

<b>Procedure Title</b>	<b>Personal Protective Equipment - Respirators</b>		
<b>Date of Issue</b>	October 5, 2005	<b>Related Policy</b>	BP 3801-D
<b>Revision Dates</b>		<b>Related Forms</b>	
<b>Review Date</b>		<b>Originator</b>	System Administrative Team
<b>References</b>			
AP 3851-D "Biological Hazards; AP 3850-D "Asbestos; AP 3859-D "Silica; AP 3860-D "Lead			

**Procedure:**

**1.0 Authority**

- Bluewater District School Board Policy BP 3801-D "Health and Safety" regulates the Occupational Health and Safety requirements to ensure all students and staff have a safe environment.
- Bluewater District School Board Administrative Procedure, Biological Hazards AP 3851-D
- Bluewater District School Board Administrative Procedure, Asbestos AP 3850-D
- Bluewater District School Board Administrative Procedure, Silica AP 3859-D
- Bluewater District School Board Administrative Procedure, Lead AP 3860-D

**2.0 Definitions**

- TWAEV:** The maximum Time Weighted Average Exposure Value as determined by the Occupational Health and Safety Act for a specific chemical or product.
- STEV:** The Short Term Exposure Value as determined by the Occupational Health and Safety Act for a specific chemical or product.
- CEV:** The Ceiling Exposure Level as determined by the Occupational Health and Safety Act for a specific chemical or product.
- IDLH:** Immediately dangerous to life or health - an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape.
- APF:** The Assigned Protection Factor is a number that each type of respirator is given that allows the user to determine the maximum concentration of airborne contaminant that the respirator is capable of protecting the user against.
- Respirator:** A non powered reusable or replaceable air purifying filter device suitable for the protection of the worker for the material designated.

### 3.0 Board Requirements

When an employee or student is exposed to the hazard of an airborne particulate, fumes or vapor exceeding the TWAEV, STEV or CEV or as prescribed by the OH&S Act and its Regulations, the employee or student shall wear the respirator appropriate to the circumstances.

### 4.0 Responsibilities

#### 4.1 Board Responsibilities:

As required under the Occupational Health and Safety Act, the Board will,

- Identify and perform testing to determine tasks and activities that are hazardous to the worker and establish a Respirator Use Program for use by employees and students.
- Provide the prescribed respirators suitable for the intended use and implement a maintenance program for the equipment.
- Implement a training program for workers in the use of the prescribed respirator. The training program will include the proper selection, fit, fit testing, maintenance procedures and use of the respirator.

#### 4.2 Principal/Manager Responsibilities:

- Ensure personal protective equipment as prescribed is provided.
- Ensure employees and students have the appropriate training for the wearing and use of the prescribed respirator for the tasks assigned.
- Ensure the personal protective equipment is worn and maintained as prescribed.
- Identify tasks or work procedures that could exceed the TWAEV, STEV or CEV for substances in the work place and request appropriate testing to determine the need for personal protective equipment.

### 4.3 Employee Responsibilities

- Participate in the prescribed training and wear the personal protective equipment designated for the task.
- Work in a manner to minimize the need for personal protective equipment designated for the task.
- Select and wear the proper prescribed respirator and filter appropriate for the task being performed.
- Maintain personal respirators as per the training program and report any damage to the equipment provided.
- Identify tasks or work practices that may exceed the TWAEV, STEV or CEV for substances and if performing these tasks shall wear the appropriate respirator until testing can be performed and confirm the proper work practices required.
- Inform his/her immediate supervisor if he/she has a medical condition that would make it unsafe to use a respirator.
- Perform a negative and/or pressure user seal check after each donning of an elastomeric faceplate respirator.

### 5.0 Respirator

#### 5.1 Respirator Fit Testing and Care

Please refer to Appendix 1 for the procedures for Fit testing and care of respirators.

#### 5.2 Respirator Selection Guide

Please refer to Appendix 2 for the details of approved respiratory protective equipment.

#### 5.3 Respirator Selections

Please refer to Appendix 3 for the list of approved respiratory protective equipment and recommended protection for specific hazards.

**APPENDIX 1**

**REUSABLE ELASTOMERIC FACEPLATE RESPIRATORS**

**Respirator Fit Testing - Qualitative Fit Test Procedure:**

- All workers to whom tight fitting elastomeric face plate respirators have been issued shall be fit tested to ensure that the equipment provides adequate protection.
- Because the use of a respirator can put added physical stress on a worker, prior to fit testing, each employee shall be asked to complete a Respirator User Screening Form (Appendix 4), see Appendix 2, a tool used to identify conditions that may put a worker at risk.

**Sensitivity Test**

- The test subject should not eat, drink or chew gum for 15 minutes before the test.
- Have the subject put on the test hood without a respirator and position the hood so that there is about 12 cm between the subject's face and the hood window.
- Instruct the test subject to mouth breathe
- Inject 10 squeezes of the Test Sensitivity Solution into the hood. If the subject can detect the taste of the test solution, record the number of squeezes and proceed to the fit test.
- If the subject does not taste the solution, inject another 10 squeezes of the aerosol. If tasted, record the total amount (20 squeezes) and proceed to fit testing.
- If the subject still does not taste the material, inject 10 more squeezes. If the subject tastes the material at this level, again record the total number of squeezes and proceed to the fit test.
- If the subject does not taste the test material after 30 squeezes, the test is terminated and another method of fit testing must be used.
- After successful completion of the sensitivity test, remove the hood and allow the subject a few minutes to clear the taste from his/her mouth before proceeding to fit testing.

**Fit Testing**

- Have the subject put on the respirator and fit check it according to the instructions provided with the unit.
- Put on the hood as before and have the subject mouth breathe.
- Inject the same number of squeezes of the Fit Test Solution as was required to get a taste response in the Sensitivity Test.
- To maintain an adequate aerosol concentration during the test period, one half of the squeezes as injected above should be added every 30 seconds.
- After the initial injection of aerosol, ask the subject to perform the following exercises for 60 seconds each.

1. Normal breathing
2. Deep breathing - breaths deep and regular
3. Turn head side to side
4. Nodding head up and down
5. Talking, or ask the subject to read a paragraph aloud
6. Normal breathing

- The test is terminated any time the subject can taste the test solution. Check the fit and repeat the test, or acquire a different mask design.
- If the entire test is performed without the subject tasting the test aerosol, the respirator fit is deemed to be satisfactory.

**Negative Pressure User Seal Check Using Tight Fitting Elastomeric Face pieces**

- While a negative pressure user seal check can usually be conducted on air purifying respirators equipped with tight fitting face pieces, it may be difficult or impossible to conduct this test if the air purifying elements are of a size or shape that does not allow the inhalation inlets to be temporarily sealed.

- The user seal check consists of closing off the openings of the inlet air so that upon inhalation, passage of air into the face piece will not occur. This seal can be maintained with the hands, or a piece of plastic wrap.
- The user shall inhale gently and hold his/her breath for at least 5 seconds. The face piece will collapse slightly against the face and should remain collapsed while the breath is held.
- If the face piece remains collapsed while the breath is held, the test is successful.
- If the face piece does not remain collapsed, while a breath is held, the user shall remove the respirator and inspect for a cause of the leakage. Correct any problems discovered or replace the respirator.
- Users shall not use a respirator for which a user seal check cannot be successfully completed.

#### **Positive Pressure User Seal Check Using Tight Fitting Elastomeric Face pieces**

- A positive pressure user seal check can be conducted on respirators equipped with tight fitting face pieces that contain both inhalation and exhalation valves.
- While wearing the respirator, the user shall seal the exhalation valve while gently breathing out.
- If a slight positive pressure cannot be maintained for 5 seconds, the user shall verify that nothing is obstructing the sealing surface and that the harness and face piece is properly adjusted. Repeat the seal check.
- If it still will not hold a positive pressure, examine all components, correct if possible or obtain a replacement respirator.
- The user shall not use a respirator for which a user seal check cannot be completed successfully.

#### **Respirator Cleaning Procedure**

- Remove the filters or cartridges from the unit.
- Disassemble the face pieces as recommended by the manufacturer.
- Inspect all components to ensure that all parts are in good repair.
- Wash the components in warm water using a mild detergent. A stiff (not wire) brush may be needed to remove dirt.
- Rinse components in warm, preferably running water to remove all dirt and detergent residue.

#### **Respirator Disinfection**

- Immerse the respirator components for two minutes in one of the following solutions:
  1. Hypochlorite solution (50 ppm chlorine) made by mixing 1 ml of household bleach in 1 litre of warm water.
  2. Other commercially available cleansers/disinfectants that are recommended by the respirator manufacturer.
- Rinse thoroughly with warm, preferably running water to remove all disinfectant residues.
- Wipe with a soft cloth and allow to dry thoroughly before reassembling.

#### **Respirator Storage**

- When not in use, the respirator should be stored in a plastic bag or container in a cool dry area.
- The respirator should not be stored in a way that the elastomeric face piece could be deformed and make a positive face seal impossible.

## APPENDIX 2

**DISPOSABLE FILTERING FACE PIECE AND HOSPITAL FACE MASKS****Filtering Face Piece Masks**

This type of respiratory protection is suitable for use in areas that contain no hazardous gasses or vapours where protection is required from nuisance dust or mists. Job tasks such as high dusting, sweeping, grinding or sanding may suspend sufficient particles in the air that a worker would require this type of protection.

**Fitting of Filtering Face Piece Masks**

Both elastic straps must be in place to ensure that an adequate seal between the face and the mask is achieved. To put on the mask, position the two straps at the top of the mask, and cup the face piece in one hand and position it over the mouth and nose. With the second hand, stretch the top strap into position near the crown of the head. Extend the second strap over the head and position it near the base of the neck. Adjust for comfort and fit. To get a proper seal around the nose, using the index fingers of both hands, gently, but firmly mould the metal strip on the nosepiece to the contours of the face. Note: Both straps must be in place to achieve a proper seal on the user's face. While this type of respirator can be fit tested, it is not normally done. The user should ensure that the mask fits snugly, and that there is no noticeable air leakage around the bridge of the nose or the chin when exhaling.

**Hospital Style Face Masks**

This type of respiratory protection is to be used when there is a risk of inhaling a biological contaminant when toileting or performing other job related functions with high needs students.

**SELECTION OF APPROPRIATE RESPIRATORY PROTECTION****Contaminant(s) Present**

**Filtering face pieces (disposable paper masks)** will only give protection against dusts, mists and fumes and are to be used in situations where nuisance materials are encountered.

**Hospital style face masks** are only to be worn in a controlled setting when performing such tasks as toileting and catheterization.

**Elastomeric Face piece Respirators** if the air contaminant is a gas or vapour, or if the dust is hazardous (asbestos) shall be worn. Cartridges and filters for these respirators are colour coded.

The following filters and chemical cartridges are routinely available for use:

<b>Cartridge/Filter</b>	<b>Colour</b>
Dust/mist/fume (HEPA)	Magenta
Organic Vapour	Black

**Concentration of Contaminant(s)**

Each type of respirator is given an Assigned Protection Factor (APF). This number allows the user to determine the maximum concentration of airborne contaminant that the respirator is capable of protecting the user against. In order to determine the maximum concentration, the user must also know the Time Weighted Average Exposure Value (TWAEV). A listing of this value can be found in Regulation 833, "Control of Exposure to Chemical or Biological Agents" of the Ontario Health and Safety Act.

The chosen respirator may be used in concentrations up to the value: **APF x TWAEV.**

This equation can be used to:

- a) determine the maximum airborne concentration that a user's respirator may be worn, For example, if the selected respirator has an APF of 10 and the TWAEV of the contaminant is 5 ppm, the respirator will protect the user in atmospheres containing up to  $(10 \times 5) = 50$  ppm OR
- b) select the appropriate respirator. For example, if the airborne concentration of the contaminant is 125 ppm and the TWAEV is 5 ppm, a respirator of at least  $(125/5) = 25$  must be used.

The following is a list of Assigned Protection Factors for our commonly used respirators.

<b>Type of Respirator</b>	<b>APF (NIOSH)</b>
Filtering Face pieces	5
Elastomeric 1/2 Face piece	10
Elastomeric Full Face piece	10 or 50*

\*Rated at 50 when used with a HEPA filter.

**CAUTION!! If the concentration of a contaminant cannot be reasonably estimated, do not enter the contaminated area until air sampling is done.**

**Proper Respirator and cartridge/filter selection**

**Appendix 3** lists the most commonly encountered situations where respiratory protection may be required, and the required protection in each case. For situations not listed, please consult with your immediate supervisor.

The Board has chosen to standardize on the 3M 6000 series half face piece respirator. If a worker's facial shape is not compatible with this particular model, a suitable substitute shall be supplied.

Disposable particulate respirators shall conform to NIOSH 42 CFR 84 Standards. The recommended model is the North 7130N95.

When working with high needs students where there is a potential risk from biological hazards, but it is important that the respiratory protection appear non-threatening, while still protecting the worker. The Kimberly-Clark "Teddy Bear Surgical Mask" Product Code 48296 has been chosen as the preferred model.

Task/Hazard	Maintenance Group	Custodial Staff	Educational Assistants	Technology Teachers
Spray painting – High Volume	Full Face Mist & Vapours (Filter Magenta)			
Spray painting – Small tasks	Disposable nuisance dust			Disposable nuisance dust
Asbestos Type 1 or Type 2 Operations	Half face HEPA dust and particle (Filter Magenta)	Half face HEPA dust and particle (Filter Magenta)		
Solvents	Half face Organic Vapour (Cartridge Black)	Half face Organic Vapour (Cartridge Black)		
High particulate generating operations: Power sweeper High dusting Grinding Sanding Sand Blasting Welding	Disposable nuisance dust	Disposable nuisance dust		Disposable nuisance dust
Biological hazards - Mould remediation	Half face HEPA dust and particle (Filter Magenta)	Half face HEPA dust and particle (Filter Magenta)		
Biological hazards – Toileting, catheterization			Hospital style	

Note: Cartridges have an expiry date. Please check expiration date and dispose of stale dated cartridges.  
Once cartridge packages are opened, the life span is shorter and it is recommended to be disposed of if not to be used within two weeks.  
**HEPA filters must be discarded after use in mould remediation.**