

RESPIRATORY PROTECTION PROGRAM

Applicability

This program defines responsibilities and procedures and is applicable to operations that may require the use of respiratory protection including routine, Immediately Dangerous to Life and Health (IDLH) and emergency conditions. This program also addresses the voluntary use of respirators.

Purpose and Scope

The purpose of this procedure is to protect the employees of **[Organization Name]**. Performing operations for which exposures cannot be controlled by use of conventional engineering or administrative controls and prior to establishing a negative air exposure assessment, and to require that respiratory protective equipment is selected, used, maintained, and stored in accordance with acceptable practices.

Implementation

Implementation of this program is the responsibility of the Area Manager. The Health and Safety Manager will have the responsibility of Program Administrator and is responsible to ensure that the program is reviewed annually.

1.0 Requirements

- A. Determine if respirators are needed or are going to be used for hazardous jobs before assigning that job to an employee.
 1. Refer to appendix A regarding activities requiring the use of respiratory protection.
 2. Assign respirators accordingly.
 3. Follow all the requirements of this procedure for employees who wish to voluntarily use tight-fitting, e.g., air purifying, respirators.
- B. Require employees who will use respirators to be medically qualified prior to assigning them a respirator and fit testing.
- C. Require respirator users to receive appropriate training.
 1. All respirator users must be trained:
 - a) Before they are assigned a respirator
 - b) Annually thereafter
 - c) Whenever a new hazard or job is introduced
 - d) Whenever employees fail to demonstrate proper use or knowledge
 2. Training must address, at a minimum, the following:
 - a) Why the respirator is necessary, and what conditions can make the respirator ineffective
 - b) What the limitations and capabilities of the respirators are
 - c) How to use respirators effectively in emergency situations
 - d) How to inspect, put on and remove, and check the seals of the respirator

- e) What the respirator maintenance and storage procedures are
 - f) How to recognize medical signs and symptoms that may limit or prevent effective use of the respirator
- D. Require respirator users to be fit tested.
1. Any employee who has been assigned a reusable respirator must be fit tested either on an annual basis (no more than one year may elapse between fit tests), or when an employee is assigned a respirator of a different make, type or size from that previously tested.
 2. Fit testing can be performed by contract or in-house personnel.
 3. Obtain a signed written copy of the fit test results. They should include:
 - a) Employee's name and social security number
 - b) Respirator brand, model and size fitted for
 - c) Date fit tested
 - d) Method of fit testing used
 - e) Name and signature of fit tester
 - f) Statement that fit test protocol met the applicable requirements
 - g) Manufacturer and serial number of fit testing apparatus (for quantitative fit test)
 - Use appendix D to document fit test results.
- E. Provide qualified employees with respirator(s) and adequate amounts of parts and cartridges.
1. Assign employees whose duties require respirators their own respirator for which they have been fit tested.
 2. Provide special eyeglass inserts designed for the respirator if an employee must wear eyeglasses with a full facepiece respirator. Contact lenses may be worn when wearing a full-face respirator.
- F. Require respirators to be used properly.
1. Prohibit facial hair where the respirator-sealing surface meets the wearer's face.
 2. Require employees to thoroughly inspect the respirator prior to each use.
 3. Employees are to perform a positive and negative fit check every time the respirator is put on.
 4. Employees will leave the area where respirators are being used:
 - a) Before removing the face piece for any reason
 - b) To change cartridges
 - c) If any of the following is detected:
 - Vapor or gas breakthrough
 - Leakage around the face piece
 - Changes in breathing resistance
 5. Use cartridges with End of Service Life Indicators or determine the respirator cartridge change-out schedule. See appendix C for guidance.
- G. Require respirators to be cleaned and stored properly.
1. Clean and disinfect respirators after each use.
 2. Store respirators in a plastic bag or case and in a clean location.

3. Inspect respirators before use and after each cleaning.
- H. Address issues associated with special use respirators (self-contained breathing apparatus; air supply respirators; emergency use respirators).
 1. Self Contained Breathing Apparatus
 - a) Inspect self-contained breathing apparatus and other emergency use respirators monthly and after each use in accordance with manufacturer's instructions.
 2. Air Supplied Respirators
 - a) Air used for atmosphere-supplying respirators must meet or exceed the requirements for Type 1 - Grade D breathing air.
 - b) Never use pure oxygen.
 - A certificate of analysis must accompany bottled air.
 - Compressors used to supply breathing air must:
 - Prevent entry of contaminated air into the air supply
 - Minimize moisture content.
 - Have suitable in-line sorbent beds and filter to provide appropriate air quality.
 - Have a high carbon monoxide alarm that sounds at 10 ppm.
 - c) Couplings on air hose lines must be incompatible with other air and gas systems.
- I. Require follow-up training and medical surveillance to be provided as directed.
 1. Provide follow-up physicals as directed by the Occupational Health Physician.
 2. Provide annual refresher training.
 3. Provide annual fit testing.

2.0 Documentation Summary

- A. File these records in the Safety Filing System:
 1. Employee Medical Clearances for Respirator Use
 2. Employee Fit Test Records
 3. Employee Respirator Training Records
 4. Completed "Voluntary Use of Respirators" form – appendix B

Appendix A: Tasks for Which Respiratory Protection is Required

The following table designates the requirements for the use of respiratory protection.

Tasks	Type of Respirator Required
<p>Abrasive Blasting</p> <ul style="list-style-type: none"> • Outdoors • Indoors • Confined spaces 	<ul style="list-style-type: none"> - Full face air purifying respirator with HEPA cartridges - Supplied air with abrasive blasting hood. - Supplied air respirator with pressure demand full face piece and adequate escape air supply as needed
<p>Acids (<i>Liquid or powder acids used in a situation where acid vapors, mists or dust may be breathed.</i>)</p> <ul style="list-style-type: none"> • Outdoors • Indoors • Confined spaces 	<ul style="list-style-type: none"> - Full face air purifying respirator with combination acid gas/HEPA cartridges - Supplied air with pressure demand full face piece. - Supplied air respirator with pressure demand full face piece and adequate escape air supply as needed
<p>Adhesives</p> <ul style="list-style-type: none"> • Aerosol-propelled adhesives are used outdoors. • Two-part or any use of adhesives in confined spaces 	<ul style="list-style-type: none"> - Half face air purifying respirator with combination Organic Vapor/HEPA cartridges - Supplied air respirator with pressure demand full face piece and adequate escape air supply as needed
<p>Alkalis/Bases/Caustics</p> <ul style="list-style-type: none"> • Powdered alkalis used in a situation where an airborne dust may be breathed 	<ul style="list-style-type: none"> - Half face air purifying respirators with HEPA cartridge
<p>Cleaning Compounds</p> <ul style="list-style-type: none"> • Organic degreasers or carbon removers are used in areas where local exhaust ventilation is not provided. • Aerosol propelled cleaning compounds will be used in areas where there is no local exhaust ventilation. • Degreasers or carbon removers will be used in voids, tanks, or other confined spaces 	<ul style="list-style-type: none"> - Half face air purifying respirator with organic vapor cartridge - Half face air purifying respirator with organic vapor cartridges - Supplied air respirator with pressure demand full face piece and adequate escape air supply

Appendix A: Tasks for Which Respiratory Protection is Required (continued)

Tasks	Type of Respirator Required
<p>Chlorine</p> <ul style="list-style-type: none"> • Work in Paper Mills or other facilities where chlorine releases are possible and emergency protection is required 	<ul style="list-style-type: none"> - Bite type chlorine escape respirators unless client has a more stringent requirement
<p>Fuels (including regular or unleaded gasoline, kerosene, diesel fuel, JP-5)</p> <ul style="list-style-type: none"> • Employees inside unventilated fuel cells or other confined spaces containing fuels 	<ul style="list-style-type: none"> - Supplied air respirator with pressure demand full face piece and adequate escape air supply
<p>Grinding, Cutting, Sanding</p> <ul style="list-style-type: none"> • Cutting, grinding or sanding surfaces that have coatings containing lead, cadmium, chromium, zinc or beryllium. • Cutting, grinding or sanding surfaces that are concrete or glass without use of ventilation or water 	<ul style="list-style-type: none"> - Requires initial exposure assessment (see SMS for Lead in Construction). Full face air purifying respirator with HEPA cartridges required until air monitoring deems otherwise. - Full face air purifying respirator with HEPA cartridges
<p>Paint Materials (including paints, primers, thinners, enamels, lacquers, strippers, coatings and varnishes)</p> <ul style="list-style-type: none"> • Paint materials spray applied outside of spray finishing booth. • Two-part (mix Part A with Part B; let set; then apply) polyurethane or epoxy polyamide paints will be brush or spray applied • Paints containing lead, chromium, cadmium, beryllium, and zinc (refer to the SDS) • Painting materials will be applied in confined spaces 	<ul style="list-style-type: none"> - Half face air purifying respirator with combination organic vapor/HEPA cartridges - Full face supplied air respirator. - Requires initial exposure assessment (see SMS for Lead in Construction). - Full face supplied air respirator with adequate escape air supply
<p>Solvents</p>	<ul style="list-style-type: none"> - See Fuels above

Appendix A: Tasks for Which Respiratory Protection is Required (continued)

Tasks	Type of Respirator Required
<p>Welding/Brazing/Torch Cutting</p> <ul style="list-style-type: none"> • Welding will be performed in confined spaces. • Welding galvanized metal or stainless steel • Brazing or silver soldering with cadmium or lead 	<p><i>Minimum 2000 cfm exhaust ventilation as per confined space standard for each welder/hot operation</i></p> <ul style="list-style-type: none"> - Half face air purifying respirator with HEPA cartridge unless otherwise determined by air monitoring. - Half face air purifying respirator with HEPA cartridge unless otherwise determined by air monitoring. - Requires initial exposure assessment (see SMS for Lead in Construction). Full face air purifying respirator with HEPA cartridges required until air monitoring deems otherwise.

In addition, respiratory protection will be required for any of the above-mentioned activities where any of the following applies:

- An employee will be in the immediate area, i.e., within 10 feet of the job or operation.
- The employee will be inside a confined space where activities are taking place,
- The employee will be inside a "controlled area" such as found in asbestos abatement, lead abatement, radiation control area, or a hazardous waste site.

Respirators will also be required whenever required by:

- A Material Safety Data Sheet
- A product label.
- A product use instruction
- A Standard Operating Procedure

Appendix B: Voluntary Use of Respirators

Instructions: Have the employee that is opting to use a respirator for non-overexposure conditions read this page and then sign on the bottom of the page. Forward a copy of the signed form to the Division Training Records Administrator and maintain a copy in the employee's personnel file.

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for employees. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the employee.

Sometimes employees may wear respirators to avoid exposures to hazards, even if the amount of the hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your own voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not pose a hazard.

You should do the following:

1. Read and follow all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety & Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how it will protect you.
3. Do not wear your respirator in atmospheres containing contaminants which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, fumes, smoke, or very small solid particles.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
5. If you have any health conditions (e.g., asthma, high blood pressure, emphysema, heart disease) that could be aggravated by using a respirator, you should check with your doctor before using one.

I have read and understand this information on: _____ (date)

Employee's name: _____

Employee's signature: _____

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Appendix C: Respirator Cartridge Change Schedule

1.0 Cartridge change schedule

- A. A cartridge change schedule must be developed for cartridges or canisters used with air purifying respirators that do not have an End of Service Life Indicator (ESLI).
 1. The purpose of this is to prevent contaminants from breaking through the respirator's sorbent cartridge(s) and thereby overexposing employees.
 - a) NIOSH has approved ESLIs for only four cartridges or canisters:
 - Mercury vapor
 - Carbon monoxide
 - Ethylene oxide
 - Hydrogen sulfide
 2. Historically we have relied on warning properties such as odor or irritation of a contaminant to dictate cartridge change.
 - a) OSHA no longer allows this as the sole basis for changing respirator cartridges.
 - B. In developing a change schedule, the following factors should be considered:
 1. Contaminants
 2. Concentration
 3. Frequency of use
 - a) Continuously or intermittently throughout the shift
 4. Temperature and humidity
 5. Work rate
 6. The presence of potentially interfering chemicals
 7. Multiple chemical exposures
 - C. The worst-case conditions should be assumed to avoid early breakthrough.
 1. This must be documented in the project health and safety plan or, in the cases of office or labs, in the site-specific Respiratory Protection Program.

2.0 Sources of Help

- A. Manufacturers
 1. 3M has an interactive "Cartridge Service Life" program that can be downloaded for free
 - a) <http://www.mmm.com/market/safety/ohes2/index.html>
 2. This program will estimate cartridge service life only for 3M products against many contaminants.
 3. The program does not evaluate the service life against mixtures (multiple contaminants).
 4. Other respirator manufacturers have similar tools for their cartridges.

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Appendix C: Respirator Cartridge Change Schedule (continued)

- B. Because of the complexity in evaluating mixtures, OSHA offers the following guidance:
 - 1. When the individual compounds in the mixture have similar breakthrough times (i.e., within one order of magnitude), service life of the cartridge should be established assuming the mixture stream behaves as a pure system of the most rapidly migrating component with the shortest breakthrough time (i.e., sum of the concentration of the components).
 - 2. Where the individual compounds in the mixture vary by 2 orders of magnitude or greater, the service life may be based on the contaminant with the shortest breakthrough time.

3.0 Rule of Thumb

- A. *The Occupational Environment: Evaluation and Control*
 - 1. If the chemical's boiling point is $>70^{\circ}\text{C}$ and the concentration is less than 200 ppm you can expect a service life of 8 hours at a normal work rate.
 - 2. Service life is inversely proportional to work rate.
 - 3. Reducing concentration by a factor of 10 will increase service life by a factor of 5.
 - 4. Humidity above 85% will reduce service life by 50%.
- B. OSHA Interpretation
 - 2. The OSHA inspection procedures for the respiratory protection standard specify that:
 - a) Where contaminant migration is possible, respirator cartridges/canisters should be changed after each work shift where exposure occurs unless there is objective data to the contrary (desorption studies) showing the performance in the conditions and schedule of use/non-use found in the workplace.

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Appendix D: Respiratory Protection

Fit Test Worksheet

Employee name: _____ Employee Number: _____
 Office location: _____ SSN: _____
 Last medical exam: _____ Corrective lenses? _____

INFORMATION	RESPIRATOR 1	RESPIRATOR 2	RESPIRATOR 3
Equipment type			
Manufacturer			
Model			
Size			
Material			

TEST RESULTS	RESPIRATOR 1	RESPIRATOR 2	RESPIRATOR 3
Negative pressure check	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>
Positive pressure check	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>
Qualitative Fit Test			
Isoamyl acetate	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>
Saccharin mist	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>
Irritant smoke	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>	Pass <input type="checkbox"/> Fail <input type="checkbox"/>
Quantitative Fit Test			
Overall fit factor achieved			
Printout/strip chart attached. (Include mfg. and serial no. of unit)			
Was the Employee:			
<ul style="list-style-type: none"> Briefed on fundamental principles of respiratory protection, use, inspection, cleaning, maintenance, and storage of equipment? 			Yes <input type="checkbox"/> No <input type="checkbox"/>
<ul style="list-style-type: none"> Briefed on the procedure for obtaining a lens kit for use with a full-face respirator? 			Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>

I hereby certify that the subject employee has been FIT tested according to procedures specified in SMS 25, "Respiratory Protection" and in accordance with 29 CFR 1910.134, App. A. The results of the test indicate that the subject employee attains a satisfactory fit on the above respiratory protective equipment.

Examiner's Name (print)

Examiner's Signature

Date

Employee's signature

Date

Distribution: (1) Employee (2) Project/Shop Health and Safety File