



WPI

Respiratory Protection Program

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1 INTRODUCTION

The purpose of this program is to establish policy, procedure and responsibilities with regard to respiratory protection selection and usage, maintenance and care, medical evaluation, training and fit testing, and program evaluation. The proper use of respiratory protection can minimize or eliminate the risk of injury or illness due to hazardous chemical/particulate exposure.

1.1 Scope

The scope of this program includes respiratory protection requirements as outlined in the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.134, Respiratory Protection and the National Institute for Occupational Safety and Health (NIOSH) 42 CFR part 84 Approval of Respiratory Protective Devices. Respiratory protection equipment including, but not limited to supplied air respirators (SCBAs), reusable tight-fitting respirators (APRs) and disposable filtering facepieces (N95s) are included in this program.

1.2 Application

The Respirator Protection Program applies to all Worcester Polytechnic Institute faculty, staff and students who are required to use respiratory protection equipment where engineering controls cannot provide adequate protection against exposures. This program also addresses responsibilities of workers who voluntarily use respiratory protection equipment.

2 RESPONSIBILITIES

For the Respiratory Protection Program to function properly, all applicable parties must know and understand their responsibilities. This section is designed to inform those parties of their responsibilities.

2.1 Department Managers and/or Directors

Department Managers are responsible for:

- Determining which workers may require respiratory protection as part of their job duties.
- Scheduling worker medical evaluation with Worcester Polytechnic Institute's appointed PLHCP.
- Scheduling respiratory protection training and fit testing with EHS.
- Monitoring and enforcing worker compliance with this program.
- Purchasing and distributing respiratory equipment to workers with written permission from EHS. This includes respirators and cartridges.
- Providing approved respiratory equipment only to those certified by EHS.
- Complying with all aspects of the Respiratory Protection Program.
- Providing support for successful implementation of the Respiratory Protection Program at the operational level.

- Ensuring that only workers that have been fully trained and authorized are allowed to wear a respirator.

2.2 Supervisors

Supervisors are responsible for:

- Complying with all aspects of the Respiratory Protection Program.
- Implementing the Respiratory Protection Program at the operational level.
- Completing the Respirator Request Form found in Appendix E for all potential respirator users and forwarding to EHS for approval.
- Scheduling workers for a medical evaluation with Worcester Polytechnic Institute's appointed PLHCP as necessary.
- Ensuring that only authorized workers are issued and use respirators.
- Attending initial respiratory protection training if workers in their department wear respirators.
- Ensuring that only workers that have been fully trained and authorized are allowed to wear a respirator.
- Reporting to EHS any known or suspected respiratory hazards and any changes in worker's physical ability to wear a respirator.
- Ensuring workers use appropriate respiratory equipment for respiratory areas designated in Appendix F of this program.
- Reporting to EHS any potential respiratory hazards (not listed in Appendix F) that workers may encounter.
- Stocking respiratory protection supplies including, a selection of cartridges and cleaning supplies.

2.3 Authorized Respirator Users

Authorized respirator users are responsible for:

- Complying with all aspects of the Respiratory Protection Program including material covered in training.
- Attending initial and annual refresher respiratory protection training and fit testing as outlined in this program.
- Completing respiratory medical evaluations as outlined in this program.
- Knowing and understanding proper use, limitations, and maintenance of respiratory protection equipment.
- Understanding existing respiratory hazards and hazards added to a work area.
- Knowing which respirator and cartridge is needed for a specific task.
- Using appropriate respiratory protection when required.
- Performing a seal check each time a respirator is worn.
- Being clean shaven (around the seal area) whenever using respiratory protection.
- Informing their supervisor of a change in conditions or hazards which may change the appropriate respiratory protection required.
- Reporting any equipment deficiencies to the supervisor as soon as possible.

2.4 Other Workers:

Other workers are responsible for:

- Not wearing respiratory equipment under any circumstance.
- Not entering areas where respiratory protection is required.

2.5 Physician or Licensed Health Care Provider (PLHCP):

The PLHCP is responsible for:

- Performing medical evaluations according to 29 CFR 1910.134(e) and as required by this program.
- Providing EHS with a written medical determination.
- Maintaining all medical records of respiratory users and making them available to workers upon request in accordance with OSHA standards.
- Keeping all information from the medical evaluation questionnaire and medical examination as confidential medical records.
- Sending a copy of all medical results to the workers' home address.

2.6 Environmental Health & Safety:

EHS is responsible for the following:

- Establishing the Respiratory Protection Program in accordance with OSHA standards.
- Reviewing the Respiratory Protection Program annually and revising as necessary.
- Providing or coordinating Respiratory Protection Training and Fit Testing for respirator users.
- Assisting in the selection of respiratory protection equipment.
- Making recommendations for safe work practices associated with respirators.
- Maintaining all records including but not limited to medical determination forms, training, and fit testing.
- Providing the PLHCP with a copy of this program and OSHA standard 29 CFR 1910.134

3 MEDICAL EVALAUTION, TRAINING & FIT TESTING REQUIREMENTS

3.1 Medical Evaluation:

Medical evaluations are required to determine a worker's ability to wear a respirator before the worker is fit tested or required to wear a respirator as part of their job duties. The medical evaluation can be a medical examination or an evaluation of worker responses to the medical evaluation questionnaire located in Appendix B of this program. Either method must be performed by a university authorized physician or other licensed health care professional (PLHCP). Workers will not be allowed to use their own physician for medical evaluations.

3.1.1 Medical Evaluation Questionnaire

Medical evaluations must be completed as needed and at least every 3 years. The evaluation shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination of a worker's ability to wear a respirator.

The PLHCP shall be provided with the following information before the PLHCP makes a recommendation concerning a worker(s)' ability to wear a respirator safely.

- Type and weight of the respirator to be used by the individual.
- Duration and frequency of respirator use.
- Expected physical work effort.
- Additional protective clothing and equipment to be worn.
- Temperature and humidity extremes that may be encountered.
- Further medical evaluation is required if any of the following occurs:
 - A worker reports medical symptoms related to their ability to safely wear a respirator.
 - A PLHCP or supervisor informs EHS that the worker needs to be reevaluated.
 - Information from an inspection of the Respiratory Protection Program or observations made during fit testing indicates a need for reevaluation.
 - A change in the workplace condition including but not limited to physical work effort, PPE, and temperature that would result in a sizable increase of physiological effort on the worker.
 - A worker is assigned to the EHS Emergency Response Team.

3.1.2 Medical Examination

If a medical evaluation is performed by using a medical questionnaire, the completed questionnaire is sent to the PLHCP for review. Depending on the answers provided to the questions, a follow-up medical examination may be required before being allowed to wear a respirator.

When a reusable tight-fitting respirator or supplied air respirator is required, Worcester Polytechnic Institute requires a medical evaluation that also includes a medical examination (e.g. a questionnaire and an exam with the PLHCP must be completed). In most cases, an actual medical examination will not be necessary for wearing a disposable filtering facepiece (N95).

3.1.3 PLHCP

Worcester Polytechnic Institute has appointed Reliant Medical Group (508) 853-2854 as an approved PLHCP. For some departments, WPI Health Services may serve as an approved PLHCP and perform medical evaluations. The PLHCP is subject to change as determined by EHS.

All medical evaluations must be performed in accordance with OSHA standard 29 CFR 1910.134(e) by using a medical evaluation questionnaire or an initial medical examination that shall obtain the equivalent information as the medical evaluation questionnaire. A PLHCP shall provide EHS only with a copy of the Medical Determination Form, found in Appendix C of this program, which provides basic information regarding the worker's ability to use a respirator.

3.2 Training Requirements/Content:

Respiratory protection training will be provided prior to requiring a worker to use a respirator in the workplace, and at least annually thereafter. Refresher training at a frequency greater than annually may be needed if:

- Changes in the workplace or the type of respirator render previous training obsolete.

- Inadequacies in the worker's knowledge or improper use of the respirator indicate that the worker does not understand the requirements of this program.
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

Respiratory protection training content includes the following topics:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.
- The limitations and capabilities of the respirator.
- Using the respirator effectively in an emergency situation, including situations in which the respirator malfunctions.
- How to inspect, put on and remove, use, and check the seals of the respirator.
- Maintenance and storage requirements of the respirator.
- Recognizing medical signs and symptoms that may limit or prevent the effective use of respirators.

3.3 Fit Testing Requirements:

Respirator fit testing is required prior to a worker using any tight-fitting respirator in the workplace as required by WPI, and at least annually thereafter. Refresher fit testing at a frequency greater than annually may be needed if:

- A different respirator (make, model, style, size) is requested.
- There are changes in a worker's physical condition (ex. facial scarring, dental changes, cosmetic surgery, obvious change in body weight, etc.)
- A recommendation is made by the PLHCP, the worker's supervisor or by EHS.

A fit test is generally done with the respirator user's own respirator, unless they are a new worker or otherwise need a new respirator. EHS also carries a number of respirator sizes to fit test respirator users. OSHA requires that respirator users are clean shaven anytime a tight-fitting respirator is worn, including during the annual fit test. No exceptions will be made. Further details on respirator fit testing procedures can be found in Appendix A.

4 PROGRAM REQUIREMENTS

4.1 Selection and Use of Respirators

All respirator use must be approved by Environmental Health & Safety (EHS). EHS assists departments and supervisors in the selection of appropriate NIOSH certified respiratory protection equipment based on the potential hazard(s) to which the worker may be exposed, along with other factors that affect respirator performance and reliability. A respirator is to be worn only by the worker to whom it was issued. Some workers are issued more than one type of respirator and shall understand which respirator to use for their tasks. For minimum respiratory equipment required for specific tasks at Worcester Polytechnic Institute, see Appendix F of this program.

4.1.1 Disposable Filtering Facepiece (N95)

- N95s are intended to be single use.
- An N95 will not protect against vapors, gases, and oxygen deficient atmospheres

- N95 use is typically recommended for certain tasks requiring protection against allergens such as mold and animal dander.
- N95 use is typically recommended for tasks requiring protection against some airborne biological agents such as mycobacterium tuberculosis and influenza.
- N95s with exhalation valves can be used to prevent excess heat build-up in the facepiece. N95s with exhalation valves should not be used in a healthcare setting or where sterile work areas are required or for the purpose of disease prevention (e.g., COVID masking requirements).

4.1.2 Reusable Tight-Fitting Air Purifying Respirator (APR)

- Half face respirator use is recommended for tasks such as HVAC filter changes and woodworking. However a full face respirator may be more appropriate when eye protection is required.
- Full face respirator use is recommended for tasks requiring protection against hazardous particulates, chemicals, aerosols, biological agents, and where eye protection from splashes is required.
- These respirators may be worn repeatedly when cleaned and inspected to verify that the respirator is in good condition prior to use.

4.1.3 Supplied Air Respirator (SCBA)

- At WPI, supplied air respirators selected are typically SCBAs.
- SCBA users are limited to EHS Emergency Response Team (ERT) members, Confined Space Rescue Team members, and select research staff.
- Supplied air respirators are to be used for responding to unknown or IDLH atmospheres, or atmospheres at or above exposure limits (PEL, STEL, TLV, etc.)
- SCBA respirators shall consist of a full-face mask with pressure demand certified by NIOSH for a minimum service life of thirty minutes.
- The University also recommends that atmospheres containing levels of methylene chloride and carbon monoxide above their respective PELs only be entered with the use of an SCBA.
- Supplied Air Respirators shall only be used with a buddy system. For non-IDLH atmospheres the buddy can be a non-ERT member located outside the hazardous area. For additional information on IDLH entries please refer to that section later in this program.

4.1.4 Other Types of Respirators

This program focuses on the most commonly used respirators at Worcester Polytechnic Institute. In rare cases, other types of respirators such as hood type respirators, positive air purifying respirator (PAPR), welding respirators, escape only respirators, R100, N100 and P100 respirators may be used. The use of all types of respirators must be approved by EHS. Applicable training will be provided and fit tests will be performed where necessary. Fit testing is not required for respirators that do not seal to the face, such as hood-type respirators.

4.2 Selection and Use of Cartridges

Respirator cartridges are selected based on the hazards. Cartridges with HEPA (P100) filters are used for aerosols and particulates, and VOC filters are used for volatile organic compounds. Respirator users shall understand which cartridge to use for their tasks, and

in some cases may need combination filters. For minimum respiratory protection equipment and cartridge requirements for specific tasks at Worcester Polytechnic Institute, see Appendix F of this program.

If an End of Service Life Indicator (ESLI) is not available for a particular contaminant then a cartridge change schedule should be implemented to ensure adequate worker protection. The change schedule should be sufficient so that the end of service life of the cartridge is not exceeded. Workers shall be provided with an air-purifying respirator equipped with an ESLI certified by NIOSH for atmospheres containing mercury, vinyl chloride, hydrogen sulfide, ethylene oxide, or isocyanates.

4.3 Immediately Dangerous to Life and Health Atmospheres

Worcester Polytechnic Institute's Emergency Response Team (ERT) shall be contacted and evaluate all unknown atmospheres. Where the ERT cannot identify or reasonably estimate the worker's exposure or if the atmosphere is oxygen-deficient, WPI will consider the atmosphere to be IDLH. An EHS ERT member will assume incident command for any IDLH atmosphere response. The incident commander will be responsible for understanding; who will be entering the IDLH atmosphere, the time and location of the entry, known and suspected hazards and the number and type of respirators used. The following procedural steps will be taken to ensure worker safety.

- At a minimum, two workers certified to wear a supplied air respirator, shall respond to a presumed IDLH atmosphere.
- At least one worker trained and equipped to respond to an emergency situation shall be located outside of the IDLH atmosphere. The worker must be equipped with a positive pressure supplied air respirator and equipment necessary for removing an injured worker.
- Visual or voice contact shall be maintained between the worker(s) in the IDLH atmosphere and the worker(s) outside the IDLH atmosphere.
- If a rescue from within the IDLH atmosphere is required, the employee located outside the IDLH atmosphere must notify WPI Public Safety to initiate additional responders. The notification must occur before any rescue activity is begun.
- If applicable, and under the supervision of the ERT incident commander, workers in other departments may wear supplied air respirators for entries into IDLH atmospheres to assist in shutting off equipment or other building specific tasks.
- All workers participating in IDLH entries must follow the requirements of the Worcester Polytechnic Institute Hazardous Waste Operations and Emergency Response Program which is found at the following URL:

4.4 Maintenance and Care of Disposable Filtering Facepieces (N95's)

4.4.1 Cleaning, Disinfecting and Repairing

Disposable filtering facepieces cannot be cleaned, disinfected or repaired. When dirty or damaged, they must be discarded.

4.4.2 Storage

Respirators shall be stored as to protect them from any damage including but not limited to, contamination, dust, sunlight, extreme temperatures, moisture, and chemicals.

4.4.3 Inspection

An inspection should be done before each use and include the following. If it does not pass inspection, it should be discarded.

- Checking the facepiece for damage or loss of elasticity
- Checking the elasticity of the straps

4.5 Maintenance and Care of Reusable Tight-Fitting Air Purifying Respirators (APR's)

4.5.1 Cleaning and Disinfecting

- Respirators shall be cleaned as often as necessary to maintain sanitary conditions and at a minimum, after each use.
- Remove filters or cartridges, and disassemble the facepiece.
- Wash components with a cleaner recommended by the manufacturer.
- Rinse and dry components thoroughly.
- Reassemble the respirator.
- Replace all defective parts with new compatible components.
- Test the respirator by doing a seal check to ensure that all components work properly.

4.5.2 Storage

- Respirators should be cleaned and dried before storage.
- Respirators shall be stored as to protect them from any damage including but not limited to, contamination, dust, sunlight, extreme temperatures, moisture, and chemicals.

4.5.3 Inspection

An inspection should be done before each use and during cleaning, and include:

- Check the facepiece and straps for damage or loss of elasticity
- Check rubber and plastic parts for flexibility.
- Check the condition of filters and cartridges.
- Check the function of all other parts such as screws, face shield and speaking diaphragm.
- If it does not pass inspection, it should be removed from service and repaired or replaced as necessary.

4.5.4 Repairing

EHS should be consulted when deficiencies are found and may assist in determining if respiratory equipment should be discarded or sent to the appropriate manufacturer or authorized dealer for repair. Respirators in need of minor repairs (e.g. valve changes) may be repaired by EHS staff and major repairs should be sent to a manufacturers' certified repair dealer for servicing.

4.6 Maintenance and Care of Supplied Air Respirators (SCBA's)

4.6.1 Cleaning and Disinfecting

- Respirators shall be cleaned as often as necessary to maintain sanitary conditions and at a minimum, after each use.
- Disassemble the facepiece.

- Wash components with a cleaner recommended by the manufacturer.
- Rinse and dry components thoroughly.
- Reassemble the respirator.
- Replace all defective parts with new compatible components.
- Test the respirator by doing a seal check to ensure that all components work properly.

4.6.2 Storage

- Respirators shall be cleaned & dried before storage.
- Respirators shall be stored as to protect them from any damage including but not limited to, contamination, dust, sunlight, extreme temperatures, moisture, and chemicals.

4.6.3 Inspection

Supplied air respirators shall be inspected at least monthly, and before and after each use. Inspections shall be documented and include the following:

- Check respirator function, including but not limited to, the condition of various parts of the facepiece, head strap, valves, and connection tubes.
- Check that the warning devices and regulator are working properly, and that all air cylinders are fully charged.
- If it does not pass inspection, it should be removed from service and repaired or replaced as necessary.

4.6.4 Breathing Air Quality and Use

- Compressed air cylinders should be maintained in a fully charged state and recharged when the pressure falls to 90% full.
- Hydrostatic testing is required on compressed air cylinders every 3 or 5 years depending on the type of cylinder (i.e. aluminum, fiberglass wrapped, etc.)
- Only certified air filling stations can be used to fill compressed air cylinders.

4.6.5 Repairing

EHS should be consulted when deficiencies are found and may assist in determining if respiratory equipment should be discarded or sent to the appropriate manufacturer or authorized dealer for repair. Respirators in need of repair should be sent to a manufacturers' certified repair dealer for servicing.

4.7 Maintenance and Care of Respirators Intended Only for Emergency Use:

- Respirators intended only for emergency use shall be cleaned and inspected after every use.
- Respirators intended only for emergency use shall be stored readily accessible to authorized users, in a recognized container, and in accordance with the manufacturer's specifications.
- Respirators intended only for emergency use shall be certified of its inspection by documenting the date of the inspection, the name of the inspector, findings or defects, required actions, and an identification number signifying that particular respirator monthly.

4.8 Obtaining Respirators and Supplies:

A new respirator may be needed for new workers, if the current respirator is damaged, if the worker's face shape has changed, or job tasks have changed. Requests for reusable tight-fitting respirators and supplied air respirators need to be made by completing the Respirator Request Form found in Appendix E. The top of the form should be filled out completely, and a supervisor shall sign off with their acknowledgement of a worker's need for a new respirator. EHS will then complete the bottom of the form indicating the make, model and size of the respirator needed, and the cartridges that the worker is likely to need. EHS makes the final approval for a respirator purchase, since medical evaluation, training and fit testing requirements must first be met.

Ordering of a new box of disposable filtering facepieces does not require EHS approval as long as the medical evaluation, training and fit testing are current, and the respirators ordered are identical to the type previously fit tested on.

Respiratory equipment, including cartridges and cleaning supplies should be readily available to workers through a supervisor and some stockrooms. The department may consult EHS about the selection of supplies and respirator replacement parts.

4.9 Seal Check:

The seal check must be performed each time the worker dons a tight-fitting respirator to ensure a good seal to the face every time it is worn. Workers must adhere to the recommendations of the respirator manufacturer since different manufacturers recommend different procedures. Positive and/or negative seal checks are discussed and demonstrated during respiratory protection training and fit testing. Additional instructions on seal checks can be found at the end of Appendix A.

4.10 When Respiratory Protection is Not Required:

Surgical masks without an N95 rating are only to be used during procedures to protect the user from a splash of a liquid biological material or surgical procedures where the application of the surgical mask is to protect the patient. Surgical masks without an N95 rating are not respirators and do not provide the wearer respiratory protection. Some masks are rated both as an N95 and a surgical mask, and do provide respiratory protection.

4.11 Voluntary Use of Respirators

- An N95 respirator may be available for voluntary use when the concentration of particulates is below the TLV.
- EHS encourages some departments to provide and for staff to use N95 respirators for voluntary use applications.
- OSHA requires Worcester Polytechnic Institute to provide basic information on voluntary use of respirators to workers who wear respirators when not required by this program. Voluntary use of any respirator, including N95s, must be reviewed with EHS. If voluntary use of a respirator is allowed by EHS, then the user must:
 - Be provided with, review and understand Appendix D of this program.
 - Ensure that the respirator is kept clean, stored properly and maintained in a safe manner.

- Be medically able to wear a respirator, which requires completion of a medical evaluation found in Appendix B and submitting it to the PLHCP for review.
 - A medical evaluation is not required if a disposable filtering facepiece respirator (e.g. N95) is used voluntarily.
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5 Program Evaluation

EHS is designated as Worcester Polytechnic Institute's Respiratory Protection Program Administrator, overseeing the program and evaluating program effectiveness. EHS regularly evaluates this program through consulting with workers during safety inspections and during annual training and fit testing. Respirator users are asked to provide information about their use of respirators on their training and fit testing records (tasks performed, frequency of use, cartridges used, etc.) Job hazard analysis or other job task reviews also provide EHS with information about respirator use at Worcester Polytechnic Institute and helps to identify areas of improvement with the program. Specific factors assessed include;

- Respirator fit including the ability to use the respirator without interfering with workplace performance.
 - Appropriate respirator selection for the hazards to which the worker is exposed.
 - Proper respirator use under the workplace conditions the worker encounters.
 - Proper respirator maintenance.
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6 DEFINITIONS

Authorized Respirator User – A clean shaven worker who has been found medically able to wear a respirator, has received annual respiratory protection training, and has passed a fit test.

Air-purifying Respirator (APR) – Negative or positive pressure respirator with cartridges, filters, or canisters that remove specific hazardous air contaminants by passing ambient air through the purifying element. For purposes of this program, APRs refer to full and half face reusable respirators.

Cartridge – Container with a filter, sorbent, catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Disposable Filtering Facepiece – One type of tight-fitting respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium, for purposes of filtering particulates and aerosols. N95s are the most common type.

Doff – to take off (a respirator).

Don – to put on (a respirator).

End-of-Service-Life Indicator (ESLI) – System on a respirator cartridge warning the respirator user of the approach of the end of adequate respiratory protection. It indicates that the sorbent is approaching saturation or is no longer effective.

Escape-Only Respirator – Respirator intended to be used only for an emergency escape.

Fit Test – The use of a protocol to evaluate the fit of a respirator on an individual.

Immediately Dangerous To Life and Health (IDLH) – Atmosphere posing an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

N95 Respirator – A NIOSH approved disposable filtering facepiece with a filter efficiency of 95% or greater.

Oxygen Deficient Atmosphere – Atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen Enriched Atmosphere – Atmosphere containing more than 23.5 percent oxygen by volume.

Permissible Exposure Limit (PEL) – Legal limit defined by OSHA for personal exposure to a substance, usually expressed in parts per million (ppm). Workers may not be exposed to greater than this concentration during any eight-hour work shift.

Physician or other Licensed Health Care Professional (PLHCP) – Individual who's legally permitted scope of practice allows him/her to independently provide, or be delegated the responsibility to provide, some or all of the healthcare services required by OSHA, (specifically the medical evaluation.)

Qualitative Fit Test – 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 – Pass/fail fit test to assess the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Seal Check – Method to ensure a seal between the facepiece and the face each time a respirator is donned. This includes both a negative pressure and a positive pressure check.

Service Life – Period of time or life cycle that a respirator, filter or sorbent or other respiratory equipment provides adequate protection to the user.

Short Term Exposure Limit (STEL) – Maximum concentration to which workers can be exposed for a short period of time (15 minutes) up to four times per day with at least one hour between exposures.

Supplied Air Respirator – Respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes air-line respirators and self-contained breathing apparatus (SCBA) units.

Threshold Limit Value (TLV) – Guidelines prepared by the American Conference of Governmental Industrial Hygienists (ACGIH). A TLV® reflects the level of exposure that the typical worker can experience without an unreasonable risk of disease or injury.

Tight-fitting Respirator – Respirator which forms a complete seal with the face, including: N95s, reusable full and half-face respirators, and SCBA masks.

Time Weighted Average (TWA) – Average time, over a given work period (e.g. 8-hour workday) of a person's exposure to a chemical or an agent. The average is determined by sampling for the contaminant throughout the time period.

7 REFERENCES

8 APPENDICES

8.1 Document Guidelines and Instructions