RESPIRATORY PROTECTION PROGRAM

THE WYSS INSTITUTE
FOR
BIOLOGICALLY INSPIRED ENGINEERING

Wyss Institute

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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>EH&amp;S</td>
<td>Environmental Health and Safety</td>
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<tr>
<td>OHD</td>
<td>Occupational Health Departments</td>
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<tr>
<td>OSHA</td>
<td>U.S. Occupational Safety and Health Administration</td>
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<tr>
<td>PAPR</td>
<td>Powered Air Purifying Respirator</td>
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<tr>
<td>PI</td>
<td>Principal Investigator</td>
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<tr>
<td>RPP</td>
<td>Respiratory Protection Program</td>
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<tr>
<td>Wyss Institute</td>
<td>Wyss Institute for Biologically Inspired Engineering at Harvard University</td>
</tr>
</tbody>
</table>
CONTACT INFORMATION AND USEFUL WEBSITES

CONTACT INFORMATION

<table>
<thead>
<tr>
<th>Name/Title</th>
<th>Phone Number</th>
<th>E-mail</th>
</tr>
</thead>
<tbody>
<tr>
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<td>617-432-7222 (office) or</td>
<td><a href="mailto:cneal@eheinc.com">cneal@eheinc.com</a></td>
</tr>
<tr>
<td></td>
<td>617-293-0333 (cell)</td>
<td></td>
</tr>
<tr>
<td>Jessica Healey, M.S., Biosafety Officer</td>
<td>774-244-7018 (cell)</td>
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</tr>
<tr>
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<td>800-825-5343*</td>
<td><a href="mailto:bgduane@eheinc.com">bgduane@eheinc.com</a></td>
</tr>
<tr>
<td>EH&amp;S Emergency Response Pager</td>
<td>781-597-9786</td>
<td></td>
</tr>
<tr>
<td>Harvard Radiation Safety</td>
<td>617-496-3797 Emergency after</td>
<td><a href="mailto:radiation_protection@harvard.edu">radiation_protection@harvard.edu</a></td>
</tr>
<tr>
<td></td>
<td>hours number: 617-495-5560</td>
<td></td>
</tr>
<tr>
<td>Mary Tolikas, Wyss Operations Director</td>
<td>978-457-5191</td>
<td><a href="mailto:mary.tolikas@wyss.harvard.edu">mary.tolikas@wyss.harvard.edu</a></td>
</tr>
<tr>
<td>Jean Lai, Assistant Director for Operations</td>
<td>617-432-7097</td>
<td><a href="mailto:Jean.lai@wyss.harvard.edu">Jean.lai@wyss.harvard.edu</a></td>
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<td>617-233-9281</td>
<td><a href="mailto:martin.montoya@wyss.harvard.edu">martin.montoya@wyss.harvard.edu</a></td>
</tr>
<tr>
<td>Occupational Health Departments:</td>
<td></td>
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<tr>
<td>Harvard Medical School (HMS)</td>
<td>617-432-1370</td>
<td></td>
</tr>
<tr>
<td>Children’s Hospital Boston (CHB)</td>
<td>617-355-7580</td>
<td></td>
</tr>
<tr>
<td>Beth Israel Deaconess Medical Center (BIDMC)</td>
<td>617-632-0710</td>
<td></td>
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<tr>
<td>Dana-Farber Cancer Institute (DFCI)</td>
<td>617-632-3016</td>
<td></td>
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<tr>
<td>Boston University (BU)</td>
<td>617-353-6630</td>
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</tr>
<tr>
<td>Massachusetts Institute of Technology (MIT)</td>
<td>617-253-8552</td>
<td></td>
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<tr>
<td>University of Massachusetts (UMass) Medical School:</td>
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<tr>
<td>Employee Health University Campus</td>
<td>774-441-6263</td>
<td></td>
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<tr>
<td>Employee Health Memorial Campus</td>
<td>508-334-6238</td>
<td></td>
</tr>
<tr>
<td>Employee Health 210 Lincoln Street</td>
<td>508-793-6400</td>
<td></td>
</tr>
<tr>
<td>Harvard University Police Department (HUPD)</td>
<td>617-432-1212</td>
<td></td>
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(Contact Information updated as of March 2013)

* NOTE: 800-825-5343 is the phone number for the main switchboard for Environmental Health & Engineering, Inc. (EH&E), which is the company supplying environmental health and safety (EH&S) support. Please specify the employee when the person answers the phone. For EH&S emergencies, please call the EH&S emergency response pager.

EMERGENCY REPORTING

For any emergency, contact the Harvard University Police Department (HUPD) at 617-432-1212.

For medical emergencies call 911 then HUPD with the exact location of the emergency.
For lock-outs or walking escorts anywhere on campus, call New Research Building Security at 617-432-6119.

**EMERGENCY HOSPITALS**

For Harvard, Children’s Hospital Boston, Brigham and Women's Hospital (BWH), Dana-Farber Cancer Institute affiliated personnel: **BWH**

For Beth Israel Deaconess Medical Center (BIDMC) affiliated personnel: **BIDMC**

For Massachusetts Institute of Technology (MIT) affiliated personnel: **MIT Medical**

For Boston University (BU) affiliated personnel: **Boston Medical Center**

**Note:** For MIT, University of Massachusetts Medical School, and BU affiliated personnel, patients should be taken to the nearest available hospital if necessary.

**WEBSITE**

<table>
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<th>Department/Resource</th>
<th>Webpage</th>
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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 (Title 29 Code of Federal Regulations Part 1910.134) for the Wyss Institute for Biologically Inspired Engineering at Harvard University (Wyss Institute). As such, the RPP addresses all Wyss Institute activities that may require respiratory protection. This program details the individuals responsible for the Wyss Institute RPP and the tasks that will be performed to implement the plan. Compliance with the RPP is required of all Wyss Institute occupants/staff and contractors.

1.2 PURPOSE

Our prime objective at the Wyss Institute 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 being instituted, or during clean up operations and other emergency situations. In such situations, Institute Administrators, Principal Investigators (PIs), or their designee, in conjunction with the Wyss Institute Environmental Health and Safety (EH&S) Office, will initiate 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 addressed 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, all but the fit testing requirements of the RPP will apply.
2.0 RESPONSIBILITY

Wyss Institute Environmental Health and Safety Office: This office will consult with Institute Administrators, PIs or their designee to determine when the use of respirators is needed and which type of respiratory protective equipment is appropriate. 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): Personnel performing research at the Wyss Institute are employed by multiple institutions, including but not limited to Harvard University, Children’s Hospital Boston, Boston University, Dana-Farber Cancer Institute and the Beth Israel Deaconess Medical Center. 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/Institute 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 atmospheric hazards. PIs or their designee will be responsible for managing and coordinating the Institute’s use and involvement with respirators. Their responsibilities include providing feedback regarding the RPP to the Wyss Institute EH&S Office.

All Staff: All staff at the Wyss Institute 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 respirator instructed to use.
• 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 Wyss Institute 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 Wyss Institute EH&S Office a copy of the medical clearance document.
  – Be properly fit tested and/or receive training on the proper use of respirators and their limitations by a representative of the Wyss Institute 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/National Institute for Occupational Safety and Health will be selected for use at the Wyss Institute. Respirator types, makes, and models will be selected by the PI or their designee, after consultation with the Wyss Institute 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 Wyss Institute EH&S Office.

• Respiratory protection available at the Wyss Institute includes, but is not limited to, the following:
<table>
<thead>
<tr>
<th>Use</th>
<th>Respirator Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research activities</td>
<td>Negative pressure PAPR with appropriate cartridges/filters N95</td>
</tr>
<tr>
<td>Conducting research with subjects</td>
<td>PAPR with appropriate cartridges/filters</td>
</tr>
<tr>
<td>potentially infected with tuberculosis</td>
<td>N95</td>
</tr>
<tr>
<td>Hazardous chemical spill clean-up</td>
<td>Negative pressure air purifying respirator with appropriate cartridges/filters</td>
</tr>
</tbody>
</table>

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

The Wyss Institute shall ensure that individuals who may engage in wearing respirators and their supervisors receive appropriate respirator training. Training is to be conducted by a representative of the Wyss Institute EH&S Office or their designee. All training should be documented and training records maintained by the Wyss Institute EH&S Office. Respirator training shall be conducted as needed and coordinated by the Wyss Institute 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.
- The hands-on-training to particularly focus on the proper placement and fitting of respirators, replacing cartridges, examining the device for broken or worn parts, and positive and negative pressure testing techniques.
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 Wyss Institute 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 optional 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.
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/Institute Administrators or their designee 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 damaged to the exhalation valves.
7.0 PROGRAM EVALUATION

Wyss Institute 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?