RESPIRATORY PROTECTION PROGRAM

HARVARD INSTITUTES OF MEDICINE/
NEW RESEARCH BUILDING

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November 2011

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LIST OF ABBREVIATIONS AND ACRONYMS

EH&S	Environmental Health and Safety
HIM	Harvard Institutes of Medicine
NRB	New Research Building
OHD	Occupational Health Departments
OSHA	U.S. Occupational Safety and Health Administration
PAPR	Powered Air Purifying Respirator
PI	Principal Investigator
RPP	Respiratory Protection Program

1.0 RESPIRATORY PROTECTION PROGRAM

1.1 POLICY

This Respiratory Protection Program (RPP) is intended to meet the requirements of the U.S. Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard (29 Code of Federal Regulations 1910.134) for the Harvard Institutes of Medicine and New Research Building (HIM/NRB). As such, the RPP addresses all HIM/NRB activities that may require respiratory protection. This program details the individuals responsible for the HIM/NRB RPP and the tasks that will be performed to implement the plan. Compliance with the RPP is required of all HIM/NRB occupants/staff and contractors. The RPP does not apply to outside visitors to HIM/NRB laboratories.

1.2 PURPOSE

Our primary objective at HIM/NRB is to eliminate airborne hazards to the fullest extent possible using feasible engineering controls and sound work practices. The use of respirators as the primary means of protection from airborne contaminants is acceptable only in very limited situations. These include those instances in which engineering controls are not feasible or effective in reducing hazards, while controls are in the process of being instituted, or during clean up operations and other emergency situations. In such situations, Department Administrators, Principal Investigators (PIs) or their designees, in conjunction with HIM/NRB Environmental Health and Safety (EH&S) Office, will determine the need for respirators and be responsible to ensure that all applicable provisions of the RPP are being followed.

As a matter of general policy, all provisions of the RPP are to be followed whenever respirators are required to be worn for the individual's protection. In circumstances where respirators are not required to be worn by reason of hazards but individuals choose to use them for comfort or other reasons (voluntary use); all but the fit testing requirements of the RPP will apply.

2.0 RESPONSIBILITY

HIM/NRB Environmental Health and Safety Office: This office will consult with Department Administrators, PIs or their designees to determine when the use of respirators is needed and which type of respiratory protective equipment is appropriate. HIM/NRB EH&S will also ensure that all staff required to use respirators are properly trained and fit tested by competent individuals.

Employee/Occupational Health Departments (OHD): The OHD at each home institution will ensure that persons assigned to tasks that might require the use of respirators are medically cleared to do so. Individuals must be medically evaluated to ensure that wearing a respirator will not impair their health. If those individuals are not medically cleared, OHD is to inform them. The OHD will evaluate the medical status of persons requiring the use of respirators as necessary. For more information on the medical evaluation process or to obtain a medical clearance form, contact your institution's OHD.

Principal Investigators/Department Administrators: The PI or their designee will ensure that the criteria contained in this section are complied with as appropriate whenever personnel within their supervisory jurisdiction use or are expected to use respirators for protection against airborne hazards. PIs or their designees will be responsible for managing and coordinating the department's use and involvement with respirators. Their responsibilities include providing feedback regarding the RPP to the HIM/NRB EH&S Office.

All Staff: All staff at HIM/NRB are responsible for using their respirators in accordance with their training and instruction. Individuals who are required to wear respirators for protection against health hazards are expected to comply with the following guidelines:

- Wear only the model and size of respirator for which fit testing has been conducted.
- Check the respirator for a good fit before each use.
- Check the respirator for deterioration before and after each use.
- Recognize indications that cartridges and/or filters are at the end of their service life.

- Clean and sanitize reusable respirators after each use and store carefully in a protected location.
- Discard disposable respirators as directed.

3.0 RESPIRATOR CRITERIA

3.1 USE CRITERIA

- Respirators shall be worn when they are necessary for protection of health. An evaluation of hazards or potential hazards by the HIM/NRB EH&S Office shall serve as the basis of determining whether respiratory protection is required and will decide what type of respirator is to be used.

- All respirators issued must be clean and in good working order.

- Persons who are issued respirators to protect against recognized hazards must:
  - Be medically approved by your institution's Occupational Health Department to wear a respirator. Please provide the HIM/NRB EH&S Office a copy of the medical clearance document.

  - Be properly fit tested and receive training on the proper use of respirators and their limitations by a representative of the HIM/NRB EH&S Office or their designee. For Powered Air Purifying Respirator (PAPR) use, employees will be shown how to operate and care for the unit.

3.2 SELECTION CRITERIA

- Only respirators certified and approved by OSHA and the National Institute for Occupational Safety and Health will be selected for use at HIM/NRB. Respirator types, makes, and models will be selected by the PI or their designee, after consultation with the HIM/NRB EH&S Office or their designee. Respirators to be used at any given time will be selected on the basis of the hazard and nature of exposure, as determined by the HIM/NRB EH&S Office.

- Respiratory protection available at HIM/NRB includes, but is not limited to, the following:

Use	Respirator Type
Research activities	Negative pressure air purifying respirator with appropriate cartridges/filters
	PAPR with appropriate cartridges/filters
	N95
Conducting research with subjects potentially infected with tuberculosis	PAPR with appropriate cartridges/filters
	N95
Hazardous chemical spill clean-up	Negative pressure air purifying respirator with appropriate cartridges/filters

PAPR Powered Air Purifying Respirator
N95 at least 95% efficient at removing particles 0.3 micrometer in size

4.0 TRAINING

Each department whose employees may engage in wearing respirators shall ensure that such individuals receive appropriate respirator training. Training is to be conducted by a representative of the HIM/NRB EH&S Office or their designee. All training should be documented and training records maintained by the HIM/NRB EH&S Office (see Respirator Training Checklist in Appendix A). Respirator training shall be conducted as needed and coordinated by the HIM/NRB EH&S Office.

Respirator training shall include the following as a minimum scope of instruction:

- Instructions on how to properly don, adjust, and fit respirators.
- Basic explanation of the purpose of respirators and the basis for proper selection.
- Discussion on the limitations of respirators and how to recognize warning properties of contaminants.
- How to examine the respirator for defects, worn or broken parts and other factors which may cause the respirator to malfunction.
- Instructions on cleaning, disinfecting, general maintenance, and proper storage of respirators.
- How and when to replace particulate and chemical cartridges on the air-purifying, negative pressure type respirators.
- An explanation and demonstration of qualitative fit testing procedures and those factors which may interfere with the proper fit of respirators.
- Instructions and demonstration on how to conduct positive and negative pressure tests.

5.0 FIT TESTING

Personnel required to wear negative pressure respirators must be fit tested to assure that the face piece of the respirator forms a good seal around the mouth and nose of the wearer. Qualitative or quantitative fit tests are acceptable methods of testing and will be conducted on employees requiring the use of respirators. Negative and positive pressure tests will also be conducted in conjunction with the fit testing. Participants will receive instruction on how to perform negative and positive pressure tests on themselves each time the respirator is donned.

Fit testing shall be conducted by a representative from the HIM/NRB EH&S Office or their designee as needed. Fit testing to the N95s (respirator that is at least 95% efficient at removing particles 0.3 micrometer in size) will only be conducted when the employee is required to wear the respirator as part of their job duties. For voluntary employee use of respirators, where respirators are not required to be worn by reason of hazards, all but the fit testing requirements of the RPP will apply.

Personnel not able to demonstrate a good facial seal shall be notified. Satisfactory fit testing results may not be obtainable on persons with excessive facial hair or other interfering features. Personnel who fail to satisfy the specific fit test criteria for air purifying respirators should not be assigned to tasks requiring the use of such equipment or alternative methods of protection must be provided.

Fit testing shall be recorded on the testee's home institution's respirator fit testing form. See Appendix B for fit testing forms.

6.0 OPERATION AND MAINTENANCE OF RESPIRATORS

6.1 INSPECTION OF RESPIRATORS

All respirators are to be inspected by the wearer each time they are used to ensure that they are clean and in good working order. PIs/Department Administrators or their designees should also periodically spot check the condition of respirators and assure that an adequate supply of filters, cartridges and other needed accessories are available.

Respirator inspections should include the following check points:

- Tightness of connections and condition of face piece
- Broken headbands or malfunctioning parts
- Condition of inhalation and exhalation valves (where applicable)
- Condition and availability of particulate and chemical cartridges for negative pressure, air purifying respirators
- Pliability and/or deterioration of any rubber or elastomer respirator parts

All major repairs or replacement of parts on reusable respirators should be performed by the manufacturer. Components and parts from various respirator manufacturers are not interchangeable.

6.2 CLEANING AND DISINFECTING REUSABLE RESPIRATORS

Reusable respirators are to be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use or more often if necessary.

Daily cleaning of respirators will be the responsibility of the individual who has been assigned their own respirator. Cleaning may be accomplished by wiping all surfaces of the respirator with a non-alcohol wipe or as recommended by the manufacturer.

Respirators that may be used by more than one person shall be cleaned and sanitized per the manufacturer's instructions after each use. Wipes will be made available to respirator users.

All emergency use respirators must be cleaned and disinfected immediately after each use.

6.3 STORAGE

Between uses, reusable respirators shall be stored in a clean, sealable plastic bag.

Respirators should be stored away from dust, sunlight, heat, extreme cold, excessive moisture, chemicals, and mechanical damage. They should also be stored or placed in a manner to prevent the rubber or plastic face piece from becoming distorted or the exhalation valves being damaged.

7.0 PROGRAM EVALUATION

HIM/NRB EH&S will review the RPP annually. Several factors must be evaluated to determine program effectiveness. These include, but are not limited to:

- Are hazards being correctly identified?
- Are the appropriate respirators being used for the hazards being encountered?
- Are the respirators being used in an appropriate manner?
- Are the respirators being properly cleaned and maintained?
- Have all workers received appropriate training and medical evaluation?
- Are all aspects of the respiratory protection standard adequately addressed?

APPENDIX A

RESPIRATOR TRAINING CHECKLIST

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- Discussion on the limitations of respirators and how to recognize warning properties of contaminants.
- How to examine the respirator for defects, worn or broken parts and other factors that may cause the respirator to malfunction.
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- Instructions and demonstration on how to conduct positive and negative pressure tests.

Date: _____

Trainee: _____

Instructor: _____

APPENDIX B

RESPIRATOR FIT TEST FORMS

BRIGHAM AND WOMEN'S HOSPITAL

Employee Information for Qualitative Fit Testing

First Name:_____ Date: _____

Last Name:_____ ID#:_____

Department:_____

Location:_____

N95 Respirator

I. Model: 3M 1860

Size: small regular PAPR

II. Training

☐ Demonstration Conducted

☐ *"Wear it Right"* 3M Respirator Guide received

☐ *"What You Should Know about Tuberculosis"* received

PAPR

I. Reason for Use

Beard ☐ Failure to fit N95 ☐

Medical ☐ Other: _____

II. Training

☐ Demonstration Conducted

☐ Will be conducted on _____

☐ Completed

III. Fit Checks (if successful)

Negative ☐ Positive ☐

IV. Qualitative Fit Test

Saccharin ☐ Bitrex ☐ Threshold level _____

V. Fit Test Result

Pass ☐ Fail ☐

Employee acknowledgement of respirator training and fit testing results.

Employee Signature: _____ Date:_____ Fit-Tester Initials:_____

HARVARD UNIVERSITY

University Operations Services

RESPIRATOR QUANTITATIVE FIT TEST FORM

EMPLOYEE INFORMATION (HMS, HSDM, HSPH)

Employee Name	Date of Test
Harvard ID Number	Job Title / Department
Telephone (Business)	Reason for Use

INFORMATION ON FIT TESTER

Name:	Signature:
Department:: EHS Department?	Company/Job Title Not necessary?
Telephone (Business) Not necessary?	(Pager) not necessary?

Quantitative Fit Test Selected:	❑	☑ TSI Portacount Plus	❑ Other:

Fit Test Problems:	❑ Beard Growth ❑ Facial scaring	❑ Dentures ❑ Prosthetics	❑ Glasses ❑ Cosmetic Surgery	❑ Other:

RESPIRATOR SELECTION

No.	Procedure	Yes	No
1.	We include information about the physical activities to be performed while wearing a respirator Test subject has own respirator		
2.	Reviewed Respirator donning/fitting techniques with test subject		
3.	Assessed comfort of selected mask by reviewing the following: Positioning mask on the nose; Room for eye protection; Room to talk; Positioning mask on face and cheeks		
4.	Adequacy of respirator fit: Chin properly placed; Snap tension; Fit across nose bridge; Distance from nose to chin; Tendency to slip; Self-observation in mirror		
5.	Test subject selected the most comfortable respirator from a selection of manufacturers and sizes		
6.	Test subject conducted negative and positive pressure checks		
7.	Test subject questioned again regarding comfort of respirator after passing the fit test (if not comfortable, allow selection of another model)		
8.	Test subject given the opportunity to select a different facepiece and be retested if respirator becomes uncomfortable at any time during the test		

FIT TEST

No.	Test Exercises (length of time for each test is one minute while standing)	Fit Factor
1.	**Breathe normally.**	
2.	**Breathe deeply.** Be certain breaths are deep and regular.	
3.	**Turn head all the way from one side to the other.** Inhale on each side. Be certain movement is complete. Do not bump the respirator against the shoulders and be careful not to dislodge the respiratory by putting tension on the Portacount tubing	
4.	**Nod head up-and-down.** Inhale when head is in the full up position. Be certain motions are complete and made about every second. Do not bump the respirator on the chest . and be careful not to dislodge the respiratory by putting tension on the Portacount tubing	
5.	**Talking.** The following is called the "Rainbow Passage." ***Hand a copy of this passage (alternatives can be used) printed on a card and instruct the test subject to read it aloud and slowly***: "When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow."	
6.	**Grimace.**	
7.	**Bend forward.** In a motion as if to touch the toes.	
8.	**Breathe normally.**	

	Criteria for passing/failing fit test (Fail: Half face: <100; Full face <500), N95	**Pass**	**Fail**
	Record the Overall Fit Factor from the Portacount in the appropriate column:		

FIT TEST OPTIONS

No.	Available options	Yes	No
1.	The fit test **cannot** be conducted if there is any hair growth between the skin and the facepiece sealing surface. **Did the test subject have any hair growth between the skin and facepiece sealing surface?**		

RESPIRATOR FIT CERTIFICATION

This is to certify that _____ has been successfully fit tested and trained in
EMPLOYEE
respirator use and care and is qualified to wear the following respirators:

RESPIRATOR BRAND/TYPE SIZE

_____ small medium large