Respirator Fit-Test Train the Tester Training Sessions

An N-95 Respirator Fit-Test (Education/Training) Session for staff will include both theoretical and practical components. The following topics arecovered during the education/training component of the session:

- Health Surveillance;
- Rationale for wearing a respirator;
- Principles of respiratory protection;
- Overview of respirators;
  - Inspection
  - Maintenance (where applicable)
  - Storage
  - Limitations
- Donning and doffing (see Appendix P);
- User seal/fit check;
- Fit-test procedure (including a demonstration); and
- Review of additional information regarding safe use.

A document entitled, "*Frequently Asked N-95 Disposable Respirator Questions"* is available (see Appendix Q). It is recommended that this be provided to affected leaders/employees upon request or situated on each Health Authority's Intranet/Internet.

10.4 Documentation/Curriculum Associated with Fit-Test Train-the-Tester Training.

The Fit-Test Train-the-Tester The curriculum associated with the Fit-Test Train-the-Tester Classroom Course is available by registering through the Learning Hub. The curriculum utilizes the following resources. These documents are available from Workplace Health.

- *Qualitative Fit-Testing of N95 Respirators - Trainer Handbook*
- *Fit-testing Train-the-Fit-Tester Tester(N95) PowerPoint Presentation*
- *Qualitative Fit-Testing of N95 Respirators - Train-the-Tester Quiz*
- *Observation Checklist Qualitative Fit Test*
- *Observation Checklist Quantitative Fit Test*

10.5 Additional Education/Training for Staff Wearing Respirators

Staff will receive education/training during annual fit-testing. Additional education/ training must be provided if requested by an employee required to wear respiratory protection or if workplace observation reveals that the employee is not able to utilize this equipment in an appropriate/safe manner.

Education/training and fit-testing may be provided by:

a. Employee Fit-Testers who have successfully completed the necessary Train-the-Fit-Tester curriculum;
b. A member of the PHSA Workplace Health; and/or
c. A Safety Advisor/Consultant recognized by PHSA Workplace Health to be qualified to provide such services on behalf of the PHSA.

11 RESPIRATOR MAINTENANCE

Respirator maintenance applies to elastomeric half-facepiece, full-facepiece respirators and powered air purifying respirators (PAPR's). Frequent inspection of these respirators is essential in ensuring that they are not damaged or malfunctioning. The employee must inspect the respirator before donning it, and again when cleaning it. The respirator should be cleaned and disinfected after each use.

Maintenance, including cleaning/disinfecting and repairing must not be conducted for disposable filtering facepiece respirators (including N-95 respirators).

Appendices H, I and J provides respirator use and maintenance instructions.

12 DOCUMENTATION/RECORDKEEPING

12.1 Forms

The following forms are associated with the Respiratory Protection Program: These forms have been decided upon through provincial collaboration and must be modified collaboratively.

Original forms will be kept and maintained by individual departments. Copies of completed forms will be provided to Workplace Health by email at workplacehealth@phsa.ca.

12.1.1 Hazard Assessment Form (Appendix B)

12.1.2 Respirator Fit-Test Form (Appendix C)

The *Respirator Fit-Test Form* serves the purpose of collecting the required information as well as information about the fit-test and the respirator models tested.

Note: Health Surveillance is required before issuing a respirator.

12.1.3 Medical Evaluation for Respirator Use (Appendix E)

Where an employee indicates a health concern regarding respirator use, a *Medical Evaluation for Respirator Use Form* will be completed.

12.1.4 Respiratory Cartridge Change-Out Schedule Form (Appendix L)

To determine cartridge service life, often a respirator cartridge change-out schedule is required. The *Respiratory Cartridge Change-Out Schedule Form* serves the purpose of collecting the required information.

12.2 Database

All fit-test information will be maintained on an electronic database. Workplace Health will:

a. Maintain the database;
b. Ensure that relevant data (e.g. fit-test forms) is entered by an authorized Workplace Health representative and/or delegate.

13 PROGRAM EVALUATION

The Respiratory Protection Program will be evaluated on an ongoing basis to ensure compliance with applicable regulations and standards.

A full review and evaluation of the Program will occur every two years; the next assessment will be September, 2015. It will involve an OH&S Professional from each of the Health Authorities .

To determine the strengths/weakness of the current Program, this process may include a review of the following elements:

- Content of the written Program;
- Efficacy of related education/training for Fit-Testers;
- Participation rates (number of trained-fit-testers per required department(s) and number of staff with current N95 fit-tests).

14 DEFINITIONS

Aerosol	A particulate suspended in a gaseous medium.
Aerosol-Generating Medical Procedures (AGMPs)	Any procedure (medical or surgical) carried out on a patient that can induce the production of aerosols of various sizes, including droplet nuclei. Examples include: non-invasive positive pressure ventilation, endotracheal intubation, respiratory/airway suctioning, high-frequency oscillatory ventilation, nasopharyngeal aspiration/swab, tracheostomy care, chest physiotherapy, aerosolized or nebulized medication administration, diagnostic sputum induction, bronchoscopy procedure, or autopsy of lung tissue.
Air-Purifying Respirator	A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
Air-Supplying Respirator	A Respirator and air supply hose with a hood/helmet, a tight-fitting facepiece, or a loose-fitting facepiece/visor that is supplied with compressed breathing air from a compressed breathing air system. Note: This type of respirator is not covered within the scope of this document.
ANSI	American National Standards Institute.
Assigned Protection Factor	The anticipated level of respiratory protection that would be provided by a properly functioning respirator or class of respirators to properly fitted and trained users.
Breakthrough	When an air-purifying cartridge or canister is saturated with a contaminant, the contaminant will penetrate or “breakthrough” the cartridge.
Cartridge	A detachable element of a respirator, usually utilizedin pairs, that filters harmful vapours and/or gases in breathable air.
Challenge Agent	The mixture (either Bitrex, Saccharine, or Irritant Smoke) to which an individual undergoing qualitative fit testing is exposed.

Change-out Schedule	A specified time period after which a chemical cartridge must be replaced. This time period may be established after consideration of the service life estimate, workplace conditions such as contaminant concentration, relative humidity, temperature, work activities, respirator use pattern (e.g. continuous or intermittent use), presence of other materials, potential for contaminant migration/desorption, health effects of the gas or vapour, and quality of warning properties, if any.
Contaminant	A harmful, irritating, or nuisance material in the air, usually occurring in the form of a dust, mist, fume, gas, or vapour.
Confined Space	A space such as a tank, silo, storage bin, process vessel, sewer, or other enclosure not designed or intended for human occupancy.
CSA	Canadian Standards Association.
Doff (Doffing)	The act of removing an article of clothing or personal protective equipment (e.g. respirator).
Don (Donning)	The act of putting on an article of clothing or personal protective equipment (e.g. respirator).
Dust	Fine solid particles dispersed in air, which have been formed by mechanical means such as grinding, crushing, blasting or drilling.
End-of-Service-Life-Indicator	A system that warns the respirator user that a cartridge/filter is no longer effective.
Fibre	A basic form of matter, with a: a. Length to width ratio greater than 3:1; b. Width less than 3 microns; and c. Length greater than 5 microns.
Filter	Filters are made of fibrous material that traps particles. Respirators that use filters provide protection against particulate contaminants.
Fit-Check	(see User Seal/Fit Check)
Fit-Factor	The particle concentration outside the respirator divided by the particle concentration inside the respirator ($FF=C_{out}/C_{in}$). The Overall Fit Factor shall be calculated as follows: Overall FF=1/Average overall penetration. A person shall be considered to have passed the fit test if the overall fit factor equals or exceeds the minimum required fit factor.

Fit-Test	The method of evaluating the fit of a specific make/ model/size of respirator for a specific individual. See definitions for, “Qualitative Fit Test” and “Quantitative Fit Test.”
Full-Facepiece (Elastomeric)	Respirator that covers from above the eyes to below the chin. Filters and/or cartridges are attached to provide protection.
Fume	Solid airborne particles generated from processes that melt substances (e.g. welding) ; often accompanied by a chemical reaction (e.g. oxidation).
Gas	A substance that is in the gaseous state at ambient temperature and pressure.
Half-Facepiece (Elastomeric)	This type of respirator covers from above the nose to below the chin.
Half-Facepiece (Filtering Facepiece)	This type of respirator covers from above the nose to below the chin. The entire facepiece serves as a filter (i.e. there are no filters or cartridges attached).
Hazardous	Refers to the existence or potential existence of an unsafe or harmful condition, substance or circumstance.
Hazardous Atmosphere	Any atmosphere that is oxygen deficient, exceeds occupational exposure limits, presents a fire or explosion hazard, or contains an airborne toxic or disease-producing contaminant in concentrations deemed to be a hazardous.
High-Efficiency Particulate Air (HEPA) Filter	A filter that has been tested to ensure efficiency equal to, or in excess of, 99.97% for removal of particles having a mean aerodynamic diameter of 0.3 μm from the air.
Immediately Dangerous to Life and Health (IDLH)	An atmosphere that poses an immediate threat to life or that will cause irreversible adverse health effects or impair an individual’s ability to escape.
Lower Explosive Limit (LEL)	The concentration of a gas or vapour below which a flame does not spread on contact with a source of ignition.
Mist	Liquids particles in a gaseous medium.
N-95 Disposable Respirator	A type of half-facepiece (filtering facepiece respirator); “N-95” refers to the efficiency of this type of respirator.
NIOSH	National Institute for Occupational Health and Safety (US).
Non-Powered Air Purifying Respirator	A type of air purifying respirator that uses a wearer’s breathing (inhalation) to draw air through the air purifying unit.

Odour Threshold	The lowest concentration of a contaminant in air that can be detected by smell.
Oxygen Deficient	An atmosphere that contains less than 18% of oxygen. Air-purifying respirators are not approved for use in oxygen concentrations below 19.5%.
Permissible Concentration	The maximum concentration of an airborne substance to which a worker is permitted to be exposed by regulation.
Powered Air Purifying Respirator (PAPR)	A type of air purifying respirator that uses a mechanical blower to force air through the air-purifying element.
Qualitative Fit-Test	Process to assess the adequacy of a respirator's fit using a pass/fail methodology that relies on the subject's sensory response to detect a challenge agent.
Quantitative Fit-Test	Process to assess the adequatcy of a respirator's fit using a methodology that employs the use of an instrument that assesses the degree of leakage into the respirator.
Respirator	Personal Protective Equipment that protects a user from inhaling hazardous materials.
Upper Explosive Limit (UEL)	The concentration of a gas or vapour above which a flame does not spread on contact with a source of ignition.
User Seal/Fit Check	An action conducted by the respirator user to determine whether his/her respirator is properly sealing to his/her face.
Vapour	The gaseous state of a substance that is solid or liquid at ambient temperature and pressure.
Warning Property	A property of a contaminant, such as smell, taste, or irritation that alerts the user when his/her respirator's cartridge(s) or canister(s) is/are saturated and need replacement.

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16 APPENDICES

Appendix A – Hazard Assessment Form

Appendix B – Job Classifications

Appendix C – Respiratory Protection Options

Appendix D – Infectious Respiratory Hazards Assessment

Appendix E – Respirator Fit-Test Record Form

Appendix F – Medical Evaluation for Respirator Use Form (Package)

Appendix G – N95 Guidelines

Appendix H – Elastomeric Guidelines

Appendix I – PAPR Guidelines

Appendix J – Respirator Cartridge Change-Out Schedule Form

Appendix K– Wood mathematical model for estimating breakthrough time for a single contaminant

Appendix L – Qualitative Fit-Test Instructions

Appendix M – Quantitative Fit-test Instructions

Appendix N – Fit Test Card

Appendix O – Respirator Donning/Doffing Instructions

Appendix A Hazard Assessment Form

Hazard Assessment for Respiratory Contaminants Other than Infectious Disease

Manager/Supervisor or designate must:

1) Identify potential respiratory hazards in the workplace/department using the checklist on the following page, e.g. check MSDS for WHMIS controlled products, etc.
2) In consultation with employees and/or Joint Occupational Health and Safety Committee implement additional control measures and update written work procedures, if required, to reduce potential exposure to each contaminant using the hierarchy of controls:
   I. Substitution/Elimination – eliminate or substitute harmful substances with less toxic ones, when possible
   II. Engineering – enclose process, e.g. general ventilation, local exhaust (fume hood, grossing station, bio-safety cabinet), etc. to reduce concentration of contaminants
   III. Administrative – education and training, work flow, staff rotation, written work procedures
   IV. Personal Protective Equipment – respirator, gloves, eye protection, gowns, coveralls, safety footwear, etc.

Hazard Assessment Checklist

Assessment Date:	Site:
Manager Name:	Department:
Worker/Employee Rep(s):	

Type of Hazard	Y/N	Contaminant (List Name)	Current Implemented Control Measures	Control Measures to be Developed
PARTICULATES				
Dusts / Fibres Solid materials broken down from processes such as sanding, milling, cutting, crushing, grinding, or drilling, casting material, laser smoke plume				
Mists Airborne drops of liquid, e.g. acid based cleaners, aerosol from cleaning/sterilizing equipment				
Fumes Produced by processes such as welding, soldering, and brazing.				
Biological contaminants Moulds and pathogens found in bird and rodent droppings, fungi/mould, grain dust, spores, and dander				
GASES				
Materials that exist as individual molecules in the air at normal room temperature and air pressure, e.g. carbon monoxide, chlorine, nitrous oxide, anaesthetic gases				
VAPOURS				
Liquids that can easily evaporate at room temperature; e.g. solvents such as paint thinners, alcohol, xylene, formaldehyde				

For gas and vapour airborne contaminants, an elastomeric type respirator must be used with agent specific cartridges attached. For some particulates, depending on concentration of the contaminant, an N95 respirator may be used.

Contact Workplace Health to assist with determination of contaminants, control measures and work procedures.

Appendix B Job Classifications

High Priority Departments and Occupations for N95 Fit-testing

Summary List of Departments
Emergency
ICU
Respiratory
Diagnostic Imaging
Nursing Units with Negative Pressure
Labs
Portering
Housekeeping
Physiotherapists (for those required to perform chest physio)
Home and Community Care
Nursing in Rural/Remote areas
TB/Street Nurses

Department	Subfamily	Classification Code	Classification Name
EMERGENCY	Care Aide	15301	Nursing Assistant I
EMERGENCY	Combined Laboratory/X-Ray Technologist	32950	Combined Laboratory/X-Ray Technologist - Staff (Diploma)
EMERGENCY	Housekeeping	11002	Cleaner
EMERGENCY	Housekeeping	96380	Cleaner
EMERGENCY	Housekeeping	80300	Housekeeper
EMERGENCY	Housekeeping	77440	Housekeeping Aide
EMERGENCY	Housekeeping	11001	Housekeeping Aide
EMERGENCY	Housekeeping	97440	Housekeeping Aide
EMERGENCY	Housekeeping	97450	Housekeeping Supervisor
EMERGENCY	Housekeeping	77450	Housekeeping Supervisor
EMERGENCY	Housekeeping	11005	Housekeeping Supervisor 1
EMERGENCY	Housekeeping	11006	Housekeeping Supervisor 2
EMERGENCY	Housekeeping	11007	Housekeeping Supervisor 3
EMERGENCY	Housekeeping	11008	Housekeeping Supervisor 4

Department	Subfamily	Classification Code	Classification Name
EMERGENCY	Housekeeping	78940	Worker - Laundry/Janitor/Cleaner
EMERGENCY	LPN	15316	Licensed Practical Nurse
EMERGENCY	LPN	77610	Licensed Practical Nurse
EMERGENCY	LPN	81202	Licensed Practical Nurse
EMERGENCY	LPN	97610	Licensed Practical Nurse
EMERGENCY	LPN	15305	Nursing Assistant II
EMERGENCY	LPN	98240	Practical Nurse
EMERGENCY	LPN	78240	Practical Nurse
EMERGENCY	Nurse	96140	Assistant Head Nurse
EMERGENCY	Nurse	21200	Assistant Head Nurse - All
EMERGENCY	Nurse	21202	Charge Nurse - All
EMERGENCY	Nurse	22202	Clinical Resource Nurse
EMERGENCY	Nurse	76580	Clinical Resource Nurse
EMERGENCY	Nurse	21208	Clinical Resource Nurse - Acute
EMERGENCY	Nurse	21001	Direct Patient Care - Profile Classification - Level 1
EMERGENCY	Nurse	21002	Direct Patient Care - Profile Classification - Level 2
EMERGENCY	Nurse	21003	Direct Patient Care - Profile Classification - Level 3
EMERGENCY	Nurse	21004	Direct Patient Care - Profile Classification - Level 4

Department	Subfamily	Classification Code	Classification Name
EMERGENCY	Nurse	21118	General Duty Nurse - Emergency
EMERGENCY	Physicians? Code?		
EMERGENCY	Admitting Clerk		
EMERGENCY	Undergraduate Nurse	24010	Undergraduate Nurse
ICU	Care Aide	15301	Nursing Assistant I
ICU	Housekeeping	11002	Cleaner
ICU	Housekeeping	96380	Cleaner
ICU	Housekeeping	80300	Housekeeper
ICU	Housekeeping	77440	Housekeeping Aide
ICU	Housekeeping	11001	Housekeeping Aide
ICU	Housekeeping	97440	Housekeeping Aide
ICU	Housekeeping	97450	Housekeeping Supervisor
ICU	Housekeeping	77450	Housekeeping Supervisor
ICU	Housekeeping	11005	Housekeeping Supervisor 1
ICU	Housekeeping	11006	Housekeeping Supervisor 2
ICU	Housekeeping	11007	Housekeeping Supervisor 3
ICU	Housekeeping	11008	Housekeeping Supervisor 4
ICU	Housekeeping	78940	Worker - Laundry/Janitor/Cleaner
ICU	Nurse	21001	Direct Patient Care - Profile Classification - Level 1
ICU	Nurse	21002	Direct Patient Care - Profile Classification - Level 2
ICU	Nurse	21003	Direct Patient Care - Profile Classification - Level 3
ICU	Nurse	21004	Direct Patient Care - Profile Classification - Level 4
ICU	Nurse	97190	General Duty Nurse - Acute Care

Department	Subfamily	Classification Code	Classification Name
ICU	Nurse	21108	General Duty Nurse - Critical Care
ICU	Nurse	21122	General Duty Nurse - Float
ICU	Nurse	21126	General Duty Nurse - Intensive Care Unit
ICU	Nurse	77310	Head Nurse
ICU	Nurse	97310	Head Nurse
ICU	Nurse	25304	Head Nurse - All
ICU	Nurse	21248	Team Leader
ICU	Nurse	98820	Team Leader
ICU	Nurse	29996	Unlisted Nurse Classification Level 1
ICU	Nurse	29997	Unlisted Nurse Classification Level 2
ICU	Nurse	29998	Unlisted Nurse Classification Level 3
ICU	Nurse	29999	Unlisted Nurse Classification Level 4
ICU	Resident	99100	Resident I
ICU	Resident	99200	Resident II
ICU	Resident	99300	Resident III
ICU	Resident	99400	Resident IV
ICU	Resident	99500	Resident V
ICU	Resident	99600	Resident VI
ICU	Resident	99700	Resident VII
ICU	Resident	99799	Unlisted Classification
ICU	Undergraduate Nurse	24010	Undergraduate Nurse
ICU	Physicians? Code?		
RESPIRATORY	Respiratory Therapist	98550	Respiratory Therapist
RESPIRATORY	Respiratory Therapist	65100	Respiratory Therapist I
RESPIRATORY	Respiratory Therapist	65200	Respiratory Therapist II

Department	Subfamily	Classification Code	Classification Name
RESPIRATORY	Respiratory Therapist	65300	Respiratory Therapist III
RESPIRATORY	Respiratory Therapist	65400	Respiratory Therapist IV
RESPIRATORY	Respiratory Therapist	65500	Respiratory Therapist V
RESPIRATORY	Respiratory Therapist	65600	Respiratory Therapist VI
RESPIRATORY	Respiratory Therapist	65800	Respiratory Therapist VI + 10%
RESPIRATORY	Respiratory Therapist	65700	Respiratory Therapist VI + 5%
RESPIRATORY	Respiratory Therapist	98560	Respite/Companion Worker
DIAGNOSTIC IMAGING	Combined Laboratory/X-Ray Technologist	32950	Combined Laboratory/X-Ray Technologist - Staff (Diploma)
DIAGNOSTIC IMAGING	Combined Laboratory/X-Ray Technologist	32951	Combined Laboratory/X-Ray Technologist - Staff (Diploma)(WS)
DIAGNOSTIC IMAGING	Combined Laboratory/X-Ray Technologist	32952	Combined Laboratory/X-Ray Technologist - Supervisor
DIAGNOSTIC IMAGING	Medical Radiation Technologist	46100	Medical Radiation Technologist I
DIAGNOSTIC IMAGING	Medical Radiation Technologist	46200	Medical Radiation Technologist II
DIAGNOSTIC IMAGING	Medical Radiation Technologist	46300	Medical Radiation Technologist III
DIAGNOSTIC IMAGING	Medical Radiation Technologist	46400	Medical Radiation Technologist IV
DIAGNOSTIC IMAGING	Medical Radiation Technologist	46500	Medical Radiation Technologist V
DIAGNOSTIC IMAGING	Medical Radiation Technologist	46600	Medical Radiation Technologist VI

Department	Subfamily	Classification Code	Classification Name
DIAGNOSTIC IMAGING	Medical Radiation Technologist	46800	Medical Radiation Technologist VI + 10%
DIAGNOSTIC IMAGING	Medical Radiation Technologist	46700	Medical Radiation Technologist VI + 5%
DIAGNOSTIC IMAGING	Medical Radiation Technologist	97740	Medical Radiography Tech
DIAGNOSTIC IMAGING	Nurse	21132	General Duty Nurse - Medical/Diagnostic Imaging
LABS	Lab Assistants	97520	Lab Assistant
LABS	Lab Assistants	15201	Lab Assistant I
LABS	Lab Assistants	15202	Lab Assistant II
LABS	Lab Assistants	15205	Lab Assistant II (A)
LABS	Lab Assistants	15203	Lab Assistant III
LABS	Lab Assistants	15204	Lab Assistant IV
LABS	Lab Assistants	84100	Laboratory Assistant
PORTERING	Nursing Assistants	98210	Porter/Patient
PORTERING	Nursing Assistants	15310	Porter/Patient (No Benchmark)
NURSING WITH NEGATIVE PRESSURE	LPN	15316	Licensed Practical Nurse
NURSING WITH NEGATIVE PRESSURE	LPN	77610	Licensed Practical Nurse
NURSING WITH NEGATIVE PRESSURE	LPN	81202	Licensed Practical Nurse
NURSING WITH NEGATIVE PRESSURE	LPN	97610	Licensed Practical Nurse
NURSING WITH NEGATIVE PRESSURE	LPN	15305	Nursing Assistant II

Department	Subfamily	Classification Code	Classification Name
NURSING WITH NEGATIVE PRESSURE	LPN	15317	Operating Room – Licensed Practical Nurse
NURSING WITH NEGATIVE PRESSURE	LPN	98240	Practical Nurse
NURSING WITH NEGATIVE PRESSURE	LPN	78240	Practical Nurse
NURSING WITH NEGATIVE PRESSURE	Nurse	96075	Agency Nurse
NURSING WITH NEGATIVE PRESSURE	Nurse	96140	Assistant Head Nurse
NURSING WITH NEGATIVE PRESSURE	Nurse	21200	Assistant Head Nurse - All
NURSING WITH NEGATIVE PRESSURE	Nurse	21202	Charge Nurse - All
NURSING WITH NEGATIVE PRESSURE	Nurse	22202	Clinical Resource Nurse
NURSING WITH NEGATIVE PRESSURE	Nurse	76580	Clinical Resource Nurse
NURSING WITH NEGATIVE PRESSURE	Nurse	21208	Clinical Resource Nurse - Acute
NURSING WITH NEGATIVE PRESSURE	Nurse	21001	Direct Patient Care - Profile Classification - Level 1

Department	Subfamily	Classification Code	Classification Name
NURSING WITH NEGATIVE PRESSURE	Nurse	21002	Direct Patient Care - Profile Classification - Level 2
NURSING WITH NEGATIVE PRESSURE	Nurse	21003	Direct Patient Care - Profile Classification - Level 3
NURSING WITH NEGATIVE PRESSURE	Nurse	21004	Direct Patient Care - Profile Classification - Level 4
NURSING WITH NEGATIVE PRESSURE	Nurse	97190	General Duty Nurse - Acute Care
NURSING WITH NEGATIVE PRESSURE	Nurse	21102	General Duty Nurse - Adult/Geriatrics
NURSING WITH NEGATIVE PRESSURE	Nurse	21104	General Duty Nurse - Ambulatory Care
NURSING WITH NEGATIVE PRESSURE	Nurse	21106	General Duty Nurse - Cardiology
NURSING WITH NEGATIVE PRESSURE	Nurse	21108	General Duty Nurse - Critical Care
NURSING WITH NEGATIVE PRESSURE	Nurse	21110	General Duty Nurse - Day Room/Outpatient
NURSING WITH NEGATIVE PRESSURE	Nurse	21112	General Duty Nurse - Diabetes
NURSING WITH NEGATIVE PRESSURE	Nurse	21114	General Duty Nurse - Discharge Planning/Booking

Department	Subfamily	Classification Code	Classification Name
NURSING WITH NEGATIVE PRESSURE	Nurse	21118	General Duty Nurse - Emergency
NURSING WITH NEGATIVE PRESSURE	Nurse	21120	General Duty Nurse - Extended Care
NURSING WITH NEGATIVE PRESSURE	Nurse	77200	General Duty Nurse - Extended Care
NURSING WITH NEGATIVE PRESSURE	Nurse	97200	General Duty Nurse - Extended Care
NURSING WITH NEGATIVE PRESSURE	Nurse	21122	General Duty Nurse - Float
NURSING WITH NEGATIVE PRESSURE	Nurse	97210	General Duty Nurse - Home Care
NURSING WITH NEGATIVE PRESSURE	Nurse	21124	General Duty Nurse - Home Care
NURSING WITH NEGATIVE PRESSURE	Nurse	77210	General Duty Nurse - Home Care
NURSING WITH NEGATIVE PRESSURE	Nurse	21126	General Duty Nurse - Intensive Care Unit
NURSING WITH NEGATIVE PRESSURE	Nurse	21128	General Duty Nurse - Leukemia/Bone Marrow
NURSING WITH NEGATIVE PRESSURE	Nurse	21130	General Duty Nurse - Long Term Care

Department	Subfamily	Classification Code	Classification Name
NURSING WITH NEGATIVE PRESSURE	Nurse	77220	General Duty Nurse - Long Term Care
NURSING WITH NEGATIVE PRESSURE	Nurse	97220	General Duty Nurse - Long Term Care
NURSING WITH NEGATIVE PRESSURE	Nurse	21132	General Duty Nurse - Medical/Diagnostic Imaging
NURSING WITH NEGATIVE PRESSURE	Nurse	21134	General Duty Nurse - Medical/Surgical
NURSING WITH NEGATIVE PRESSURE	Nurse	21136	General Duty Nurse - Nephrology/Renal
NURSING WITH NEGATIVE PRESSURE	Nurse	21138	General Duty Nurse - Oncology
NURSING WITH NEGATIVE PRESSURE	Nurse	21140	General Duty Nurse - Operating Room/Recovery
NURSING WITH NEGATIVE PRESSURE	Nurse	21142	General Duty Nurse - Opthamology
NURSING WITH NEGATIVE PRESSURE	Nurse	21100	General Duty Nurse - Other
NURSING WITH NEGATIVE PRESSURE	Nurse	21144	General Duty Nurse - Palliative/Hospice
NURSING WITH NEGATIVE PRESSURE	Nurse	21146	General Duty Nurse - Pediatrics

Department	Subfamily	Classification Code	Classification Name
NURSING WITH NEGATIVE PRESSURE	Nurse	21148	General Duty Nurse - Pre-Admission
NURSING WITH NEGATIVE PRESSURE	Nurse	21150	General Duty Nurse - Prenatal/Perinatal/Labour/Delivery
NURSING WITH NEGATIVE PRESSURE	Nurse	21152	General Duty Nurse - Psychiatry
NURSING WITH NEGATIVE PRESSURE	Nurse	21154	General Duty Nurse - Rehabiliation
NURSING WITH NEGATIVE PRESSURE	Nurse	21158	General Duty Nurse - Special Care
NURSING WITH NEGATIVE PRESSURE	Nurse	77310	Head Nurse
NURSING WITH NEGATIVE PRESSURE	Nurse	97310	Head Nurse
NURSING WITH NEGATIVE PRESSURE	Nurse	25304	Head Nurse - All
NURSING WITH NEGATIVE PRESSURE	Nurse	25208	Health Service Community Living (HSCL)
NURSING WITH NEGATIVE PRESSURE	Nurse	97400	Health Service Community Living (HSCL)
NURSING WITH NEGATIVE PRESSURE	Nurse	97410	Home Care Nurse

Department	Subfamily	Classification Code	Classification Name
NURSING WITH NEGATIVE PRESSURE	Nurse	77870	Nurse Clinician
NURSING WITH NEGATIVE PRESSURE	Nurse	97870	Nurse Clinician
NURSING WITH NEGATIVE PRESSURE	Nurse	21228	Nurse Clinician - Ambulatory
NURSING WITH NEGATIVE PRESSURE	Nurse	21230	Nurse Clinician - Cardiac
NURSING WITH NEGATIVE PRESSURE	Nurse	21234	Nurse Clinician - Geriatric
NURSING WITH NEGATIVE PRESSURE	Nurse	21236	Nurse Clinician - Medicine
NURSING WITH NEGATIVE PRESSURE	Nurse	21238	Nurse Clinician - Neurosciences
NURSING WITH NEGATIVE PRESSURE	Nurse	21240	Nurse Clinician - Psychiatry
NURSING WITH NEGATIVE PRESSURE	Nurse	21242	Nurse Clinician - Renal
NURSING WITH NEGATIVE PRESSURE	Nurse	21300	Nurse Manager/Head Nurse - Clinical
NURSING WITH NEGATIVE PRESSURE	Nurse	21302	Nurse Manager/Head Nurse - Crisis Stabilization

Department	Subfamily	Classification Code	Classification Name
NURSING WITH NEGATIVE PRESSURE	Nurse	21304	Nurse Manager/Head Nurse - Extended Care Unit
NURSING WITH NEGATIVE PRESSURE	Nurse	21306	Nurse Manager/Head Nurse - Intensive Care Unit
NURSING WITH NEGATIVE PRESSURE	Nurse	21310	Nurse Manager/Head Nurse - Medicine/Surgery
NURSING WITH NEGATIVE PRESSURE	Nurse	21314	Nurse Manager/Head Nurse - Operating Room/Recovery
NURSING WITH NEGATIVE PRESSURE	Nurse	21316	Nurse Manager/Head Nurse - Other
NURSING WITH NEGATIVE PRESSURE	Nurse	4250	Nurse Practitioner
NURSING WITH NEGATIVE PRESSURE	Nurse	21248	Team Leader
NURSING WITH NEGATIVE PRESSURE	Nurse	98820	Team Leader
NURSING WITH NEGATIVE PRESSURE	Nurse	29996	Unlisted Nurse Classification Level 1
NURSING WITH NEGATIVE PRESSURE	Nurse	29997	Unlisted Nurse Classification Level 2

Department	Subfamily	Classification Code	Classification Name
NURSING WITH NEGATIVE PRESSURE	Nurse	29998	Unlisted Nurse Classification Level 3
NURSING WITH NEGATIVE PRESSURE	Nurse	29999	Unlisted Nurse Classification Level 4
NURSING WITH NEGATIVE PRESSURE	Nursing Assistants	97920	Nursing Assistant
NURSING WITH NEGATIVE PRESSURE	Nursing Assistants	77920	Nursing Assistant
Housekeeping	Housekeeping	11002	Cleaner
Housekeeping	Housekeeping	96380	Cleaner
Housekeeping	Housekeeping	80300	Housekeeper
Housekeeping	Housekeeping	77440	Housekeeping Aide
Housekeeping	Housekeeping	11001	Housekeeping Aide
Housekeeping	Housekeeping	97440	Housekeeping Aide
Housekeeping	Housekeeping	97450	Housekeeping Supervisor
Housekeeping	Housekeeping	77450	Housekeeping Supervisor
Housekeeping	Housekeeping	11005	Housekeeping Supervisor 1
Housekeeping	Housekeeping	11006	Housekeeping Supervisor 2
Housekeeping	Housekeeping	11007	Housekeeping Supervisor 3
Housekeeping	Housekeeping	11008	Housekeeping Supervisor 4
Housekeeping	Housekeeping	78940	Worker - Laundry/Janitor/Cleaner
Physiotherapy	Physiotherapist	78170	Physiotherapist
Physiotherapy	Physiotherapist	98170	Physiotherapist
Physiotherapy	Physiotherapist	37100	Physiotherapist Grade I

Department	Subfamily	Classification Code	Classification
Physiotherapy	Physiotherapist	37200	Physiotherapist Grade II
Physiotherapy	Physiotherapist	37300	Physiotherapist Grade III
Physiotherapy	Physiotherapist	37400	Physiotherapist Grade IV
Physiotherapy	Physiotherapist	37500	Physiotherapist Grade V
Physiotherapy	Physiotherapist	37600	Physiotherapist Grade VI
Physiotherapy	Physiotherapist	37800	Physiotherapist Grade VI + 10%
Physiotherapy	Physiotherapist	37700	Physiotherapist Grade VI + 5%
Lab	Diagnostic	70300	Pathology - Anatomical Pathology
Lab	Diagnostic	70304	Pathology - Medical Microbiology

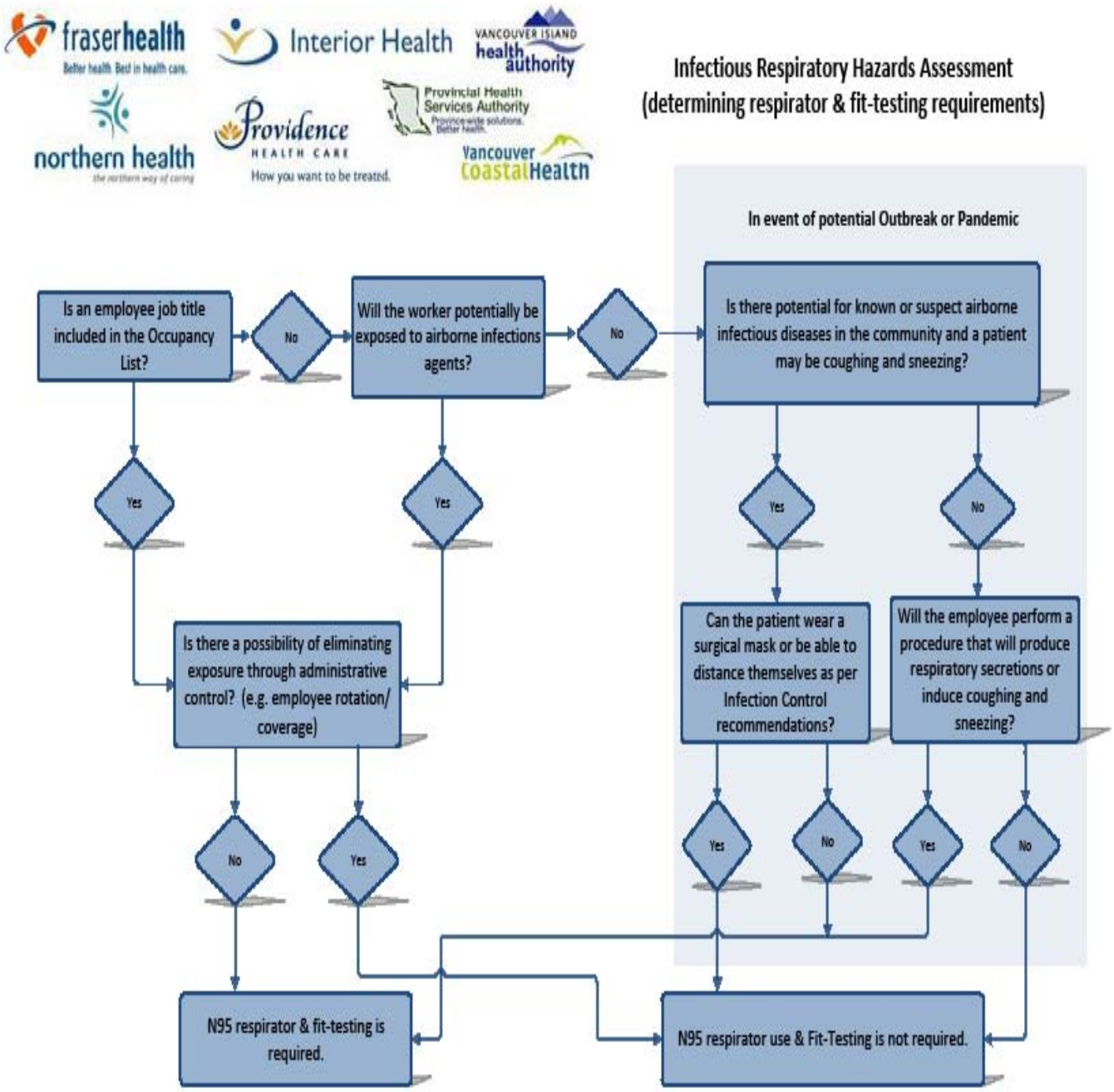
Appendix C Respiratory Protection Options

Type	When used	Advantages	Disadvantages
Disposable N95 (Tight Fitting Respirator)	▪ Most common respirator ▪ IPC Airborne Precaution in place	▪ Annual fit test provides opportunity to refresh user on proper use ▪ Low Cost (less than $1 per respirator) ▪ Several different models/sizes that fit most users ▪ No sanitation, sterilization, maintenance procedures required ▪ Quick to don/doff seal check when entering/exiting isolation areas ▪ Light weight	▪ Requires annual fit test ▪ Respirator relies on face seal to protect user ▪ Site/department needs to train/assign fit testers ▪ No protection against chemical hazards
Elastomeric (Tight Fitting Respirator)	▪ Used for those with difficulty achieving an adequate fit with a disposable respirator ▪ If protection from both infectious and non-infectious agents is required (e.g. airborne infectious agents & chemical gases or vapours) ▪ IPC Airborne Precaution in place	▪ Annual fit test provides opportunity to refresh user on proper use ▪ Medium cost > $20 per respirator ▪ Cartridges/Filters add additional cost but particulate filters may be reused ▪ Several different sizes ▪ Can also be used for protection against chemical hazards	▪ Requires annual fit test ▪ Takes some extra time to don/doff and seal check when entering/exiting isolation areas ▪ Requires additional training and attention to cleaning, sanitization after use in areas under airborne precaution ▪ Requires additional training and attention to maintenance procedures

Type	When used	Advantages	Disadvantages
Loose fitting Powered Air Purifying Respirator (PAPR)	PAPR Use is normally restricted to users: ▪ performing a high risk procedure where visual acuity is critical (e.g. intubation, bronchoscopy, etc) ▪ when providing care to chemically contaminated patients ▪ have failed fit-tests on all other models of N95 and/or tight-fitting respirators and assessment (by manager, and other departments (e.g. Infection Control, Workplace Health) indicates that the use of a PAPR is appropriate ▪ having facial hair for religious reasons. Other considerations ▪ If protection from both infectious and non-infectious agents is required (e.g. airborne infectious agents & chemical gases or vapours)	▪ Does not require annual fit testing ▪ Does not require a tight seal to users face ▪ Offers higher level of protection. ▪ Able to provide protection for chemical hazards, including chemically contaminated patients/ hazmat with appropriate canisters ▪ Just in time training may be done	▪ High initial cost (approx. $800.00) ▪ Constant care and attention to maintenance ▪ Some users may find that unit is cumbersome and heavy. ▪ Doning/doffing more involved procedure, takes more time ▪ Potential communication difficulties (related to employee ability to hear and communicate with patients). ▪ Patients may find look of PAPR intimidating

Type	When used	Advantages	Disadvantages
Fit Testing Methods (Must be used for Disposable N95 and Elastomeric Respirators)	Qualitative For disposable and elastomeric respirators	▪ Low equipment cost (Kit cost & supplies approx. $350) ▪ Training is straightforward ▪ More than one subject can be tested at once (dependant on the experience of the fit tester)	▪ Results can be subjective ▪ Some workers are not sensitive or hypersensitive to test agents
	Quantitative For disposable and elastomeric respirators	▪ Not subjective; doesn't rely on subject's ability to taste test agent ▪ Only one subject can be tested at once	▪ High equipment cost (TSI PortaCount cost approx. $15,000)

Appendix D Infectious Respiratory Hazards Assessment



Appendix E Respirator Fit-Test Record Form

RESPIRATOR FIT TEST RECORD

Version: February 2013

	To be Completed by Worker		
	Name: *(Print clearly)*	Job Title:	Date: *(yyyy/mm/dd)*
	Facility:	Department:	ID#:
	List all HA's that are you employed by?	☐ FHA ☐ IHA ☐ NHA ☐ PHC ☐ PHSA ☐ VCH ☐ VIHA	
	Indicate if you are **not** an employee of a HA:	☐ Physician ☐ Other _____	
*Health	**Please answer the following questions so we may assess your ability to safely use a respirator**		
	Do you have any condition(s) that may affect respirator use? Examples include; Chronic bronchitis, Difficulty breathing, Asthma, Other diagnosed lung disease, Claustrophobia, Panic attacks, Allergies/Sensitivities, Skin Conditions, etc. If yes, please speak with your fit tester.	☐ Yes ☐ No	
	Have you had previous difficulties being fit tested or using a respirator?	☐ Yes ☐ No	
	Do you have any concerns about your ability to be fit tested or to use a respirator safely?	☐ Yes ☐ No	
	***Note:** Further assessment may be required if "yes" to any of the above questions (Fit Tester may contact WH for next steps)*		

	To be Completed by Fit Tester							
	Test agent (Bitrex to be used unless sensitivity or previous reaction)	☐ Bitrex		☐ Saccharin ☐ N/A				
	Test agent Lot Numbers - Sensitivity Sol'n:			Fit Test Sol'n:				
	Sensitivity Test Result ☐ 10 ☐ 20 ☐ 30 ☐ Not Sensitive							
Respirator Fit Test Results		**MODEL**	**BITREX/SACCH** Pass	Fail	**PORTACOUNT** Pass	Fail	Fit Factor	**Steps to Complete a Fit-** (as applicable)
	N95	3M 1870						❑ Introduce yourself/explain
		3M 1860						❑ Staff has not eaten or drank
		3M 1860S						❑ Staff to complete Worker Section
		KC TC-84A-						❑ Conduct sensitivity test and
		KC TC-84A-						❑ Provide respirator education
		Pleats Plus						❑ Select and don respirator
		Pleats Plus						❑ Complete fit-test
		Other:						1. Normal breathing
	Half Face	3M 6100						2. Deep breathing
		3M 6200						3. Turn head side-to-side
		3M 6300						4. Nod head up-and-down
		North 7700-						5. Talk out loud
		North 7700-						6. Normal breathing
		North 7700-30L						❑ Address any remaining questions.
		Other:						Review points: annual fit testing~use model tested for~ clean shave~seal check
	Full Face	3M 6700						
		3M 6800						**Promptly send all completed fit test records to the address below.**
		3M 6900						
		Other:						

I have been fit-tested and counseled in the use, limitations, and maintenance of the above noted respirator(s).	Worker (*Signature*)
Fit Tester Comments (e.g. PPE notation, facial hair, use dentures etc.)	Fit Tester Name (*Print clearly*)

Appendix F Medical Evaluation for Respirator Use Form(Package)

Medical Evaluation for Respirator Use FORM (Package)

To assist in assessing the worker's ability to safely use a respirator

SECTION A: To be completed by Workplace Health and the Worker		
Workers Name (Print):		Date:
Facility:	Work Contact #	Dept:
Job Title:	ID:	Manager/Supervisor Name:

Some conditions can affect your ability to safely use a respirator. Answering yes, to any of the screening questions may require further assessment by a physician. **NOTE: The respirator user is NOT required to offer any medical information on this form.**

Do you have any of the following conditions or a condition not listed, that may affect respirator use?
Indicate Yes or No if any apply to you. ☐ Yes ☐ No

Chronic bronchitis *Difficulty breathing* *Asthma* *Other diagnosed lung disease*
Claustrophobia *Panic attacks* *Allergies/Sensitivities* *Skin Conditions*

Have you had previous difficulties being fit tested or using a respirator? ☐ Yes ☐ No

Do you have any concerns about your ability to be fit tested or to use a respirator safely? If yes, please contact your local Safety Advisor. ☐ Yes ☐ No

Worker Signature

_____Date_____

By signing above the worker is agreeing to take this form to a physician and be medically evaluated for use of a respirator provided under conditions identified on this form.

SECTION B: To be completed by Manager/Supervisor in consultation with Workplace Health

Activities/Tasks Requiring Use of a Respirator (consider total weight of tools/equipment carried during respirator use etc) **- specify:**

Frequency of Use:	❑ Daily	❑ Weekly	❑ Monthly	❑ Yearly	❑ Unknown
Temperature During Use:	❑ < 0°C	❑ > 0°C and < 25°C		❑ > 25°C	❑ Unknown
Duration of Use:	❑ < 15 min	❑ 15 – 120 min	❑ > 2 hrs	❑ Variable	❑ Other

Exertion Level During Use per shift:	
❑Light	Sitting with light manual work with hands or hands/arms, and driving. Standing with some light arm work and occasional walking.
❑Moderate	Sustained moderate hand and arm work, moderate arm and leg work, moderate arm and trunk work, or light pushing and pulling. Normal walking

SECTION C: Physician assessment to determine the workers ability to wear a respirator considering the workers health, the type of respirator and the conditions of respirator use. (See article attached)

Physicians Recommendations:

☐ No restrictions on respirator use.
☐ No respirator use under any circumstances.
☐ Respirator use recommended with the following *restrictions:
(*Please list the restrictions and state whether they are temporary or permanent).

Restriction Type		Recommended Restriction
☐ Permanent	☐ Temporary	
☐ Permanent	☐ Temporary	
☐ Permanent	☐ Temporary	

Physician's Signature :
_____

Name (print) : _____Date:
_____

❑Heavy	Intense arm and trunk work, carrying, shoveling, manual sawing; pushing and pulling heavy loads; walking at a fast pace.
❑Variable	

Type of respirator required for use by employee:

☐ Disposable N95 ☐ Elastomeric Half-Facepiece ☐ Elastomeric Full-facepiece

☐ Loose fitting Powered Air Purifying Respirator (PAPR)

Other types of personal protective equipment required (specify):

Manager (or Designate) Signature:
_____Date_____

1. Fit Tester - if employee indicates that medical condition may prevent respirator use, provide worker with this form.
2. Worker will take form 1) to manager/supervisor to complete section 2 then 2) to physician for assessment
3. Instruct employee to return completed form to Safety Advisor
4. If no further medical follow up required proceed with fit testing procedure.
5. If restrictions identified by physician further follow up may be required to determine ability to accommodate employee in the workplace or provide alternative protective equipment.
6. Safety Advisor send completed "**Medical Evaluation for Respirator Use**" form to Disability Management department to attach to employee health record in WHITE™.

Appendix G N95 Guidelines

Guideline: Use of N95 Respirators

What You Need to Know

N95 Respirators are a type of disposable air-purifying tight fitting respirator that protect against particulate contaminants such as dusts and bioaerosols. Properties of N95 Respirators include:

- Have a filter efficiency level of at least 95% against particulate aerosols free of oil when tested against a 0.3 micron particle. It is more efficient for particles that are smaller (viruses) or larger than 0.3 microns (bacteria).
- Provides a tight facial seal.
- NIOSH-approved as per OHS Regulation sec. 8.33(2).

Workers must be fit tested by a qualified fit tester before initial use and retested annually to ensure the respirator provides an effective seal to the users face. Respirators should only be utilized when other more effective measures of protection (elimination/substitution, fume hoods, ventilation or other engineering control) are not adequate or available.

Summary:

- Only provide protection against particulates (not gases/vapours).
- Fit Testing is required prior to first use and annually thereafter.
- Requires knowledge of how to perform seal checks and proper donning and doffing procedures.
- An individual must be clean shaven where the N95 seals with the face.
- Air-purifying respirators are not approved for use in oxygen concentrations below 19.5%.
- These are disposable and meant for single use.

Quick Links for Easy Navigation

For information on selecting, using, and disposing a N95 Respirator use the quick links below. You may copy any of the procedures or add/create new procedures specific to your tasks *(link to contents)*:

1. **Selecting the Appropriate Respirator**
2. **User Procedures**
   - **Step 1: Inspection**
   - **Step 2: Donning and Doffing**
   - **Step 3: Seal Check**
   - **Step 4: Disposal**
3. **Education and Training**
4. **Documentation**

Respirator Fit Test Record

Selecting the Appropriate N95 Respirators

N95 Respirators

N95 respirators are designed to provide a tight facial seal and therefore a worker must be fit tested prior to first use and annually thereafter. Based on the fit test result, that will be the only model of N95 respirator the worker wears.

1.1.1. Different models of Commonly used N95 respirators

Type	Make/Model	Order #
	Make: 3M Model: 1860 Size: Regular / Small	
	Make: 3M Model: 1870/9210 Size: Regular	
	Make: Kimberly Clark Model: 46767 & 46867 Size: Regular & Small	

Appendix H Elastomeric Guidelines

Guideline: Use, Cleaning, Maintenance and Storage of Reusable Elastomeric Respirators

What You Need to Know

Reusable Elastomeric Respirators (full facepiece and half facepiece) are a type of tight fitting respirator that has a flexible, rubber-like face piece with either permanent or removable filters or cartridges or both. They remove contaminants from air by passing it through the filter medium. Depending on which filter medium is used, reusable respirators provide protection from particulates/bioaerosols (e.g. Tuberculosis, Varicella or Zoster, Cytotoxic drugs, etc.) vapors/gases (e.g. Formaldehyde, Xylene) or combination thereof (e.g. laboratory chemicals).

Workers must be fit tested by a qualified fit tester before initial use and retested annually to ensure the respirator provides a proper seal to the users face. Cartridges must be selected in accordance with the hazard. Respirators should only be utilized when other more effective measures of protection (chemical elimination/substitution, fume hoods, ventilation or other engineering controls) are not feasible.

Summary:

- Fit Testing is required prior to first use and annually thereafter.
- Requires knowledge of how to perform seal checks and proper donning and doffing procedures.
- An individual must be clean shaven where the elastomeric respirator seals with the face.
- Elastomeric Respirators are reusable with some basic cleaning & disinfection.
- Elastomeric Respirators protect from variety of hazards.
- Air-purifying respirators are not approved for use in oxygen concentrations below 19.5%.
- Requires knowledge for proper maintenance and storage.

Quick Links for Easy Navigation

For information on selecting, using, maintaining, and storing an Elastomeric Respirator use the quick links below. You may copy any of the procedures or add/create new procedures specific to your tasks:

1. **Purchasing the Appropriate Respirator and Filter/Cartridge Medium**
2. **User Procedures**
   - **Step 1: Inspection**
   - **Step 2: Assembly**
   - **Step 3: Donning and Doffing**
   - **Step 4: Seal Check**
   - **Step 5: Cleaning & Storage**
3. **Education and Training**
4. **Documentation**

Respirator Fit Test Record

Filter/Cartridge Change-out Form (refer to Appendix K for form)

How do you Use an Elastomeric Respirator

1.Purchasing the Appropriate Respirator and Filter/Cartridge Medium

1.1 Respirator

Elastomeric respirators are tight-fitting and therefore a worker must be fit tested prior to first use. Based on the fit test result, purchase the model and size of respirator the worker was fit tested to.

Half face respirators fit under the chin to the bridge of the nose and must be worn with eye protection if applicable.
3M Series 6000 S,M,L

Full face respirators provide a higher level of protection. They fit over the entire face, from the hairline to under the chin, and offer eye protection.
3M Series 6000 S,M,L

1.2 Cartridge/Filter Medium

1. 2.1 3M & North

- Conduct a risk assessment and identify the chemical or bio aerosol contaminant(s). Look up the contaminant in the first column below.
- Determine whether HEPA filter is required (indicated when exposure may include particulates or airborne infectious diseases).
- Contact Workplace Health if you need any assistance

Contaminant	3M		North	
	Chemical Cartridge	**Chemical Cartridge with HEPA capacity**	**Chemical Cartridge**	**Chemical Cartridge with HEPA capacity**
Required for conducting fit test (HEPA). Particulates & Airborne infectious disease.	N/A		N/A	
		3M 2091		North 7580P100
Order #				
Organic Vapours*				
	3M 6001	3M 60921	North N75001	North 7581P100
Order #				
Organic Vapours & Acid Gas				
	3M 6003	3M 60923	North N75003	North 7583P100
Order #				
Formaldehyde and Certain Organic Vapours*				
	3M 6005	3M 60925	North N75002	North 7582P100
Order #				
Multi Gas and Certain Organic Vapours				
	3M 6006	3M 60926	North 75SC	North 75SCP100
Order #				
Mercury vapor or chlorine				
	3M 6009	3M 60929	North 750052	North 75852P100
Order #				

*Please contact your WHS specialist for a list of the organic vapours covered by this cartridge

If you are unsure of cartridge selection please consult with Workplace Health.

2. User Procedures

To ensure that the respirator is used correctly, always review manufacturer's instructions on use, storage and handling of the device**.**

Step 1: Inspection

Workers must inspect their respirators before each use (refer to the Check list for Respirator Care at the end of this document). A more thorough inspection is to be done while cleaning the respirator. Any needed maintenance must be done prior to using the respirator again.

Inspection Procedure for Half Face Respirator

- Visually inspect face piece for cracks, deformities, tears, dirt, and any modifications.
- Inspect straps. They must be elastic. Straps must have points of attachment for the face piece. No modifications are allowed.
- Inspect inhalation and exhalation valves for tears, cracks, distortion, and foreign materials (e.g., hair, lint, or dirt). Make sure valves lay flat on valve assembly. Assure that exhalation valve cover is in place and not cracked or broken.
- Inspect cartridges, cartridge holders, O-rings, threads, etc.

Inspection Procedure for Full Face Respirators

- Ensure that the lens is not scratched, cracked, or broken.
- Ensure that the lens is completely sealed.
- Ensure the area where the lens holder comes in contact with rubber is not cut or torn.
- If the respirator has a speaking diaphragm, ensure that it is in place and not punctured. Ensure the gasket is in place.
- Straps must be elastic. Straps must have points of attachment for the face piece. No modifications are allowed.
- Make sure all the clips are present and the straps are attached securely to the mask.
- Ensure that the inhalation valves are present and in good working order.

Step 2: Assembly

- Attach filters/cartridges as per manufacturer's instructions.

Step 3: Donning and Doffing

Follow instructions for donning a Half Facepiece Respirator or Full Facepiece Respirator below.

A. Donning an Elastomeric Half Facepiece Respirator

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.

B. Donning an Elastomeric Full Facepiece Respirator

1. Fully loosen all head straps. Pull hair back with one hand. Bring facepiece up to face with other hand.
2. While holding the facepiece in place, pull the straps over your head.
3. Tighten straps starting with bottom ones, moving to the middle and top straps.

C. Steps to Use of Other Personal Protective Equipment

Ensure all other appropriate protective equipment is being worn before entering **bio contaminated hazardous area** as described below.

Donning personal protective equipment (PPE) before entering room or in anteroom

1. Perform hand hygiene
2. Apply gown (as per routine practices)
3. Apply elastomeric respirator and perform user seal check in accordance with manufacturer's instructions
4. Apply protective eyewear
5. Apply new pair gloves (gloves to cover the sleeve cuff of gown if is worn)

Doffing

Before exiting patient room or anteroom

1. Remove gloves and gown
2. Perform hand hygiene

Exit room to hallway (or anteroom if provided)

3. Open door with paper towel, or
4. Open door and perform hand hygiene in anteroom or in the hall

Doffing PPE in hallway or anteroom

1. Remove eye protection (handle using side straps)
2. Perform hand hygiene
3. To remove respirator, use both hands to loosen the straps from both sides and gently pull out them over your head. Do not touch contaminated cartridges/filters.

Step 4: Seal Check

User seal checks consist of both positive and negative pressure checks as described below.

A. Positive Pressure Check

1. Put on the respirator and any other associated personal protective equipment. Tighten the straps until the respirator feels snug but comfortable. Wear the respirator for a few minutes so that it will warm up and conform to your face better.
2. Close off the exhaust valve opening by covering it with the palm of your hand and breathe out slightly to force air into the facepiece. Hold for 10 seconds.
3. If you have a good seal, the facepiece should bulge out and stay out. No air should leak out of the facepiece past the sides, top or bottom.
4. If the air does leak out, check the inhalation valves and try repositioning the respirator on your face and adjusting the head straps.
5. If it is not possible to get a good fit, do not use the respirator and do not perform the task for which the respirator is required. Inform your supervisor/manager and contact Workplace Health.

B. Negative Pressure Check

1. Put on the respirator and any other associated personal protective equipment. Tighten the straps until the respirator feels snug but comfortable. Wear the respirator for a few minutes so that it will warm up and conform to your face better.
2. Close off the inlet opening of the cartridges or filters by covering them gently with the palms of your hands (In some cases you may have to remove the cartridges so you can cover the inlet valves.).
3. Breathe in slightly to create a vacuum, hold for 10 seconds.
4. If you have a good seal, the facepiece should collapse slightly against your face and stay collapsed. No air should leak into the facepiece past the sides, top or bottom.
5. If the air does leak out, check the exhalation valve(s) and try repositioning the respirator on your face and adjusting the head straps.
6. If it is not possible to get a good fit, do not use the respirator and do not perform the task for which the respirator is required. Inform your supervisor/manager and contact Workplace Health.

Step 5: Cleaning & Storage

A. Cleaning of elastomeric respirators used in bio-contaminated areas

1. Don appropriate PPE for cleaning and disinfection
    - latex, nitrile or chemical resistant gloves
    - water resistant gown
    - full face shield
2. Remove the P100 filters and wipe exterior surface of filters with 70% alcohol wipe or 3M Respirator Cleaning Wipe
3. Allow filters to dry and store in appropriate container
4. Prepare cleaning solution according to instructions on container of neutral detergent you have available (e.g. Measure 5 ml of Neutrawash for each 1 litre of warm water – mix)
5. Completely immerse respirator in neutral detergent solution
    - Time: 2 mins

- Temperature: lukewarm

6. Scrub crevices under water with brushes, swabs, or pipe cleaners for 30 seconds or until visible soil is removed (whichever is longer)
7. Disposable equipment must be used once then thrown away
    - Non-disposable brushes must be reprocessed according to brush manufacturer's instructions after each use
8. Rinse in warm tap water
9. Remove excess water prior to disinfection

B. Disinfection of elastomeric respirators used in bio-contaminated areas

1. Don appropriate PPE for cleaning and disinfection
    - latex or nitrile gloves
    - water resistant gown
    - full face shield
2. Measure hospital grade disinfectant as per protocol for your facility. If using bleach use mixing instructions to obtain 50 ppm solution (e.g.: 1ml of household bleach to 1 litre of water)
3. Completely immerse respirator in disinfectant solution
    - Time: 10 min
    - Temperature: lukewarm
4. Scrub respirator crevices, openings and holes under water with brushes, swabs, or pipe cleaners for 1 minute minimum.
    - Disposable equipment must be used once then thrown away
    - Non-disposable brushes must be reprocessed according to brush manufacturer's instructions after each use
5. Rinse respirator in warm tap water
6. Dry completely
7. Ensure filter gaskets are properly seated and in good condition
    - Inspect filter gaskets for signs of damage
    - If damaged, remove respirator from service & follow your facilities process for gasket replacement
    - Ensure appropriate filters (e.g. P100) are within expiry date (within 1 year) & reinstall

C. Cleaning of elastomeric respirators used in chemically-contaminated areas

- Each worker is responsible for the regular cleaning of his/ her respirator.
- Before cleaning, the filters and cartridges should be removed and stored in an air tight container. It may be necessary to remove other parts such as demand and pressure-demand valves, gaskets as recommended by the manufacturer.
- Discard or repair any defective parts.
- Wash components in warm water (max 43ºC) with a mild detergent or with a cleaner recommended by the manufacturer. A soft scrubbing brash can be used to facilitate the removal of dirt. Care must be taking to avoid damaging or distorting the face piece during the cleaning. DO NOT WASH the filters or cartridges.

- A second wash using a germicidal detergent and/or disinfectant is recommended.
- The respirator should then be rinsed in clean, warm water to remove all traces of cleaning agents. Skin irritation may result if detergent and disinfectant are not removed.
- It is recommended that the respirator then be air dried in a clean location.
- When dry, the air purifying elements and any other parts that were removed should be re-installed. It may be necessary at this time to install new filters/ cartridges if the old ones are past their useful service life.

D. Storage

- The respirator should then be stored on an air-tight sealed plastic bag in a clean, cool location. During storage the respirator must be protected from heat, extreme cold, sunlight, excessive moisture, dust and contaminating chemicals. Also, it should be stored in a manner that does not cause deformation of the face piece.

Step 6: Handling

Follow cartridge change-out for re-use or disposal of cartridge.

3. Education, Training and Fit Testing

- Education on limitations and training on correct use of elastomeric respirators will be provided during the required fit testing session. The worker must be fit tested with the same make, model, style, and size of respirator that will be used. The particulate filter is used for fit testing workers to elastomeric respirators.

4. Documentation

- The Fit Test Record Form will be completed while performing the fit test and a copy sent to Workplace Health for entry into the WHITE database, the department should keep the original.
- The Cartridge Change-Out Schedule Form will be kept in the department for each elastomeric respirator issued.

4.1 Check list for Respirator Care

a. General

- Inspect the respirator before and after each use and during the cleaning
- Replace all parts that a cracked, torn, broken, missing or worn

b. Rubber and/or Plastic Face Piece check for

- cracks, tears or holes
- excessive dirt
- distortion form improper storage
- any broken or missing parts

c. Head Strap / Harness check for

- breaks
- loss of elasticity
- broken or malfunctioning buckles or attachments
- whether the suspension have become permanently twisted

d. Inhalation and Exhalation Valves check for

- detergent residue, dust particles, or dirt on valve or valve seat
- filter/cartridges inlet gaskets are present and in good conditions
- cracks, tears or distortion in the valve material or valve seat
- missing or defective valve cover

e. Filter Elements check for

- compatibility of face piece and filter elements (must be from the same manufacturer)
- proper filter/cartridge for contaminant
- missing or worn gaskets
- worn threads-both filter and face piece threads (if present)
- cracks or dents in filter housing
- for gas masks-the end of service life indicator/expiration date

Appendix I PAPR Guidelines

Guideline: Use, Cleaning, Maintenance and Storage of Powered Air Purifying Respirators (PAPRS) with Loose Fitting Headpieces

What You Need to Know

Powered Air Purifying Respirators (PAPRs) with loose fitting headpieces are most commonly used within the Health Authorities. Ambient air is drawn through the filtering media connected to the blower unit. This filtered air is then passed through the breathing tube and delivered to the user's breathing zone via the headpiece. The constant supply of air to the headpiece prevents contaminated air from entering the headpiece and the user's breathing zone. The blower unit is worn with a waist belt or possibly on a specially designed backpack. No fit testing is required for these respirators. However users must be trained on how to properly don, doff and maintain the equipment as well as be informed of which filters/canisters are to be used.

1) Breathe Easy PAPR can be equipped with a variety of canisters and filters and has the capacity to protect employees against various chemical gases and vapours as well as particulates and airborne infectious agents. Examples include Formaldehyde, laboratory chemicals, first receiver chemical decontamination, cytotoxic drugs and infectious forms of Tuberculosis, Varicella or Zoster, Measles (Rubeola).

2) Air Mate PAPR equipped with a HEPA filter can be used where the required protection is against particulates or airborne infectious agents only. Examples include protection from cytotoxic drug particulates and airborne infectious agents such as Tuberculosis, Varicella or Zoster, Measles (Rubeola).

Summary:

- Fit Testing is not required.
- Suitable for staff who cannot be fit tested to seal dependent respirators.
- Does not require the individual to be clean shaven.
- Most parts of the PAPRs are reusable with some basic cleaning & disinfection.
- Breathe Easy model can provide protection from variety of hazards dependent on the filtering media used.
- Air Mate PAPRs can only be used for particulates and airborne infectious agents.
- Battery provides up to 8 hours of use per charge.
- Requires knowledge for proper maintenance and storage.
- Not suitable for oxygen deficient & immediately dangerous to life and health (IDLH) environments.

For information on selecting, using, maintaining, and storing a PAPR follow the links below. You may copy any of the procedures or add/create new procedures specific to your tasks *(link to contents)*:

1. Breathe Easy PAPR (appropriate for chemical gas/vapour protection, airborne infectious agents and/or particulates)	• Parts & Accessories • Battery & Battery Charging • Inspection & Air Flow Checks • Donning procedure • Doffing, Cleaning & Maintenance • PAPR Monthly Check Record Sheet
2. Air Mate PAPR (appropriate for airborne infectious agents and particulates ONLY)	• Parts & Accessories • Battery & Battery Charging • Inspection & Air Flow Checks • Donning procedure • Doffing, Cleaning & Maintenance • PAPR Monthly Check Record Sheet

Using Powered Air Purifying Respirator
Date Created: August 27, 2013
Date Revised: New

1. Breathe Easy PAPRS - What You Need to Do

PARTS & ACCESSORIES

	Name	Model	Order Number
	PAPR Unit includes: • motor blower 022-00-03R01 • Battery pack (Black) 520-01-15R01 • Belt 520-02-90R01 • Air Flow meter 520-01-21	3M Breathe Easy(TM) belt-mounted powered air purifying respirator	
	Vinyl Waist Belt (*order if use is for Chemical Decontamination)	3M GVP-117	
	Battery Pack (replacement batteries)	3M BP-15 NiMH Battery Pack	
	Breathing Tube Assembly (Use with white hoods)	3M Breathing Tube Assembly 3M 520-01-00R01	
	Breathing Tube Assembly (Use with S-class Chemical Decontamination Grey hoods)	Breathing Tube Assembly 3M BE-324	
	Head Cover - Clinical	3M BE-12-3 White, Regular Size, Tychem QC, 3/Case 3M BE-12-50 White, Regular, Tychem Q 50/Case	
		3M BE-12-3L White, Large Size, Tychem QC, 3/Case	
	Hood - Chemical	3M BE-10-3 Regular 3/ Case	
	Hood Assembly - Chemical Decontamination, includes: • Hood harness • Hood (Provides "First receiver" protection when patient has external chemical contamination. Most appropriate for ER.)	3M S-Series 855 S-Series Premium Suspension Hood Assembly (for grey hoods) S-Series Replacement Hood, grey	
	Battery Charging Station Single Unit (can connect up to 10 chargers in series to one electrical outlet)	3M BC-210	

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Select Filter Medium (contact Workplace Health for more information)

Contaminant	Cartridge/Filter Manufacturer #	Order #
Formaldehyde/Chlorine/Hydrogen Chloride/Sulfur Dioxide & Particulates (including airborne infectious agents)		
	3M 456-02-01R06 6/case	
Formaldehyde/Chlorine/Hydrogen Chloride/Sulfur Dioxide & Particulates (including airborne infectious agents)		
	3M 453-01-01R06 6/case	
Organic Vapours & Particulates		
	3M 453-00-01R06 6/case	
Particulates (HEPA)		
	3M 450-00-01R12 12/case	
Chemical Decontamination Organic Vapor, Acid Gas (Sulfur Dioxide, Chlorine and Hydrogen Chloride), Ammonia/Methylamine, Hydrogen Fluoride, Chlorine Dioxide, Formaldehyde, and High Efficiency Filter. Can also filter a wide range of chemical warfare agents such as: Nerve, Mustard, Tear and Blood agents; Chlorine, Phosgene, Chloropicrin, and Diphenylchloroarsine		
	3M RBE-57 6/case	

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BATTERY & CHARGING

- New and fully charged batteries should be able to maintain a charge for 8h.
- As batteries age, their ability to hold charge will begin to diminish.
- The best way to maintain the batteries capacity to hold charge is to exercise it regularly (charge and discharge cycles).
- Infrequently used batteries should be tested to determine their capacitance.

Charging the Battery

- ☐ Battery Pack is sufficiently charged if the indicator lamp next to the switch is **NOT** lit.
- ☐ The battery should be charged at the end of every shift to prevent a dead battery.
- ☐ If the lamp next to the switch glows **RED** the battery needs immediate charging. If the battery is not charged shortly after the lamp glows **RED** the battery can automatically shut down and the unit will not continue to run.

1. Check that the battery charger is plugged in and the **GREEN** charger power lamp is lit.
2. Remove the PAPR turbo blower power lead from battery pack receptacle.
3. Insert battery charger charging lead into the battery pack receptacle.
4. The charge **GREEN** lamp (on top of charger) will flash fast initially and slow to a steady green when the battery fully charged. If the lamp glows **RED** there is a battery fault – check the instruction manual trouble shooting section.

1. Connect the charger plug to an outlet. Watch that all LED's light, switch off momentarily and then re-light and stay on.
2. Plug the charging cable into a battery and wait 3-5 seconds to see that the LED switches off and stays off.
3. Once the battery has reached full charge, the LED on the smart-charger will trickle on for 3-5 seconds and off approximately 1 second at which time the battery is being supplied with a full-rate charge for that one second. The smart charger is now in trickle mode.
4. At any time after the trickle charge cycle begins, the battery will be in a state of full charge and be ready for use.
5. The charging time is approximately 3-8 hours depending on the charger.

Using Powered Air Purifying Respirator
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DONNING THE PAPR

Before donning, an inspection and air flow check must be performed.

There are two donning procedures:

1. For use when the white hood is used (airborne precautions or chemical spill clean-up)
2. For use when the grey hood assembly is used (during Patient Chemical Decontamination tasks)

Donning posters for both uses follow. Don the unit in a CLEAN environment following the applicable donning procedure that follows.

Using Powered Air Purifying Respirator
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Using Powered Air Purifying Respirator
Date Created: August 27, 2013
Date Revised: New

Powered Air Purifying Respirator (PAPR) Breathe Easy: Donning Instructions

The following instructions must be followed **each time** the PAPR is worn.
Before donning, inspect the PAPR to ensure the integrity of the components, including the blower, tube, battery, canisters and headpiece.

PREPARING THE PAPR UNIT

1. Obtain blower unit, battery and canisters from the storage area.

2. If the canisters are in their original package, open the package. If the canisters are already attached proceed to ***Step 5***.

3. ***Unscrew the cap*** from the end of each of the three canisters. ***Remove the plug*** from the opposite end by firmly grasping on the tab and pulling.

4. Firmly attach **ALL 3 canisters** to the PAPR unit.

5. Align the flat side of the PAPR plug with the flat end of the battery and firmly insert the plug into the battery.

TESTING THE AIR FLOW

6. The airflow must be tested prior to use to ensure the unit is functioning properly. To test airflow ensure that three canisters are attached, insert the air flow indicator tube into the end of breathing tube and seal with your hand.

TESTING THE AIRFLOW

7. Turn on the unit by turning the switch on the top of the battery counterclockwise. A green indicator will appear. If you do not hear the blower, ensure the unit plug is securely inserted into the battery. If the unit still does not turn on, obtain a new battery.

8. Turn on the battery (see Step 7). The plastic ball should rise above the dark arrow labelled 6 CFM (cubic feet per minute). If the flow is not above this, ensure the battery is charged. If you cannot get the flow at or above 6 CFM, **DO NOT** use.

DONNING THE PAPR UNIT

9. Grasp the belt, and locate the PAPR unit against your lower back. Slide the end of the belt through the clasp, tighten and securely close the clasp.

10. Clip the battery pack securely to the belt and turn on the unit.

11. Reaching behind you, grasp the loose end of the tubing and insert into the hole on the headpiece.

12. Grasp the headpiece and pull over your head. You should feel a rush of air as the blower delivers positive pressure air to the headpiece.

NOTE: If you cannot activate the blower unit, DO NOT use the PAPR. See your supervisor / manager.

For additional information on the PAPR, contact Workplace Health.

7. Either pre-prepare the halo or hook it into the shroud with the clips already in the shroud and halo. Minor adjustments may be required when wearing.

8. Put on the bottom portion of the coveralls. Pull up cuff of coveralls and put on rubber boots. Pull coveralls over top of boot so the boot is underneath the cuff of the leg of the coveralls.

9. Put on a pair of the Silver Shield gloves. Put on the top portion of the coveralls. The Silver Shield gloves should be underneath the cuff of the sleeve. Zip the coveralls up halfway.

10. With assistance, lift the cuff slightly up the boot to accommodate movement and wrap the chemical tape 1.5 times around the cuff and form a tab on the end. Repeat on the other boot.

11. Don the black butyl gloves, pulling the gloves overtop of the cuff of the coverall sleeve. With assistance, wrap the chemical tape 1.5 times around the cuff and form a tab on the end.

12. Remove the adhesive strip backing at the bottom portion of the coveralls and seal the coveralls up halfway.

13. Slide the belt of the PAPR through the clasp and secure. Ensure the belt is snug and the blower unit is secure against the small of your back. Using the clip, secure the loose end of the belt. Clip the battery pack securely to the belt and turn it on as in Step 4.

14. Reaching behind you, grasp the loose end of the breathing tube and insert fully into the hole on the headpiece until you hear a click. If available, use a partner to assist you.

15. Pull the headpiece over your head - ensure inner shroud is underneath the coveralls and outer shroud is overtop of the coveralls. Fully zip up coveralls and secure adhesive strip. Secure ties on both sides of the outer shroud. If available, use a partner to assist you.

To remove the PPE, refer to:

Instructions for DOFFING: Personal Protective Equipment Used for Patient Decontamination.

For technical assistance contact:

BCAS Technical Advisors

604-660-6557

Created: December 2010, Revised: February 2013

DOFFING, CLEANING AND MAINTAINING THE PAPR

DOFFING

Remove the PAPR in a CLEAN environment.

CLEANING

- Thoroughly wipe the exterior of the PAPR unit, breathing tube, and head cover with a mild disinfectant/respirator wipe.
- Inspect the condition of head gear for any tears, damage or overly scratched face shield.
- If the condition is poor replace with a new head-cover – if condition is good, clean (by thoroughly wiping with a respirator wipe) and re-use.
- Under normal operation the breathing tube will not become contaminated. If it does (e.g. blower unit fails):
  - Disconnect breathing tube from the headpiece and PAPR unit.
  - Flush breathing tube with mild cleaning solution and soak as necessary.
  - Flush with clean water and let drain until drippings stops.
  - Immediately connect breathing tube to an assembled PAPR unit and run system for a minimum of 30 minutes with the breathing tube hanging downward.

DO NOT:

- Use solvents to clean the PAPR unit, battery pack or battery charger.
- Immerse the PAPR unit, battery pack or battery charger in water.
- Attempt to clean the filters.

MAINTAINANCE

A. Determining Filter/Cartridge Change-out Schedule

- PAPR filters (HEPA) need to be changed when the filters are no longer providing adequate flow rates as determined by an Air Check. If filters are exposed to infectious agents, they should be changed annually and care should be taken not to touch the filter medium at any time. Filters can be discarded with regular waste.

- PAPR cartridges need to be changed when the charcoal medium has reached its limit to adsorb the chemical. To determine the appropriate change out schedule for cartridges, contact an OHS Specialist in Workplace Health and Safety to assist in calculating the change-out schedule.

- Where PAPR was used for Chemical Decontamination the cartridges are to be disposed of and replaced at the end of a case. *Note: if staff are rotating or shift change occurs while caring for the same case (patient) the cartridges can continue to be used by the next staff member. Just the hood would need to be changed.

B. Conduct & document PAPR monthly checks

- Complete monthly inspection and airflow checks of all PAPR blowers and batteries. See PAPR Monthly Check Record Sheet.

3M BREATHE EASY PAPRS MONTHLY CHECK RECORD SHEET

Inspection Date:________________ Checked by: ____________________________

Battery ID #	Blower Unit ID	Flow Check >6 CFM	Visual Inspection Blower Unit/Battery	Comments *Note actions taken for all failed tests*
1		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
2		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
3		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
4		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
5		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
6		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	

Inspection Date:________________ Checked by: ____________________________

Battery ID #	Blower Unit ID	Flow Check >6 CFM	Visual Inspection Blower Unit/Battery	Comments *Note actions taken for all failed tests*
1		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
2		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
3		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
4		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
5		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
6		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	

Inspection Date:________________ Checked by: ____________________________

Battery ID #	Blower Unit ID	Flow Check >6 CFM	Visual Inspection Blower Unit/Battery	Comments *Note actions taken for all failed tests*
1		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
2		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
3		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
4		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
5		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
6		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	

INSPECTION REMINDERS:

- Ensure filters are attached to blower unit during the flow check.
- Indicate each blower unit id on the checklist. Test each blower unit/battery combination so that every battery and blower unit is tested.
- Maintain this record for at least 6 months.
- Remove from service any defective equipment and notify manager.

2. *AirMate PAPRS* - What You Need to Do

PARTS & ACCESSORIES

	Name	Model	Order Number
	PAPR Unit includes: • Air Filter Unit • Battery Pack • High Efficiency Filter • Belt • Airflow Indicator	3M Air-Mate Belt-Mounted High Efficiency Powered Air Purify Respirator (PAPR) Assembly 231-01-30	
	Breathing Tube	3M Breathing Tube Assembly BE-224 3	
	Head Cover	3M Head Cover BE-12-3 White, Regular, Tychem QC	
	Battery Charger	Part of PAPR Unit Assembly (3M 520-03-73)	
	Charging Station, 5 Unit	3M 520-03-72	
	Charging Station, 10 units	3M 520-01-61	
	High Efficiency Filter	3M High Efficiency Filter 451-02-01R01	

Using Powered Air Purifying Respirator
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Air Flow Check

1. Ensure that the breathing tube is connected to the PAPR unit. Hold the free end of the tube up by grasping the slotted connector and covering the slots of the connector with thumb and forefinger. Drop the black, bullet-shaped airflow indicator (pointed end first) into the slotted connector.
2. Switch the PAPR unit on. Hold the tube so that it is vertical and at eye level. The indicator should "float" on the air coming out and the lower band on the indicator should be above the connector's rim.
3. If the lower band on the indicator rises above the slotted connector edge, airflow is sufficient. If the indicator fails to rise to this level, airflow is insufficient. This may be the result of a battery with a low charge, a clogged filter or another malfunction.

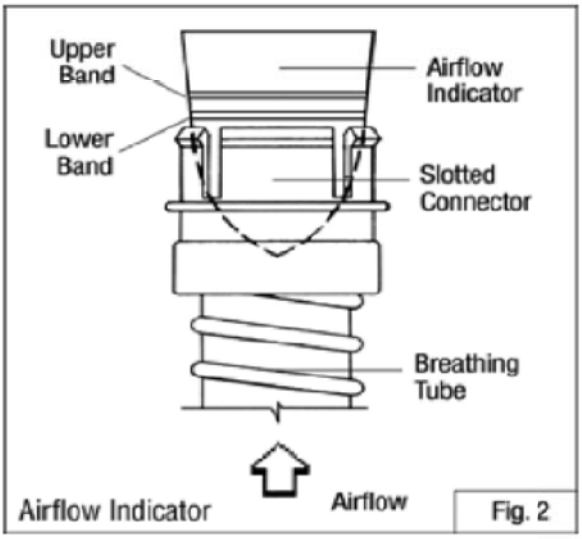


Fig. 2

DONNING THE PAPR

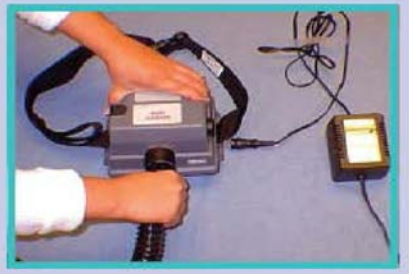
Before donning, an inspection and air flow check must be performed.

Don the unit in a CLEAN environment following the donning procedure that follows.

3M Air-Mate Powered Air Purifying Respirator (PAPR) Instructions for Use

1. Unplug the PAPR from the cord connecting it to the battery charger and electrical outlet.

2. Inspect the airflow tube for cracks. Pay close attention to the end that connects to the head cover.



3. Check to ensure that the airflow tube is securely connected to the PAPR. Look for any signs of damage.

4. Remove the tissue paper covering the faceshield of the headpiece.

5. Turn the PAPR on by pressing the black rubber button.

6. To check the airflow, place the indicator into the end of the breathing tube.

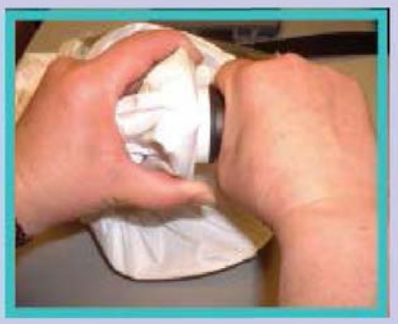
7. The lower band of the airflow indicator will rise above the edge of the airflow tube if the air supply is adequate.

8. Connect the airflow tube to the plastic circle at the back of the head cover.

9. Place the PAPR (with airflow tube up) against your lower back and fasten the belt buckle.

10. Guide the airflow tube upward behind you and put the headpiece on. There are headbands inside the headpiece that fit snugly on your head.

11. Adjust the headpiece so that the elasticized edge of the face seal fits under your chin. It is now safe to enter the patient room.



12. Remove PAPR in a non-contaminated area. Disconnect the head cover from the airflow tube with care by firmly grasping both pieces by the hard plastic parts that connect them. Gently but firmly pull them apart.

DOFFING, CLEANING AND MAINTAINING THE PAPR

DOFFING

Remove the PAPR in a CLEAN environment.

CLEANING

Thoroughly wipe the exterior of the PAPR unit, breathing tube, and head cover with a mild disinfectant. Thoroughly wipe the inside of the head cover with a mild disinfectant.

Under normal operation the breathing tube will not become contaminated. If it does (e.g. blower unit fails):

- Disconnect breathing tube from the headpiece and PAPR unit.
- Flush breathing tube with mild cleaning solution and soak as necessary.
- Flush with clean water and let drain until drippings stops.
- Immediately connect breathing tube to an assembled PAPR unit and run system for a minimum of 30 minutes with the breathing tube hanging downward.

DO NOT:

- Use solvents to clean the PAPR unit, battery pack or battery charger.
- Immerse the PAPR unit, battery pack or battery charger in water.
- Attempt to clean the filters.

MAINTENANCE

Complete monthly inspection and airflow checks of all PAPR blowers and batteries. Document these monthly checks using the PAPR Monthly Check Record Sheet.

3M AIR MATE PAPRS MONTHLY CHECK RECORD SHEET

Inspection Date:________________ Checked by: ___________________________

Battery ID #	Blower Unit ID	Flow Check >6 CFM	Visual Inspection Blower Unit/Battery	Comments *Note actions taken for all failed tests*
1		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
2		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
3		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
4		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
5		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
6		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	

Inspection Date:________________ Checked by: ___________________________

Battery ID #	Blower Unit ID	Flow Check >6 CFM	Visual Inspection Blower Unit/Battery	Comments *Note actions taken for all failed tests*
1		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
2		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
3		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
4		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
5		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
6		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	

Inspection Date:________________ Checked by: ____________________________

Battery ID #	Blower Unit ID	Flow Check >6 CFM	Visual Inspection Blower Unit/Battery	Comments *Note actions taken for all failed tests*
1		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
2		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
3		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
4		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
5		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
6		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	
		◯ Pass ◯ Fail	◯ Pass ◯ Fail	

INSPECTION REMINDERS:

- Ensure filters are attached to blower unit during the flow check.
- Indicate each blower unit id on the checklist. Test each blower unit/battery combination so that every battery and blower unit is tested.
- Maintain this record for at least 6 months.
- Remove from service any defective equipment and notify manager.

Appendix J Respirator Cartridge Change-Out Schedule

Respirator Cartridge Change-out Scheduling Instructions

1.1 Information Required for Cartridge Change-Out Schedule

In order to prepare a change-out schedule, a number of pieces of information must be gathered. This information will be collected as part of the risk assessment process with emphasis on the criteria listed below. Completion of the *Respiratory Cartridge Change-Out Schedule Form* (page 4) is required for all schedules determined. Copies of the forms will be maintained by Workplace Health with appropriate copies maintained by department management.

1.1.1 Contaminant

The first step is to ascertain against what chemical the respirator will be used as a means of protection. The next step is to determine the concentration of the contaminant to which the worker will be exposed and the worker's exposure profile. If this is not available or is unknown, an exposure assessment and exposure monitoring (if applicable) must be conducted as outlined in the Health Authority Chemical Exposure Control Program.

1.1.1 Level of Exertion

Determine the breathing rate that the worker will experience performing tasks while utilizing the respirator. Breathing rates may be categorized as follows:

- *Low*: Approximately 30 litres per minute e.g. light hand or arm work, sitting or standing to operate equipment.
- *Moderate*: Approximately 60 litres per minute e.g. walking with moderate lifting or pushing.
- *High*: Approximately 85 litres per minute.

1.1.2 Temperature

Determine the maximum temperature the worker may encounter while utilizing the respirator.

1.1.3 Relative Humidity

Determine the maximum relative humidity the worker may encounter while utilizing the respirator.

1.1.4 Physical Characteristics of Cartridge

In order to determine the change-out schedule for some cartridges, the following information may be required:

- Weight of sorbent in each cartridge (grams)
- Carbon micropore volume (cubic centimetres per gram). If this number cannot be obtained from the manufacturer, a standard value of 0.4 may be used.

- Bulk density of the packed bed (grams per cubic centimetre). This can be determined by disassembling a respirator cartridge and determining the total volume of the bed then dividing this number into the sorbent weight.

1.1.6 Special Considerations

1.1.6.1 Organic Vapours

Special consideration will be given to cartridges designed to protect against organic vapours where the substance of interest has a boiling point below 65^{o}C. In such cases, it may be necessary to change the cartridge after every shift in order to prevent exposure due to desorption of the substance. This will be assessed on an individual basis and will include an assessment of the type of use, duration and frequency of use, and particular substance of interest.

1.1.6.2 Formaldehyde

Special consideration may be required for formaldehyde cartridges.

1.2 Calculating the Change-Out Schedule

The method for calculating the change-out schedule is based on the model develop by Wood (1994). This mathematical model is outlined in Appendix H. When calculating change-out schedules, contact the Workplace Health Department.

1.2.1 3M Brand Cartridges

A software program has been developed by 3M for determining the service life of its cartridges (3M Respirator Service Life Software Version 3.0 or later). This program allows for the calculation of service life for single substances, or mixtures.

Link to 3M Service Life Software (Version 3.2)

Although there is a fairly comprehensive list of organic compounds listed in the software's database, some organic vapours may not be included. In such cases, the user may provide the following information to allow for appropriate calculations, including:

- Molecular weight
- Saturated vapour pressure
- Liquid density
- Index of refraction
- Occupational exposure limit
- IDLH (Immediately Dangerous to Life and Health) concentration
- CAS # (Chemical Abstracts Service)

Note that the service life is based on occupational exposure limits from the ACGIH (American Conference of Governmental Industrial Hygienists), so modifications may be required when entering information into the fields to ensure compliance with WorkSafeBC occupational exposure limits.

1.2.2 North Brand Cartridges

A software program has been developed by North for determining the service life of its cartridges (North Safety ezGuide Glove-Respirator Selection Guide Version 2.2 or later). This program allows for the calculation of service life for single substances, or mixtures.

Note: That the service life is based on occupational exposure limits from the ACGIH (American Conference of Governmental Industrial Hygienists), so modifications may be required when entering information into the fields to ensure compliance with WorkSafeBC occupational exposure limits.

1.2.3 Other Methods of Calculating Service Life

Web-based software developed by OSHA (Occupational Safety and Health Administration) may be used to determine the service life of cartridges as well. This program only allows for the calculation of service life for single substances, not mixtures. Exposure to mixtures will require an in-depth assessment by Workplace Health, likely using experimental methodology.

OSHA recommends that where the individual compounds in the mixture have breakthrough times within one order of magnitude, the service life of the cartridge should be established assuming the mixture stream behaves as a pure system of the most rapidly migrating component or compound with the shortest breakthrough time (i.e., sum up the concentration of the components). Where the individual compounds in the mixture vary by 2 orders of magnitude or greater, the service life may be based on the contaminant with the shortest breakthrough time.

Appedix J Respirator Cartridge Change-Out Schedule Form

BACKGROUND INFORMATION			
Site:		**Department:**	
Job Title:		**Date:**	
Prepared by:		**Request of:**	

RESPIRATOR INFORMATION	
Respirator Model:	❑ 3M 6100 ❑ 3M 6200 ❑ 3M 6300 ❑ 3M 6700 ❑ 3M 6800 ❑ 3M 6900 ❑ North 7700-30S ❑ North 7700-30M ❑ North 7700-30L ❑ North 5400(S) ❑ North 5400(M/L) ❑ Other: _____
Cartridge Model:	

CHEMICAL INFORMATION				
Chemical Name	**OEL(s)**	**Concentration**	**Odour Threshold**	**Boiling Point**

CONDITIONS OF USE			
Number of Shifts/Week:		**Hours Cartridge Used During Shift:**	
Exertion Level During Use:	❑ Light ❑ Moderate ❑ Heavy		
Maximum Temperature:	°C	**Maximum Relative Humidity:**	%

SERVICE LIFE ESTIMATE	
Basis for Estimate (attach results):	❑ 3M Respirator Service Life Software Version _____ ❑ North ezGuide Glove-Respirator Selection Guide Version ____ ❑ Other: _____
Estimated Service Life:	_____ Hours

CARTRIDGE CHANGE SCHEDULE
❑ Every _____ Hours ❑ After Each Shift ❑ After One Week ❑ After Every Month ❑ Other (specify): _____

Appendix K Wood Mathematical Model for Estimating Breakthrough Times

$$t_b = \left[\frac{W_e W}{C_o Q}\right] - \left[\frac{W_e \rho \beta}{k_v C_o}\right] \ln\left[\frac{C_o - C_x}{C_x}\right]$$

Where: t_b = breakthrough time (minutes)
W_e = equilibrium absorption capacity (g/g carbon)
W = weight of carbon absorbent
ρ_β = bulk density of the packed bed (g/cm^3)
Q = volumetric flow rate (cm^3/min)
C_o = inlet concentration (g/cm^3)
C_x = exit concentration (g/cm^3)

$$W_e = W_o d_L \exp\left[-b' W_o P_e^{-1.8} R^2 T^2 \left(\ln\left\{\frac{\rho}{\rho_{sat}}\right\}\right)^2\right]$$

Where: W_o = carbon micropore volume (cm^3/g)
d_L = liquid desnity of adsorbate (g/cm^3)
T = absolute temperature (^{o}K = ^{o}C + 273)
ρ = partial pressure corresponding to concentration C_x
ρ_{sat} = saturation vapour pressure at temperature T
P_e = molar polarization
R = ideal gas constant (1.987)
b' = an empirical coeeficient with value 3.56 x 10^{-5}

$$P_e = \left(\frac{n_D^2 - 1}{n_D^2 + 2}\right)\frac{M_w}{d_L}$$

Where: M_W = molecular weight
N_D = refractive index

$$1/k_v = \left[\left(\frac{1}{V_L}\right) + 0.027\right]\left[I + \frac{S}{P_e}\right]$$

Where: I = calculated to be 0.000825
S = 0.036 for 1% breakthrough
V_L = linear air

flow velocity (cm/sec)

Appendix L Qualitative Fit-Test Instructions

Qualitative Fit Test Instructions

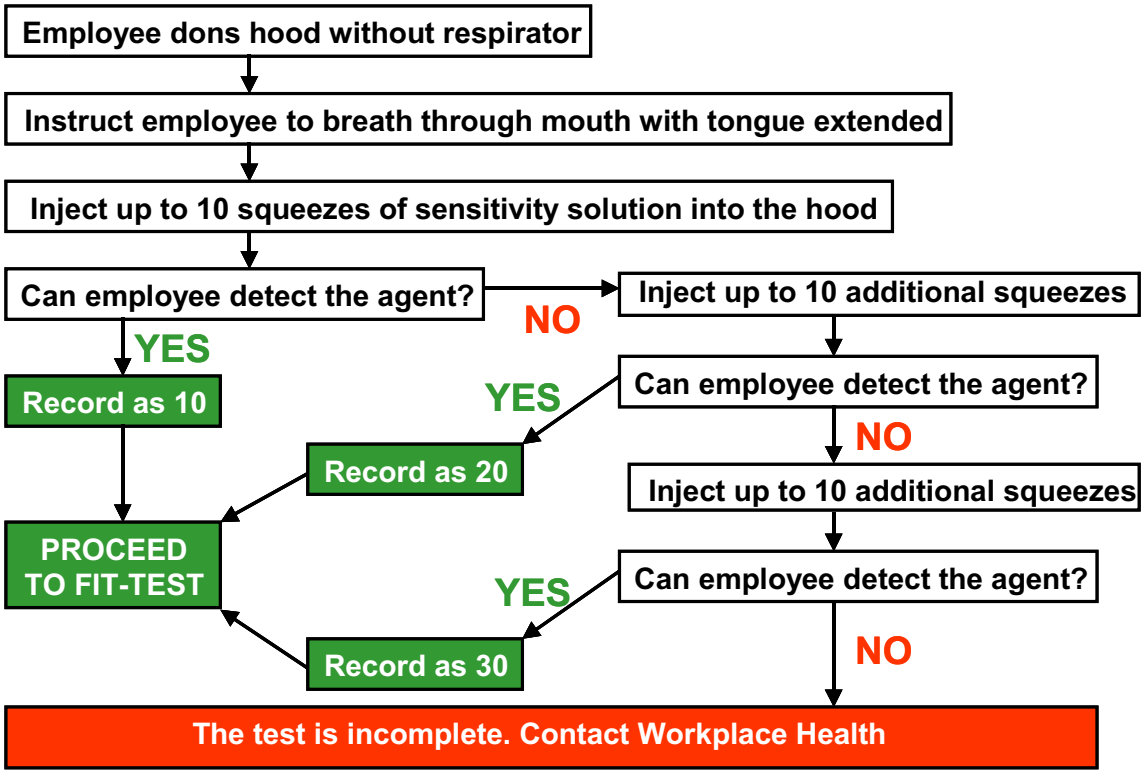
STEPS IN COMPLETING THE SENSITIVITY TEST

This test is done to assure that the person being fit tested can detect the bitter taste of the test solution at very low levels. The Sensitivity Test Solution is a very dilute version of the Fit Test Solution. The test subject should not eat, drink (except water), or chew gum for 10-15 minutes before the test, and no smoking 30 minutes before the test.

Use the test agent, unless the staff member has had an adverse reaction to it in the past, or the staff member is not sensitive to it. In such cases, do not proceed with the test – contact Workplace Health.
Bitrex is made up of water, table salt, and denatonium benzoate (a benzoate salt with a bitter taste). It is of low toxicity and will not affect individuals with asthma. MSDS are available for Bitrex in the fit-test kits.

1. Have the test subject put on the hood and collar assembly without a respirator.
2. Position the hood assembly forward so that there is about six inches between the subject's face and the hood window.
3. Instruct the test subject to breathe through his/her mouth with tongue extended.
4. Using Nebulizer #1 with the Sensitivity Test Solution (#1), inject the aerosol into the hood through the hole in the hood window. Inject up to ten squeezes with the bulb fully collapsing and allowing the bulb to expand fully on each squeeze. Both plugs on the nebulizer must be removed from the openings during use. The nebulizer must be held in an upright position to ensure aerosol generation.
5. Ask the test subject if he/she can detect the bitter taste of the solution. If tasted, note the number of squeezes as 10 and proceed to the Fit Test.
6. If not tasted, inject an additional ten squeezes of the aerosol into the hood. Repeat with ten more squeezes if necessary. Note whether 20 or 30 squeezes produced a taste response.
7. If 30 squeezes are inadequate, in that the subject does not detect a bitter taste, the test is ended. Another type of fit test must be used.
8. Remove the test hood, and give the subject a few minutes to clear the taste from his/her mouth. It may be helpful to have the subject rinse his/her mouth with water.

SENSITIVITY SCREENING TEST FLOWCHART



STEPS IN COMPLETING THE FIT-TEST

1. Have the test subject don the respirator and perform user seal check per the instructions provided on the respirator package.
2. Have subject wear any applicable safety equipment that may be worn during actual respirator use that could interfere with respirator fit.
3. Have the subject put on and position the test hood as before, and breathe through his/her mouth with tongue extended.
4. Using Nebulizer #2 with Fit Test Solution (#2), inject the fit test aerosol using the same number of squeezes as required in the Sensitivity Test (10, 20, or 30). A minimum of ten squeezes is required, fully collapsing and allowing the bulb to expand fully on each squeeze. The nebulizer must be held in an upright position to ensure aerosol generation.
5. To maintain an adequate concentration of aerosol during this test, inject one-half the number of squeezes (5, 10, or 15) every 30 seconds for the duration of the fit test procedure.
6. After the initial injection of aerosol, ask the test subject to perform the following test exercises for at least 30 seconds each:
    a. Normal breathing.
    b. Deep breathing.
    c. Turning head side to side - Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
    d. Moving head up and down - Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
    e. Count out loud or talk out loud.
    f. Normal breathing.
7. The test is terminated at any time the taste of the aerosol is detected by the subject because this indicates an inadequate fit. Wait a couple of minutes and perform the fit-test test again. The staff member may drink water to speed up recovery.
8. Repeat the fit-test after re-donning and readjusting the respirator. A second failure will indicate that a different size or model respirator is needed.
9. If the entire test is completed without the subject detecting the bitter taste of the aerosol, the test is successful and respirator fit has been demonstrated.
10. If the staff member does not pass on any of the available respirators, inform the staff member and the supervisor/manager that the staff member must not be allowed to perform tasks that require the use of a respirator. Contact Workplace Health.

Periodically check the nebulizer to make sure that it is not clogged. If clogging is found, clean the nebulizer and retest. At the end of each session or at least every four hours, discard the unused solutions from the nebulizers.

Between using the fit-test hood on staff wipe it down with an alcohol wipe.

Appendix M Quantitative Fit-test Instructions

Quantitative Fit Test Instructions

Refer to the TSI Portacount Instruction Manual for more detailed information regarding the use of this instrument.

1. Attach the appropriate sampling adapter to the respirator.

2. Connect the AC Adapter (or battery) to the PORTACOUNT Plus and turn it on by pressing the “ON/OFF” key. The PORTACOUNT Plus will go through a 60-second warm-up period before it’s ready to go.

3. Connect the PORTACOUNT’s Data Port to your computer’s RS-232 serial port using the cable provided. If the computer port has 25 pins instead of 9, use the provided 25 to 9-pin adapter. Computers that do not have an RS-232 serial port can use a USB port by purchasing a USB to Serial Converter.

4. Add alcohol to the PORTACOUNT Plus. Follow the instructions under “Adding Alcohol” located in the *PORTACOUNT Plus Model 8020 Operation and Service Manual* chapter on maintenance (Chapter 5, page 29).

5. Start FitPlus for Windows software by double-clicking the PORTACOUNT icon or selecting FitPlus for Windows from the Start Menu.

6. FitPlus software starts and asks if you want to do the Daily Checks. TSI recommends that you Click “**YES**” the first time you use the PORTACOUNT Plus each day. Subsequent Daily Checks are optional. You can have FitPlus software perform the Daily Checks at any time by using the dropdown menus.

7. Perform the Daily Checks as directed by the software when it first starts or by selecting Daily Checks from the PORTACOUNT Menu. You will need to use the Zero Check Filter provided. See Chapter 6, “Troubleshooting,” if any of the tests fail.

8. Next, FitPlus will offer to begin the fit test process at Step 1. Type in the information about the person you will be fit testing. Next time you fit test that person you will be able to pick the name off a list. Click “**NEXT**” when done.

9. Step 2 (on screen) requires you to select a respirator. Type in the information about the respirator that will be used. Next time you use that same respirator you will be able to pick it off a list. A fit factor pass level of 100 for half masks and 500 for fullface masks is required. Click the Help button if necessary. Click **NEXT** when done.

10. Step 3 (on screen) requires you to enter the size of the mask being used and the fit test operator's name or initials. You can also review the other settings to make sure they are correct. Pay special attention to the current default fit test exercise protocol to make sure it's the one you are required to use. USA protocols and some non-USA protocols are pre-defined. If yours is not on the list you can create it by duplicating an existing protocol and editing it. Use the online help if necessary. Click **NEXT** when done.

11. Now you are ready to start the fit test itself. Attach the clear sample hose to the respirator worn by the person being fit tested. When ready, click **START**. You will then be guided through the entire fit test exercise protocol automatically. Just have the person being fit tested perform each exercise as directed by the computer. The computer automatically performs the fit test, calculates all fit factors and saves the information to the database. After each fit test is completed, you may review the results, print a report, or start another fit test.

Appendix N Fit Test Card

FRONT OF CARD

RESPIRATOR FIT TEST RECORD

Name: _____

Date of Fit Test: _____

Next Fit Test Due: One year from last fit test

Make/Model: _____

Fit Tester: _____

Fit Tested In: ☐ fraserhealth ☐ ☐ northern health ☐

☐ ☐ ☐

BACK OF CARD

N95 RESPIRATOR REMINDERS

- After donning your respirator, always perform a Seal Check.
- Wash your hands before and after removing your respirator.
- N95s do not offer protection against vapours or gases.
- A surgical mask is designed to protect the patient from the wearer; an N95 respirator is designed to protect the wearer from inhaling particulate contaminants
- Passing a fit test on any one model ensures that only that particular model fits your face.
- N95 respirators are one time use only.
- Fit testing must be done annually.
- Retain this card as proof of having successfully passed a respirator fit test.

Appendix O Respirator Donning/Doffing Instructions

fraserhealth · Interior Health · Vancouver Island Health Authority · northern health · Providence Health Care · Provincial Health Services Authority · Vancouver Coastal Health

Respirator Donning/Doffing Instructions

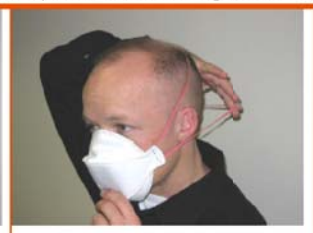
The following instructions must be followed **each time** the respirator is worn.
Before donning, inspect the respirator to ensure the integrity of the components, including the shell, straps, and metal nose clip.

3M 1870

1. Remove respirator from packaging and hold with straps facing upward. Place the bottom strap under the center flaps next to the **WARNING/ ATTENTION** statement.

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

3. Place respirator on your face so that the foam rests on your nose and the bottom panel is under chin. Hold the bottom panel and pull the top strap and position it high on the back of your head.



4. Then pull the bottom strap over your head and position it around the neck and below the ears. Adjust for a comfortable fit by pulling top panel toward the bridge of the nose and bottom panel under chin.

5. 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 while moving your fingertips down both sides of the nosepiece.

6. **USER SEAL CHECK:** Place both hands over the respirator and exhale gently. If air leaks are noted adjust facepiece and RECHECK. If a proper seal cannot be obtained, inform your supervisor.

3M 1860 & 1860S (small)
3M 8210 & 8110S (small)

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

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

3. Pull the top strap over your head so it rests high of the back of head.

4. Pull the bottom strap over your head and position it around neck below ears.

5. Using two hands, mold the nosepiece to the shape of your nose by pushing inward while moving fingertips down both sides of the nosepiece.

6. **USER SEAL CHECK:** Place both hands over the respirator and exhale gently. If air leaks are noted adjust facepiece and RECHECK. If a proper seal cannot be obtained, inform your supervisor.

DOFFING THE N95: (1) Perform hand hygiene; (2) Remove the N95 in the reverse order. Pull the bottom strap up and over your head. Next, carefully pull the top strap up and over your head thereby pull the facepiece directly away from your face. Perform hand hygiene.

NOTE: If you cannot achieve proper fit, DO NOT use the respirator. See your supervisor / manager.

Revised: August 2013

Appendix P Frequently Asked Questions on N95 Respirator

Frequently Asked Questions Regarding N95 Respirators

This document is intended to address questions and concerns from all staff regarding the use of N95 respirators.

GENERAL INFORMATION ON N95s

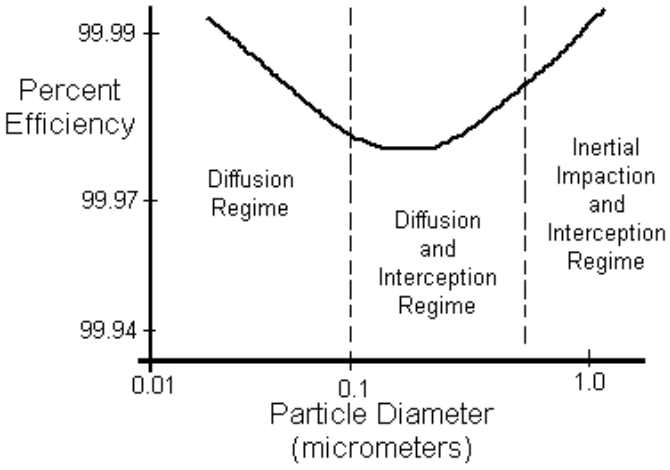
What does N95 mean?

Personal equipment designed to provide a wearer with respiratory protection from contaminants are called *respirators*. Respirators used to provide protection against particulate and aerosols must be tested according to criteria laid out by the National Institute of Occupational Health and Safety (NIOSH). If a respirator passes using the NIOSH protocols, it will be classified as a "NIOSH approved" respirator.

Particulate respirators are used in industry as well as healthcare. These respirators are comprised of tiny fibres which are electrostatically charged. While it is not an issue in the healthcare setting, in certain industries, oil mists are present in the air. Oil mist will "coat" the electrostatically charged fibres and make the respirator less efficient. As a result, certain respirators are designed to be used in oil mist environments.

The first letter for the respirator rating is an "N", "R", or "P". The "N" means that the respirator is "Not oil resistant"; the "R" means that the respirator is "Oil resistant", and the "P" means that the respirator is "Oil proof". In health care, oil mist is not a concern, and respirators with the "N" rating are used.

Next on the respirator rating is the filter efficiency when tested against particles of 0.3 micron size. The respirator is rated at either 95%, 99%, or 100% efficient. The 0.3 micron particle size is chosen because this is the particle size that the material is actually least efficient. Particles are filtered using two main methods. Particles larger than 0.3 microns are filtered through impaction and interception of the particles by the fibres. As particle size gets smaller, these mechanisms become less and less efficient. Very small particles are filtered using the electrostatic charge on the fibres and through a process called Brownian motion (small particles behave more like gases than they do like solids). As particle size increases, Brownian motion is a less efficient way of capturing particles. Therefore, particles greater or less than 0.3 microns are actually captured with much greater efficiency than they are for 0.3 micron particles.



Thus the rating of the respirator masks used in healthcare are "N95". Respirators with 99% or 100% efficiency are typically only more efficient for 0.3 micron particles.

Do N95s provide protection against aerosols and droplets?

Yes. N95 respirators are designed to provide at least 95% filtration efficiency against solid and liquid aerosols [of the 0.3 micron size] and droplets which may contain bacteria, viruses and dust.

Will an N95 provide protection against splashes?

Proper face protection must be worn whenever there is the potential for any blood or body fluid splashes. If the mask or respirator comes in contact with blood or body fluids the respirator must be changed as soon as possible. Respirators should only be removed when the wearer is in an area that is considered free of airborne hazards.

Why are there different N95s?

There are two main models of N95s in use in the Health Authority sites:

- 3M 1860 (also available in small size 3M 1860S)
- 3M 1870

The main reason for having more than one model is that staff have a variety of different face shapes and some models of N95 fit some face shapes better than others. To ensure that that there are N95s available for the range of faces, a number of different respirator models and sizes are available.

Which of the N95s is the best?

No particular make or model of N95 is any better than another in terms of protection provided. In order to receive the NIOSH N95 rating, respiratory protection must undergo and successfully complete a series of stringent tests.

Certain N95s will fit certain shapes of faces better than others. This is why it is important to undergo a fit-test and use only the model of N95 with which you passed.

Do any of the N95s contain latex?

All standard N95s (3M 1860/1860S, 3M 1870, and the special order AO Safety Pleats Plus) are latex-free.

FIT-TESTING

What is a fit-test?

A fit test is a series of procedures used to determine if the N95 provides an adequate seal around the face. Without conducting a fit-test, there is no way to be certain that the N95 will be providing the full protection it is designed for.

The fit-test procedures take approximately 15 minutes. During this time an introduction of respiratory protection is provided, proper donning/doffing methods are reviewed, the selection and fit-test of the N95 is completed and other information required in order to use an N95 are detailed.

The fit-test procedure uses a product called Bitrex, one of the most bitter substances known, to illicit a taste response. Bitrex is comprised of water, table salt, and denatonium benzoate. It is the denatonium benzoate (a salt) that is important for the test as exposure results in a bitter taste. Bitrex can be detected at extremely low levels.
The use of Bitrex is standardized as a validated method recognized by numerous agencies and jurisdictions, including WorkSafe BC, Canadian Standards Association, and Occupational Health and Safety Administration (OSHA - USA).

The first part of the fit-test procedure is the sensitivity test. A large hood, used to contain and concentrate the solution, is placed over the head of the staff. A dilute solution is injected into the hood until the taste is experienced by the staff. This step is required because different concentrations are required for different people and a small number of staff cannot detect Bitrex at all.

During the fit-test, the N95 is donned, the hood placed over the staff's head again, and a more concentrated Bitrex solution is added (100 times more concentrated). A series of six exercises are performed, each with a duration of at least 30 seconds. The exercises are designed to simulate movements that may occur while wearing the N95 in an actual working environment.
If no taste is experienced, the N95 properly fits the face. Only the model of N95 passed during the fit-test may be utilized, as only this type of model has demonstrated a good seal.

Is it safe to be exposed to Bitrex?

The Bitrex solution used during the fit-tests is not an exposure hazard and not anticipated to result in adverse health effects. The amount of Bitrex actually used in the test is extremely low. People can detect Bitrex at 50 parts per billion (ppb) in water. A MSDS is available upon request.

I have asthma – is it safe for me to be exposed to Bitrex?

Bitrex has not demonstrated any problem for individuals with asthma. Additionally, the amount of Bitrex actually used in the test is extremely low. People can detect Bitrex at 50 parts per billion (ppb) in water.

If an individual is required to wear a respirator and there is doubt about the individual's ability to use a respirator for medical reasons, prior to fit-testing the individual is to be examined by a physician to assess whether a respirator can be worn.

A MSDS is available upon request.

I am pregnant – is it safe for me to be exposed to Bitrex?

Bitrex is safe for pregnant individuals. Additionally, the amount of Bitrex actually used in the test is extremely low. People can detect Bitrex at 50 parts per billion (ppb) in water. A MSDS is available upon request.

What if I cannot detect Bitrex during the sensitivity test?

If you cannot detect Bitrex during the sensitivity test (and have eaten, smoked, drank (with the exception of water), or chewed gum or candy in the past 15 minutes), you may not be able to detect Bitrex at the concentrations required for a fit-test. If so, another alternative testing method may also be utilized – either a quantitative method (that does not rely on individuals' ability to taste a test agent) or a different test agent, substance called Saccharine, will be used.

What if I taste the Bitrex during the fit-test when I am wearing a N95?

This means that a proper seal of the N95 to your face was not obtained. You will be asked to remove the N95 and re-don it. If you can still detect the Bitrex, a different model of N95 will be selected and fit-tested.

Why have I been told not to eat, smoke, drink (with the exception of water), or chew gum or candy for at least 15 minutes before my fit-test?

Because the fit-test requires a taste response, certain foods and activities may interfere with your ability to taste. In order to efficiently utilize time, you will be asked not to participate in these activities for the 15 minute-period prior to the fit-test.

Do I need to be clean shaven in order to wear a N95?

Yes, you must be clean shaven wherever the respirator comes into contact with the face. Facial hair (even very short stubble) interferes with the seal of the N95 to the face, thereby reducing its efficiency to provide respiratory protection.

Are the hoods used for the sensitivty test and fit-test cleaned between staff?

Between uses, hoods are wiped down with an isopropyl alcohol solution.

What is an Assigned Protection Factor (APF)? What does an APF of 10 mean?

An Assigned Protection Factor (APF) is a value assigned to a respirator by WorkSafe BC. It is the level of protection that the respirator can be expected to provide at least 95% of the time. Although not directly applicable to biological agents, the APF is used when selecting respirators for particular chemical substances. For example, an appropriate respirator with an APF of 10 would allow an individual to enter an atmosphere containing up to 10 times the exposure limit for the chemical.

The accepted practice for passing a fit-test is to require the respirator to demonstrate the ability to provide protection ten times the APF. For example, a respirator assigned an APF of 10 by the WCB, requires the respirator actually demonstrate a protection factor of 100 during the fit-test. This allows for an additional "safety factor" to be used when using the respirator in the "real world".

N95s are fit-tested to demonstrate a protection factor of 100 during the fit-test (APF of 10 in the work environment). It is important to remember that APF are designed for substances with exposure limits (e.g. certain chemicals) and are not necessarily directly applicable for biological agents. However, Health Canada requires N95s provide a *"tight facial seal (less than 10% leak)"*.

Do I really need to be fit-tested?

Yes. Fit-testing is required to ensure that the N95 is providing you the respiratory protection required of it. Without fit-testing a N95, you cannot be certain that it is offering you the degree of protection it is designed to provide. Fit-testing requirements are a WorkSafe BC, Canadian Standards Association, manufacturer, and Health Authority requirement.

I have had a fit-test on a particular model of N95. Can I wear other models if they look similar?

No. Different makes and models may utilize different materials (e.g. different straps) and although they may appear to look similar, they may fit your face quite differently. Only use the model of N95 for which you have passed a fit-test, as only this type of model has been tested and shown to provide you with a good seal.

N**ow that I have been fit-tested on a N95 do I ever have to be fit-tested again?**

Fit-testing is required annually by WorkSafeBC. This is because individuals may experience physical changes over time (e.g. weight gain or loss) which can affect the fit of the N95. An annual fit-test also allows for a refresher on the issues surrounding the N95.

USING N95s

How long can I wear a N95 for? How many times can I wear a N95?

The length of time an N95 can be worn varies. If at any point the N95 becomes wet, soiled, damaged, or interferes with breathing, exit the area and following proper infection control protocols, remove the N95 and replace with a new one.

An N95 may only be used once. When an N95 is removed it must be discarded, even if it does not appear to be visibly contaminated. If it is necessary to enter the area again, a new N95 must be donned.

Use proper infection control protocols when removing the N95 and replacing with a new one.

Can a N95 be decontaminated if it becomes soiled?

No, N95 respirators are not designed to be decontaminated if soiled. If the N95 becomes contaminated remove it in an area free of inhalation risks and dispose of it.

How do I dispose of the N95 once I have used it?

Unless the N95 is visibly contaminated, it may be disposed of in regular waste. If it is visibly contaminated with Blood or Body Fluids or Cytotoxics, dispose of it along with other contaminated material in Biohazardous Waste or Cytotoxic waste as applicable.

How is donning and doffing done with an N95?

The N95 should be the last piece of protective equipment removed.

Wash your hands with soap and water or alcohol hand cleanser **before** removing the N95. Doff the N95 in the reverse order of the donning procedure (make sure you do not "drag" it over your head!) Dispose of the N95 **and wash your hands**.

What is a User Seal Check?

A user seal check is a quick, basic procedure you must do to help ensure that you have donned the N95 correctly. It is not the same, nor is able to replace, a fit-test.

How do I perform a User Seal Check?

Conduct the user seal check as instructed during your fit-test session. Instructions are provided by the manufacturer and instruction pages are available from your manager, on the intranet, or from Workplace Health.

A basic user seal check will involve placing both hands over the N95 and inhaling and exhaling sharply. If air leaks around the nose, adjust the nosepieces. If air leaks around the edges, adjust the straps. If a proper seal cannot be attained, DO NOT enter the area. Consult your supervisor/manager.

When do I perform a User Seal Check?

A user seal check must be performed every time you put on a N95 prior to entering the precaution area.

Will I be able to get enough oxygen if I use a N95?

Yes. Gas molecules can pass freely through the N95. Individuals wearing a N95 easily obtain enough oxygen. Likewise, carbon dioxide levels inside the N95 are also at safe levels.

Individuals with compromised respiratory systems should not wear an N95 without obtaining medical clearance from their physician. By wearing a N95, the dead space of your lungs is basically increased. This means that breathing is slightly more labour intensive. While this does not affect a healthy individual, wearing a N95 should be avoided by someone with a compromised respiratory system. Remember N95 are meant for staff and should not be placed on patients.

Why do I feel uncomfortable when wearing a N95?

This may be as a result of the fact that you are not used to wearing a respirator. First-time users of N95s may breathe more quickly than usual due to anxiety and/or are not used to wearing a N95. If at any point, breathing becomes difficult, you feel faint or dizzy, exit the area immediately and remove the N95 using proper infection control protocols.

Is it normal for my face to feel warm under the N95? Is it normal for my face to be red when I remove the N95?

Yes. As you breathe out, your breath is warm and humid. This air will heat up the inside of the N95 which will make your face feel warm. This warm air will increase the surface temperature of the skin on your face, which can result in reddening of the skin. If at any point, breathing becomes difficult, you feel faint or dizzy, exit the area immediately and remove the N95 using proper infection control protocols.

My glasses fog up when I wear the N95. Does this mean that it is not working properly?

Not necessarily, provided that you have been fit-tested and passed on that model, and that you have performed a user seal check immediately after donning the N95. When we breathe out, the inside of the N95 becomes positively pressurized. This means that the pressure inside the N95 will be greater than the surrounding air, and the air from inside will rush out. A large majority will pass directly through the material, but some may go around the outside of the N95.

When you breathe in however, the inside of the N95 becomes negatively pressurized. As a result, the N95 will collapse closer to your face and incoming air is forced to enter through the material.

The air we breathe out is warm and moist, and a small amount can fog up glasses. If you find your glasses tend to fog up, try adjusting them prior to entering an isolation area. You may also find it helpful to put antifog solution on the lenses to prevent them from fogging up.

If you wore your glasses during your fit-test, you probably noticed them fog up at that time as well. If you passed your fit-test, this will have demonstrated that even though they fogged up, the N95 provided sufficient respiratory protection.

Will air come in through the sides of the N95 if I move my head around a lot?

During the fit-test process, a number of exercises are required to be performed, including turning your head side-to-side, nodding up and down, and talking. These exercises are used to simulate some of the extreme movements that can be performed in a care or work setting. A passed fit-test demonstrates that even while performing these types of exercises, the N95 provides sufficient respiratory protection.

When do I remove my N95?

The N95 should only be removed in a clean area, such as in an anti-room. All other personal protective equipment (i.e. gown, gloves, eye protection, etc) must be removed prior to removing the N95.