

RESPIRATORY PROTECTION PROGRAM

Pontifical Catholic University of Puerto Rico Ponce Campus

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Table of Contents

1.0	Introduction	3
2.0	Scope and Application	3
3.0	Objectives	3
4.0	Definitions	3
5.0	Responsibilities	5
5.1	Environmental Coordination Office	5
5.2	Department Program Director	6
5.3	Inspectors	6
5.4	Employees	6
6.0	Respiratory Protection Program	7
6.1	Hazard Assessment	7
6.2	Respiratory Types	7
6.3	Selection	8
6.4	Medical Evaluation	9
6.5	Fit testing Procedures	10
6.6	Training	11
6.7	General Respirator Rules Procedures	12
6.8	Cleaning	13
6.9	Maintenance and Inspection	14
6.10	Storage	15
6.11	Recordkeeping	15
6.11.1	Medical Evaluation Record	15
6.11.2	Fit Test Record	15
6.11.3	Training Record	16
6.12	Program Evaluation	16
7.0	APPENDIX	17
	Appendix A	18
	Appendix B	19
	Appendix C	20
	Appendix D	28

1.0 Introduction

The need for the preparation of a Respiratory Protection Program (RPP) is required by federal regulations as set forth under title 29 of the Code of Federal Regulations part 1910 subpart 134. The main objective of the RPP is to provide a safe environment for employees from respiratory hazards. The RPP includes the necessary work practices, procedures and policies to ensure that employees are protected from all potential air hazards in the work area.

2.0 Scope and Application

The RPP shall be implemented for the Pontifical Catholic University of Puerto Rico, Ponce campus with the purpose of ensuring the protection of all employees from respiratory hazards. The primary objective is to prevent harmful exposures caused by breathing air contaminated with harmful dusts, fogs, smoke, mists, gases, vapors and sprays. These hazards can be found in general maintenance products such as paint, cleaning sprays, cabinetwork products, pool chemicals and in the laboratories among others.

3.0 Objectives

The objectives of the RPP are the following:

- Educate employees and students about airborne hazards.
- Establish procedures for selecting respirators.
- Provide guidelines for Medical Evaluations.
- Conduct hazard monitoring whenever needed.
- Provide guidelines for respirator fit testing.
- Establish procedures for cleaning, disinfecting, storing, inspecting, repairing and maintaining respirators.
- Provide training employees in the proper use of respirators.
- Recognition and resolutions of problems that can affect the efficiency of the respirators.

4.0 Definitions

- **ANSI** – The abbreviation for the American National Standard Institute.
- **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.

- **Atmosphere supplying respirator** – Respirator devices that provide a breathing atmosphere to the wearer independent of the ambient atmosphere.
- **Cartridge or canister** – A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
- **Dust** – Solid particles generated by handling, crushing, grinding, rapid impact, detonation of organic or inorganic materials.
- **End of service life indicator (ESLI)** – A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer to remove solid or liquid aerosols from the inspired air.
- **Filtering facepiece (dust mask)** – A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- **Fit test** – The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.
- **Fog** – A mixture consisting of liquid particles dispersed in a gaseous medium.
- **Fume** – Small solid particles usually generated by condensation from the gaseous state of a metal or plastic after volatilization.
- **Gas** – A state of matter in which the material has very low density and viscosity; can expand and contract greatly in response to changes in temperature and pressure; easily diffuses into other gases; readily and uniformly distributes itself throughout any container.
- **Immediately Dangerous to Life and Health (IDLH)** – Acute exposure that poses an immediate threat of loss of life, immediate or delayed irreversible adverse effects on health.
- **Mist** – Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state. Mist is formed when a finely divided liquid is suspended in air.
- **Filter or air purifying element** – A component used in respirators
- **MSHA** – An abbreviation for Mine Safety and Health Administration
- **Negative Pressure Respirator** – A type of respirator in which the air pressure inside is lower relative to the outside air pressure.
- **NIOSH** – An abbreviation for the National Institute for Occupational Safety and Health.
- **Oxygen deficient atmosphere** – An atmosphere with less than 19.5% oxygen content.
- **Permissible Exposition Level (PEL)** – Maximum concentration that an employee could be exposed during a 8 hours working period without PPE.

- **Positive Pressure Respirator** – A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
- **Powered air-purifying respirator (PAPR)** – A type of respirator in which filtered air is delivered under positive pressure to the wearer’s breathing zone.
- **Qualitative fit test (QLFT)** – Means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- **Quantitative fit test (QNFT)** – An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- **Self-contained breathing apparatus (SCBA)** – A type of respirator in which the wearer is independent of the surrounding atmosphere because he/she is breathing with a system that is portable and admits no outside air, thus providing respiratory protection against toxic gases and oxygen deficient atmospheres.
- **Smoke** – An air suspension (aerosol) of particles, originating from combustion or sublimation.
- **Supplied-air respirators (SAR)** – A type of respirator that delivers breathing air through a supply hose connected to the wearer’s facepiece or enclosure.
- **Tight fitting facepiece** – A respiratory inlet covering that forms a complete seal with the face.
- **Threshold Limit Value (TLV)** – A term used by the American Conference of Governmental Industrial Hygienists to express the airborne concentration of a material to which nearly every worker can be exposed day after day without adverse effects.
- **User seal check** – An action conducted by the respirator user to determine if the respirator is properly fit to the face.
- **Vapor** – A term used for a substance that, although present in the gaseous phase, usually exists as a liquid or solid at room temperature and pressure.

5.0 Responsibilities

5.1 Environmental Coordination Office

The Environmental Coordination Office Director will be responsible for the following:

- Developing and implementing the Respiratory Protection Program.
- Conducting audits to determine if the RPP is properly implemented.

- Select the proper respiratory protection equipment.
- Audit the departments to ensure compliance with the RPP.
- Administrate the medical program.
- Maintain records required by the program.
- Evaluate and update the RPP.

5.2 Department Program Director

Each Department Program Director affected by this RPP is responsible for the following:

- Identify the activities, work areas or processes where the use of respirators is necessary.
- Monitoring respirator use to ensure that respirators are used in accordance with their certifications.
- Provide training.

5.3 Supervisors

The Supervisors are responsible for:

- Ensuring that respirators are properly stored, inspected and maintained.
- Provide training for employees that use the respirators.
- Schedule the inspections for the respirators.
- Provide a list with the names of the employees that are required to use the respirators.
- Provide respirator fit testing.

5.4 Employees

Each employee is responsible for the following:

- Wear the respirator where and when is required.
- Maintain and care for their respirators, protect them against damage, and store them in a safe clean designated area.
- Inform their supervisor when the respirator is not in good functioning and if their respirator no longer fits well.
- Inform to Supervisor any possible respiratory hazard.
- Use the respirator in accordance with the instructions of the manufacturer and with accordance with the training received.

6.0 Respiratory Protection Program

6.1 Hazard Assessment

The Environmental Coordination Office will choose the respirators used in the University. The selection of the respirators is based on the hazard to which each employee is exposed. The Environmental Coordination Office will perform an evaluation of each process, operation or work area where hazardous contaminants may be present. These evaluations will include:

- Identification of hazardous substances used in a work area or process.
- Monitoring to quantify potential hazardous exposures.
- Interview employees and supervisors about any possible hazards.
- The Environmental Coordination Office must review and update the hazard assessment as needed.

Refer to Appendix A for Location of Potential Dangerous Atmospheres.

6.2 Respirator Types

Many types of respirators are used for protection, but there are two (2) basic types:

- Atmosphere supplying – Respirators which are designed to provide breathing air from a clean source outside of the contaminated work area. They range from supplied air respirators and self contained breathing apparatus (SCBA) to complete air supplied suits. The followings are types of atmosphere supplying:
 - Air supplied respirators – Use a hose to deliver clean air from a stationary source of compressed air. Provides clean air for long periods of time and are light weights for the user. Limits the range of user mobility and may fail due to hose damage. Are normally used when there are extended work periods required in atmospheres that are not immediately dangerous to life and health (IDLH)
 - Combination Respirators – Have an auxiliary self-contained air supply that can be used if the primary supply fails. The self-contained portion can be small since it only needs to supply enough air for escape. Can be used for entry into confined spaces. Are normally used when there are extended work periods required in atmospheres that are or may be immediately dangerous to life and health (IDLH)

- Self-Contained Breathing Apparatus (SCBA) – Consists of a wearable, clean-air supply pack. Do not restrict movement with a hose connection. The closed-circuit type can provide air up to 4 hours. The open-circuit type only provides air for 30 - 60 minutes. Are normally used when there is a short-time need to enter and escape from atmospheres which are or may be immediately dangerous to life and health (IDLH)
- Air purifying – These respirators use filters or absorbents to remove harmful substances from the air. They range from simple disposable masks to sophisticated positive-pressure, blower-operated units. Air purifying respirators may not be used in an oxygen deficient atmosphere or under immediately dangerous to life or health (IDLH) conditions.
 - Particulate respirators – Capture particles in the air, such as dusts, mists, and fumes. Do not protect against gases or vapors. Generally become more effective as particles accumulate on the filter and plug spaces between the fibers. Filters should be replaced when user finds it difficult to breath through them.
 - Combination Respirators – Are normally used in atmospheres that contain hazards of both particulates and gases. Have both particulate filters and gas/vapor filters.
 - Gas and Vapor Respirators – Are normally used when there are only hazardous gases and vapors in the air. Use chemical filters (called cartridges or canisters) to remove dangerous gases or vapors. Do not protect against airborne particles. Are made to protect against specific gases or vapors. Provide protection only as long as the filter's absorbing capacity is not depleted. The service life of the filter depends upon many factors and can be estimated in various ways.

6.3 Selection

Respirator selection is directly related to the hazard(s) present, the degree of the hazard(s) and the user. The factors to be considered in the selection of a respirator are:

- Determine the nature of the hazard
 - Concentration and identity of the contaminant(s)
 - Determine the Threshold Limit Value, Permissible Exposure Limit (PEL) or other applicable exposure limit.
 - Oxygen concentration
 - Physical properties of the work environment (humidity, visibility, heat)

- Physical, chemical and toxicological characteristics of the hazard.
- Hazardous Operations
 - Operation and process characteristics
 - Work area characteristics
 - Work rate
- Approved respirators
 - Select a NIOSH certified respirator
 - All respirators must be certified by the National Institute for Occupational Safety and Health (NIOSH). All filters, cartridges, and canisters must be labeled with the appropriate NIOSH approval label. The label must not be removed or defaced while the respirator is in use.
- Immediately Dangerous to Life and Health (IDLH)
 - Negative pressure respirators should not be used in IDLH conditions
 - IDLH conditions are:
 - Any atmosphere that presents an immediate hazard to life or can cause irreversible effects on health.
 - The respirators to be used in IDLH are:
 - SCBA
 - SAR with auxiliary self contained air supply

A list of employees and appropriate respiratory protection will be maintained by the Environmental Coordination Office. Refer to Appendix B

6.4 Medical Evaluation

Employees should not use a respirator until a medical evaluation that determines that he or she is physically able to perform the work activities with the use of respirators. The Medical Evaluation Procedure is as follows:

- The evaluation must be performed by a physician or other licensed health care professional and will be conducted using the questionnaire provided in Appendix C.
- The Environmental Coordination Office will provide assistance to employees who are unable to read the questionnaire.
- Employees will be granted the opportunity to speak with the physician about their medical evaluation, if they so request.

- The Environmental Coordination Office will provide to the evaluating physician a copy of the OSHA Respiratory Protection Standard, the list of hazardous substances by work area, and the following information about each employee requiring evaluation:
 - Work area or job title
 - Proposed respirator type
 - The time required for using the respirator
 - Physical work load
 - Description of the work environment (humidity, temperature)
- The employees with particular medical needs will be provided with positive pressure air purifying respirators.
- After using the indicated respirator another medical evaluation could be done if:
 - The employee has symptoms of shortness of breath, dizziness, chest pain caused by the use of the respirator.

6.5 Fit testing Procedures

Before an employee uses any respirator with a negative or positive pressure tight fitting face piece, the employee must have a fit test with the same model, style and size of respirator that the employee will use. The following procedure must be followed:

- The employees have to pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT). Such respirators include: half-mask and full facepiece, air-purifying, and supplied-air/air-purifying combination respirators.
 - The QLFT relies on wearers' subjective response to an irritant and smell test.
 - The employee shall ensure that the persons administering the QLFT are able to prepare test solution, calibrate equipment, and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.
 - The QNFT quantifies any facepiece leakage by the use of a detecting instrument and a test aerosol. The test instrument measures the concentration of a test aerosol outside the respirator and inside the respirator.

- The employee shall ensure that the persons administering the QLFT are able to prepare test solution, calibrate equipment, and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.
- Prior to the test the employee must know how to put on the respirator, the correct position on face, how to adjust the strap tension and how to determine an acceptable fit.
- The employee must hold the facepieces that give acceptable fits and eliminate the ones that do not have an acceptable fit.
- The more acceptable facepieces are noted, the one that fits best is worn around five minutes to assure comfort.
- To assure comfort the user must verify:
 - Position of the mask on nose
 - Position of the mask on face and cheeks
 - Eye protection
 - Capacity to talk
- To assure adequacy the user must verify:
 - Strap tension
 - Chin place properly
 - Respirator of proper size
 - Fit across nose bridge
- If the employee presents any problem in breathing during the test, he or she should be referred to a physician. The physician has to determine if the employee can use a respirator.
- OSHA regulations prohibit facial hair, including beards, sideburns and mustaches on employees who are required to wear tight facepiece respirators.
- The fit test will be performed prior to initial use and annually or when there are changes in the employee's physical condition that could affect respiratory fit.
- Ordinary eye glasses should not be used with full face piece respirators.
- The Environmental Coordination Office will maintain a record of the fit tests.

6.6 Training

The Environmental Coordinator Office will provide training for all affected employees and their supervisors that need to use a respirator. The training element of the respiratory protection program is one of the most important elements to assure that the

respirators are properly used. Training must cover the following topics:

- The University's Respiratory Protection Program.
- The general requirements of the OSHA Respiratory Protection Standard.
- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.
- Proper selection of respirators.
- The procedure for inspecting the respirator, donning and removing it, checking the fit and seal, and actually wearing it.
- Limitations and capabilities of the respirator selected.
- How to use the respirator effectively in emergency situations, including situations when malfunctions occur.
- Procedures for maintenance and storage.
- How to recognize medical signs and symptoms that may limit the effective use of respirators.

The training must be done annually and under some conditions additional retraining might be required. For each individual, records shall be maintained that give the date and type of training received, fit test results, and the instructor's name.

6.7 General Respirator Rules and Procedures

Each employee has to follow these rules:

- The employees will use the respirators under the rules of the Respiratory Protection Program and in accordance with the training that they receive.
- Physically qualified employees should be trained and authorized to use respirators. Annual certification by a qualified physician will be required and maintained. Any changes in an employee's health or physical characteristics will be reported to the Human Resources Department and will be reevaluated by a qualified physician.
- The employees have to perform seal checks or fit checks each time they use the respirators. They can use the positive and negative pressure test.
 - Positive Pressure Test – This test is performed by closing the exhalation valve with your hand. Breathe air into the mask. The face fit is satisfactory if some pressure can be built up inside the mask without any air leaking out between the mask and the face of the wearer.

- Negative Pressure Test – This test is performed by closing of the inlet openings of the cartridge with your hand. Some masks may require that the filter holder be removed to seal off the intake valve. Inhale gently so that a vacuum occurs within the face piece. Hold your breath for ten (10) seconds. If the vacuum remains, and no inward leakage is detected, the respirator is fit properly.
- The employees have to maintain the respirator:
 - Clean
 - Change filters or cartridge
 - Replace parts
 - Inspect the respirator
- Employees with any condition, facial scars, facial hair, or missing dentures are not permitted to wear tight-fitting respirators if such condition interferes with the proper seal or fit.
- Employees should not have jewelry, headphones, glasses that can interfere with the seal of the respirator.
- Before and after the employee use the respirator an inspection has to be made to verify tightness and connections.
- Some types of end of service life warning indicators are available for SCBA's and cartridges. Usually it's an audible alarm or a changing color in the cartridge. The employees have to know and understand the different types of warning devices.
- Cartridges for air purifying respirators that do not have the warning indicator must be disposed after eight hours of use, if there is resistance in breathing, or if an odor is detected at any time during use.

6.8 Cleaning

The respirators have to regularly be cleaned and disinfected in order to assure a good functioning. The following procedure should be implemented to clean and disinfect the respirators:

- Atmosphere-supplying and emergency use respirators are to be cleaned and disinfected after each use.
- Remove any filter, cartridges or canister.
- Wash with cleaner-disinfectant solution or with a cleaner recommended by the manufacturer in warm water all the face piece and the associated parts (except cartridge and plastics headbands).

- If the cleaner does not contain a disinfectant agent the respirator should be immersed approximately two minutes in one of the following solutions:
 - Hypochlorite solution (50 ppm of chlorine)
 - Aqueous solution of iodine (50 ppm of iodine)
- Rinse in clean warm water.
- Hand dry with a cloth or air dry.
- Connect or reassemble the parts and insert new filters or cartridges and assure that seals are tight.
- Test the respirator to ensure that all parts work correctly.
- Locate the respirator in a clean and dry plastic bag in the work area designated for respirator storage.

6.9 Maintenance and Inspection

The respirators have to be properly maintained to ensure proper function and to protect the employees from any respiratory hazard.

The maintenance and inspection includes:

- Visual inspection for cleanliness and defects.
- Worn or deteriorated parts will be replaced before use.
- The components will be repaired in accordance with manufacturer's recommendation.
- Changes in regulators or alarms of atmosphere-supplying respirators will be repaired by the manufacturer or designated service center.
- The respirator should be inspected before and after use it.
- Respirators that are used for emergencies should be inspected at least monthly.
- Inspection the function, tightness of connections and other parts including facepiece, heads straps, valves, connecting tube, cartridges, canister and filters.
- The SCBA's shall be inspected monthly.
- Air and oxygen cylinders should be maintained fully charged and should be recharged when the pressure is under 90% of the manufacturer's recommended level.
- Inspections should be recorded, including date, name of the inspector, and findings.
- The respirator that fails the inspection should be removed from service or repaired. If the respirator is repaired the reparation should:
 - Be performed by persons trained to perform the repairs
 - Use NIOSH approved parts

- Be in accordance with the manufacturer's recommendation

Refer to Appendix D for Respirator Inspection Checklist

6.10 Storage

The Environmental Coordination Office shall ensure that respirators are stored as follows:

- The respirator should be stored to protect it from damage, dust, contamination, sunlight, extreme temperatures, moisture and strong chemicals.
- Each employee will clean and inspect his/her own respirator in accordance with the Respiratory Protection Program and will store it in a plastic bag with his/her name on the bag and leave it in the designated area.
- Storage should prevent deformation of the facepiece and the exhalation valve.
- Emergency respirators should be accessible in the work area and stored in places that are clearly marked as containing emergency respirators.

6.11 Recordkeeping

6.11.1 Medical Evaluation Records

The Human Resources Department will maintain the records of the medical evaluation performed to each employee that needs to use a respirator. These records will be kept and made available as required by OSHA. The records will include the medical evaluation questionnaire and the results of examinations and recommendations made by the physician or other licensed health care professional. The Human Resources Department will retain these records for at least three (3) years.

6.11.2 Fit Test Records

The fit test records must be maintained to determine whether annual fit testing has been done. The records must include:

- Name of the employee tested.
- Name of the person who performed the test.
- Type of fit test performed.
- Specific make, model, style, and size of respirator tested.
- Date of test.
- Results of the performed test.

6.11.3 Training Records

The training records should include a statement of understanding indicating that the employee understands the uses, limitations and maintenance of respirators. The employee will sign such statement and the University will retain the records for at least three (3) years.

6.12 Program Evaluation

The Environmental Coordination Office will conduct inspections or evaluations to ensure that all aspects contained in the Respiratory Protection Program are being implemented. The inspection will include:

- Interviews with employees and supervisors that use respirators.
- Site inspections.
- Air monitoring and review of records.

The problems reported should be corrected with target dates for implementation.

7.0 APPENDICES

Appendix A

PONTIFICAL CATHOLIC UNIVERSITY OF PUERTO RICO		
LOCATION OF POTENTIAL DANGEROUS ATMOSPHERES		
Area	Type of Emergency	Location of Emergency Respirator(s)

Environmental Coordinator

Date

Appendix B

PONTIFICAL CATHOLIC UNIVERSITY OF PUERTO RICO PERSONNEL IN RESPIRATORY PROTECTION PROGRAM			
Name	Job Description	Type of Respirator	Date Issued
Mr. Carlos Cruz	Operator Potable Water Treatment Plant	Full Face	08/20/2004
Mr. Marcos Cotto	Painter	Half face	Eliminado*
Mr. Francis González	Plumber	Full Face	Eliminado*
Mr. Carlos Vélez	Plumber Assistant	Full Face	Eliminado *
Guillermina Ortíz	Técnico de Laboratorio	Half Face	05/14/2012

* Estos empleados ya no tienen la tarea asignada.

Appendix C

OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

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

To the employee:

Can you read (circle one): **Yes / No**

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

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

1. Today's date: _____

2. Your name: _____

3. Your age (to nearest year): _____

4. Sex (circle one): Male/Female

5. Your height: _____ ft. _____ in.

6. Your weight: _____ lbs.

7. Your job title: _____

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

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

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

11. Check the type of respirator you will use (you can check more than one category):

- a. _____ N, R, or P disposable respirator (filter-mask, non- cartridge type only).
- b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

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

If "yes," what type(s): _____

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

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

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

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

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

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

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

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

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

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

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

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

7. Do you **currently** take medication for any of the following problems?

- a. Breathing or lung problems: **Yes / No**
- b. Heart trouble: **Yes / No**
- c. Blood pressure: **Yes / No**
- d. Seizures (fits): **Yes / No**

8. If you've used a respirator, have you **ever had** any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

- a. Eye irritation: **Yes / No**
- b. Skin allergies or rashes: **Yes / No**
- c. Anxiety: **Yes / No**
- d. General weakness or fatigue: **Yes / No**
- e. Any other problem that interferes with your use of a respirator: **Yes / No**

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: **Yes / No**

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you **ever lost** vision in either eye (temporarily or permanently): **Yes / No**

11. Do you **currently** have any of the following vision problems?

- a. Wear contact lenses: **Yes / No**
- b. Wear glasses: **Yes / No**
- c. Color blind: **Yes / No**
- d. Any other eye or vision problem: **Yes / No**

12. Have you **ever had** an injury to your ears, including a broken ear drum: **Yes/No**

13. Do you **currently** have any of the following hearing problems?

- a. Difficulty hearing: **Yes / No**
- b. Wear a hearing aid: **Yes / No**
- c. Any other hearing or ear problem: **Yes / No**

14. Have you **ever had** a back injury: **Yes / No**

15. Do you **currently** have any of the following musculoskeletal problems?

- a. Weakness in any of your arms, hands, legs, or feet: **Yes / No**
- b. Back pain: **Yes / No**
- c. Difficulty fully moving your arms and legs: **Yes / No**
- d. Pain or stiffness when you lean forward or backward at the waist: **Yes / No**
- e. Difficulty fully moving your head up or down: **Yes / No**
- f. Difficulty fully moving your head side to side: **Yes / No**
- g. Difficulty bending at your knees: **Yes / No**
- h. Difficulty squatting to the ground: **Yes / No**
- i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: **Yes / No**
- j. Any other muscle or skeletal problem that interferes with using a respirator: **Yes / No**

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: **Yes / No**

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: **Yes / No**

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: **Yes / No**

If "yes," name the chemicals if you know them: _____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

- a. Asbestos: **Yes / No**
- b. Silica (e.g., in sandblasting): **Yes / No**
- c. Tungsten/cobalt (e.g., grinding or welding this material): **Yes / No**
- d. Beryllium: **Yes / No**
- e. Aluminum: **Yes / No**
- f. Coal (for example, mining): **Yes / No**
- g. Iron: **Yes / No**
- h. Tin: **Yes / No**
- i. Dusty environments: **Yes / No**
- j. Any other hazardous exposures: **Yes / No**

If "yes," describe these exposures: _____

4. List any second jobs or side businesses you have: _____

5. List your previous occupations: _____

6. List your current and previous hobbies: _____

7. Have you been in the military services? **Yes / No**

If "yes," were you exposed to biological or chemical agents (either in training or combat): **Yes / No**

8. Have you ever worked on a HAZMAT team? **Yes / No**

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): **Yes / No**

If "yes," name the medications if you know them: _____

10. Will you be using any of the following items with your respirator(s)?

- a. HEPA Filters: **Yes / No**
- b. Canisters (for example, gas masks): **Yes / No**
- c. Cartridges: **Yes / No**

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

- a. Escape only (no rescue): **Yes / No**
- b. Emergency rescue only: **Yes / No**
- c. Less than 5 hours per week: **Yes / No**
- d. Less than 2 hours per day: **Yes / No**
- e. 2 to 4 hours per day: **Yes / No**
- f. Over 4 hours per day: **Yes / No**

12. During the period you are using the respirator(s), is your work effort:

- a. **Light** (less than 200 kcal per hour): **Yes / No**

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of a light work effort are **sitting** while writing, typing, drafting, or performing light assembly work; or **standing** while operating a drill press (1-3 lbs.) or controlling machines.

- b. **Moderate** (200 to 350 kcal per hour): **Yes / No**

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of moderate work effort are **sitting** while nailing or filing; **driving** a truck or bus in urban traffic; **standing** while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; **walking** on a

level surface about 2 mph or down a 5-degree grade about 3 mph; or **pushing** a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. **Heavy** (above 350 kcal per hour): **Yes / No**

If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of heavy work are **lifting** a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; **shoveling**; **standing** while bricklaying or chipping castings; **walking** up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: **Yes / No**

If "yes," describe this protective clothing and/or equipment: _____

14. Will you be working under hot conditions (temperature exceeding 77 deg. F): **Yes / No**

15. Will you be working under humid conditions: **Yes / No**

16. Describe the work you'll be doing while you're using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

Name of the second toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

Name of the third toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

The name of any other toxic substances that you'll be exposed to while using your respirator:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

Appendix D

PONTIFICAL CATHOLIC UNIVERSITY OF PUERTO RICO RESPIRATOR INSPECTION CHECKLIST				
Inspection Part	Condition			Commentaries
	Good	Average	Poor	
Disposable Respirators				
Air-Purifying Respirators				
Heads Straps				
Check rubber and plastic parts for flexibility				
Inhalation Valves				
Exhalation Valves				
Filter Elements				
Breathing Tubes				
Air Supply System				
Seal of the facepiece.				