Respiratory Protection Manual

The University of Alabama in Huntsville

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Respiratory Protection Manual

The University of Alabama in Huntsville

1.0 INTRODUCTION

The purpose of this document is to establish a standard operating procedure and to provide the necessary information required for the safe and effective use of respiratory protective equipment by The University of Alabama in Huntsville personnel and contractors providing services to The University of Alabama in Huntsville.

It is the responsibility of the Office of Environmental Health and Safety to establish an effective respiratory protection program which sets guidelines for the control of occupational illnesses which may be caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors. It is the responsibility of the employees and their supervisors for overall compliance with the program.

2.0 FEDERAL REGULATIONS

2.1 OSHA/EPA Guidelines

The Occupational Safety and Health Administration (OSHA) is the primary governing body for the establishment of occupational related regulations. Regulations concerning respiratory protection, including the use of Self-Contained-Breathing-Apparatus (SCBA), are found in chapter 29 of the Code of Federal Regulations (CFR) section 1910 paragraph 134. A copy of 29 CFR 1910.134 can be found in Appendix A of this document. These regulations stipulate the use of approved respirators, proper selection of protective equipment, employee training, and the appropriate methods for fit testing. The EPA has established the Worker Protection Rule that directly links EPA and OSHA regulations concerning occupational respiratory exposures. The UAH Respiratory Protection Program outlines the specifics necessary to comply with OSHA and EPA requirements, thus ensuring the health and safety of UAH employees through adequate respiratory protection.

2.2 Primary Requirements

EPA/OSHA guidelines state that prevention of atmospheric contamination is the primary means of controlling occupational diseases related to breathing contaminated air. Engineering control measures shall be the primary means of controlling respiratory hazards. Examples include enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials.

When these control measures are not feasible or while they are being instituted, appropriate respiratory protection will be used based on the following requirements:

> (1) The employer shall provide respirators suitable for the purpose intended when such equipment is necessary to protect the health of the employee.
>
> (2) The employer shall be responsible for the establishment and maintenance of a respiratory protection program based on OSHA and EPA standards and American National Standards Institute (ANSI) guidelines.

(3) The employee shall use the provided respiratory protection in accordance with instructions and training received.

3.0 UAH POLICY

The policies of The University of Alabama in Huntsville regarding the Respiratory Protection Program are intended to safeguard the health and safety of employees and contractors of UAH who must at any time, due to the nature of their occupational exposure, be required to wear respiratory protection. However, it must be noted that the ultimate responsibility for safety and the proper use of respiratory equipment lies with the individual employee.

Where and when an employee will be required to use respiratory protection may be the most important decisions made with regard to safety while on the job. Generally, any employee who enters into an atmosphere which may contain dusts, organic vapors, fumes, mists, and or sprays of a hazardous nature above the Action Limit (AL) or Permissible Exposure Limit (PEL) as specified by regulatory guidance for a given substance is required to wear respiratory protection.

Specific instances which occur on the UAH campus requiring the use of respirators are:

a) Maintenance procedures requiring the removal or possible disturbance of asbestos containing materials which might constitute a fiber release.

b) Entrance into an atmosphere containing radon at >40 pCi/L or when the use of chemicals creates an atmosphere where the permissible exposure limit (PEL) is exceeded.

c) Hazardous chemical spills/releases.

d) Painting/spray painting that may create hazardous vapors and/or the release of particulates or mists into the air that may be inhaled by the employee.

e) Routine boiler maintenance that produces large quantities of dust.

f) Entrance into an area with an oxygen level below 19.5%.

This list is not all-inclusive, and if there are any questions as to the safety of a particular assignment, contact the OEHS at 256-824-2352. Specific responsibilities of The University of Alabama in Huntsville, supervisory staff, and employees are discussed below.

3.1 University Responsibilities

The University of Alabama in Huntsville through the Office of Environmental Health and Safety (OEHS) shall:

3.1.1 Establish and maintain a written respiratory protection program that shall include the requirements outlined in 29 CFR 1910.134.

3.1.2 Ensure employees will not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. A physician or other licensed health care provider (PLHCP) shall review the user's medical evaluation status on an annual basis. Appendix B contains a sample medical questionnaire used by the PLCHP (Occupational Health Group) to partially determine the health and physical condition of the respirator user. In addition, each employee will be fit tested by trained professionals prior to being issued a respirator.

3.1.3 Be responsible for providing the necessary annual medical screening and training for personnel in the respiratory protection program. When applicable, companies contracted by the University must provide documentation of medical evaluations, training, and fit testing of their affected personnel.

3.1.4 Be responsible for keeping records of all respiratory training and medical evaluations of employees within the program.

3.1.5 Provide respirators and appropriate filters/cartridges that are applicable and suitable for the purpose intended.

3.1.6 Costs associated with respiratory protection equipment, fit testing and annual medical surveillance shall be provided at no cost to the employee.

3.2 Department and Employee Responsibilities

It is the responsibility of the employee to use the provided respiratory equipment in accordance with the instructions and training received. The supervisors of employees who perform tasks that have the potential for respiratory exposure must notify the OEHS prior to the performance of these tasks. Furthermore, the Department and immediate supervisor must ensure the proper usage of all respiratory equipment through appropriate surveillance of employee work habits and implementation of the following guidelines:

3.2.1 Supervisors must notify employees of hazards requiring the use of respirators. Employees shall not be assigned to tasks requiring the use of respirators unless they have completed the appropriate training, medical clearance, and fit testing as per sections 3.1.2 and 3.1.3 of this document.

3.2.2 A copy of The University of Alabama in Huntsville Respiratory Protection Program must be made available to all employees who participate in the respiratory protection program.

3.2.3 The employer will provide training to affected employees. Training shall encompass (but is not limited to) the proper use of respirators, donning and doffing respiratory protective equipment, limitations of respirator use, and maintenance.

3.2.4 Cleaning, normal maintenance, and inspection activities are the responsibility of the employee and their supervisor. Supervisors will periodically inspect respirators to ensure

serviceability and cleanliness. A record of inspection and routine maintenance dates as well as any findings for respirators maintained for emergency use shall be maintained under supervisor direction.

3.2.5 Respirators shall not be worn when conditions prevent a good face seal. Conditions which may prevent a good seal and therefore decrease the effectiveness of a respirator include the growth of a beard, excessive sideburns, hair over the forehead, dentures, and eyeglasses.

3.2.6 Respirators shall be stored in a convenient, clean, and sanitary location. The use of personal lockers for respirator storage is appropriate. Respirators shall be washed, dried, and placed in sealed plastic bags prior to storage in this manner.

3.2.7 The user must conduct inspections of the respirators during routine cleaning. A schedule for changing cartridges shall be implemented by supervisory staff according to manufacturers' guidelines. Alternatively, cartridges with end of service life indicators (ESLI) may be used. The date of change must be recorded on the respirator maintenance log (see Appendix C). Worn or deteriorated parts shall be replaced. Respirators for emergency use shall be thoroughly inspected at least once a month and after each use. Labels identifying performance of monthly inspections of SCBA units must be attached to the unit. Inspection records must be maintained and kept in the SCBA casing.

3.3 Medical Surveillance

A medical evaluation is required prior to training for the Respiratory Protection Program. The medical evaluation and testing related to this program will be conducted at no cost to the employee. Upon review of the medical questionnaire by a physician or other licensed health care provider (PLHCP), a pulmonary function test and chest X-ray may be required. The PLHCP will provide the employee with either an approval or disapproval to participate in the Respiratory Protection Program. A written medical evaluation is required annually for those employees who are required to use respirators. A sample Medical Questionnaire is included in Appendix B.

3.4 Training

Training will be provided prior to initial use of respiratory protective equipment and annually thereafter. Additional training is deemed necessary when respiratory protection regulations have changed or a new respiratory hazard is introduced. Respiratory protection training will encompass but not be limited to the following:

a) The respiratory hazard and the effect if the respirator is not used appropriately.

b) Why the respirator is needed to provide protection and the engineering controls already being used to control the hazard.

c) Choosing appropriate respirators and cartridges - Selection of appropriate respirators shall be in accordance with Standards for Respiratory Protection, as published in ANSI Z88.2-1992.

d) Limitations of the selected respirator.

e) Donning and doffing respiratory protective equipment. Ensuring appropriate fit and function.

f) Respirator maintenance, inspection, and storage.

g) Recognizing and handling emergency situations.

h) Governmental regulations on specific substances.

3.5 Fit Testing

Maintaining the facepiece-to-face seal is imperative for proper respiratory protection. Therefore, all individuals in the program must successfully pass the fit-test as described in Section 7.0. A copy of the fit test record can be found in Appendix B. Supervisory personnel will be trained every second year to provide training and perform fit tests.

4.0 RESPIRATORY PROTECTION DEVICES

The basic function of a respirator is to reduce the risk of respiratory injury due to breathing airborne contaminants. A respirator provides protection by either removing the contaminants from surrounding air (air-purifying respirators) or by supplying the wearer with an alternate source of clean breathing air (air-supplying respirators).

4.1 Air-Purifying Respirators

When using air-purifying respirators (APRs), air is passed through air-purifying elements, which removes aerosols, vapors, gases, or a combination of these contaminants. When using negative-pressure type respirators breathing air is drawn through the air-purifying element creating a negative pressure inside the facemask. This type of respirator is also known as tight-fitting. Powered air-purifying respirators (PAPR) contain a blower that pulls surrounding air across the air-purifying element and blows the purified air into the wearer’s facepiece. The powered type is equipped with either a tight-fitting facepiece or a loose-fitting facepiece, helmet, hood, or suit. Of the wide variety of APRs available, they must fall into one of the following groups:

4.1.1 Mechanical Particulate Respirators
Particulate APR's which employ a mechanical filter element such as the High Efficiency Particulate filter (HEPA); screens out particulates based solely on size and are used for contaminants in the form of dusts, mists, fibers, and radionucleotides.

4.1.2 Vapor or Gas-Removing Respirators
Gas and vapor APRs that utilize chemical adsorbents remove, a) a single type of vapor or gas (for example, chorine gas), b) a single class of gases or vapors (for example, organic vapors), or c) a combination of two or more classes of vapors or gases (for example, organic vapors and acid gases) from surrounding air.

4.1.3 Combination Particulate, Vapor, and Gas-Removing Respirators
These respirators consist of a combination of particulate removal filters and gas-vapor adsorbent cartridges.

4.2 Atmosphere-Supplying Respirators
Atmosphere (air)-supplying respirators (ASR) provide a substitute source of clean breathing air. This air is supplied to the worker from either a stationary source through a supply hose or from a portable container independent of the surrounding air. ASR must be used in oxygen deficient atmospheres and those atmospheres containing hazardous chemicals that cannot be purified by cartridges and cassettes for APR.

4.2.1 Oxygen Deficiency
The body requires oxygen in order to sustain the physiological activities necessary for life. If the oxygen concentration decreases, the body reacts in various ways (Table 4-1). Death occurs rapidly when the concentration of oxygen decreases to 6.0% and below.

The physiological effects of oxygen deficiency may not be apparent until the concentration falls below 16%. The various regulations and standards dealing with respirator use recommend that concentrations ranging between 16.0-19.5% be considered indicative of an oxygen deficiency. In hazardous materials response operations, 19.5% oxygen is considered the lowest "safe" working concentration. In instances where the oxygen content falls below 19.5%, a supplied-air respirator must be used.

PHYSIOLOGICAL EFFECTS OF OXYGEN DEFICIENCY

% Oxygen at Sea Level Effects

21-19.5 Nothing abnormal

19.5 OSHA mandated oxygen level below which supplied air must be used.

16-12 Loss of peripheral vision, increased breathing volume, accelerated heartbeat, impaired attention and thinking, impaired coordination.

12-10 Very faulty judgement, muscular exertion causes fatigue that may cause permanent heart damage, intermittent respiration.

10-6 Nausea, vomiting, inability to perform vigorous movement or loss of all movement, unconsciousness, followed by death.

6 Spastic breathing, convulsive movements, death in minutes.
Air-supplying respirators fall into two major categories and several subcategories as described below:

4.2.2 Self-contained Breathing Apparatus (SCBA)
With this type of apparatus, the wearer carries the breathing atmosphere. Either compressed air or oxygen provides the atmosphere. A full facepiece is most commonly used, although half-masks, mouthpieces, and hoods are available on some units. Classes of SCBA units include:

a) Closed-circuit SCBA - In a closed-circuit breathing apparatus, all or a percentage of the exhaled air is cleaned and rebreathed. All closed-circuit units have the advantage of lower weight for the same use interval as open-circuit units. Available units contain supplied air for a 30-minute to 4-hour duration. Disadvantages include increased complexity and cost. With the exception of the liquefied gas systems, closed-circuit SCBAs tend to produce more heat in the system than the open-circuit systems.

b) 0pen-circuit SCBA - In this type of SCBA, exhaled air is released to the surrounding environment rather than being recirculated. The equipment is simpler and less expensive than the closed-circuit systems. Units typically supply air for 30 minutes to 1 hour.

c) Escape SCBA - SCBAs designed for escape are similar to the types described above, except the use duration tends to be shorter, typically 5, 7, or 10 minutes. SCBAs certified for escape only shall not be used to enter a hazardous atmosphere. Protection factors have not been established for this category of SCBA. Positive pressure units are recommended for all activities requiring SCBA use.

4.2.3 Airline Respirators
This type of ASR supplies the user with breathing air through a hose from a compressor or compressed air cylinder(s). The hose is attached to the wearer by a belt or other suitable means and can be detached rapidly in an emergency. A flow-control valve is used to govern the rate of airflow to the wearer.

ASRs can be used regardless of the type of airborne contaminant or oxygen concentration. However, the contaminant concentration limits vary for the different types of ASRs and the wearer must be aware of the limitations of their respirator.

4.3 Types of Facepieces
The protection provided to the wearer of respiratory equipment is based on how well the facepiece or respirator fits. Regardless of the efficiency of the purifying element or how clean the

supplied air, if the facepiece-to-face seal is insufficient then little protection is afforded the wearer.

There are three basic configurations for facepieces, each of which relates to their protective capacities.

a) Quarter-Mask: fits over the bridge of the nose across the cheeks and over the chin. Limited protection is expected with this type of mask because it can be easily dislodged, therefore breaking the seal. Quarter-masks are not approved for use by University employees.

b) Half-Mask: fits over the bridge of the nose across the cheek and under the chin. Protection is better than with the quarter-mask due to the seal being less likely to be broken.

c) Full-Face Mask: fits across the forehead, down over the temples and cheeks, and under the chin. Head harness usually has a five or six-point suspension. These facepieces give the greatest protection, because they are held in place more securely with the seal along the forehead. An added benefit is the eye protection afforded by the clear lens in the full-facepiece.

5.0 Respirator Selection Criteria

Requests for the use of respiratory equipment shall be made by contacting the Office of Environmental Health and Safety at 824-6875. Upon medical approval, the OEHS will be responsible for the selection of the appropriate respiratory equipment and for assuring the user has been instructed and trained in the proper use of respirators and their limitations. Selection will be in accordance with the guidance of the American National Standard Practices for Respiratory Protection Z88.2-1992 and OSHA 29 CFR 1910.134.

5.1 Hazard Determination Steps
The UAH OEHS shall determine the nature of all hazards. The proper respiratory protection equipment will be selected based upon this information. The steps involved in hazard determination are described below:

a) Determine if an oxygen deficient atmosphere exists.

b) Determine what contaminants may be present in the work area.

c) Measure or calculate the concentration of the contaminant(s).

d) Determine whether there is a published Action Limit (AL), Permissible Exposure Limit (PEL), Threshold Limit Value (TLV), or any other available exposure limit or estimate of toxicity for the contaminants. Determine if an Immediately Dangerous to Life and Health (IDLH) concentration for the contaminant is available.

e) Determine if there is regulatory guidance in effect for the contaminant(s) (e.g. lead, asbestos). If so, there may be specific respirators required which will influence the selection process.

f) Determine the physical state of the contaminant. If an aerosol, determine or estimate the particulate size. Determine if the vapor pressure of the aerosol is significant at the maximum expected temperature of the work environment.

g) Determine whether the contaminant(s) present can be absorbed through the skin, produce skin sensitization, or be irritating or corrosive to the eyes or skin.

h) For gas or vapor contaminant(s), determine if a known odor, taste, or irritation concentration exists.

5.2 Selection Steps

The proper respirator shall be selected by the UAH OEHS as follows:

a) If unable to determine what potentially hazardous contaminant may be present, the atmosphere shall be considered Immediately Dangerous to Life and Health (IDLH) and require the use of an air-supplying respirator.

b) If no exposure limit or guideline is available and estimates of the toxicity cannot be made, the atmosphere shall be considered IDLH and require the use of an air- supplying respirator.

c) If a specific regulation or standard exists for the contaminant, follow those guidelines/requirements.

d) Only air-supplying respirators may be used in oxygen-deficient atmospheres.

e) If the measured or estimated concentration of the contaminant(s) is considered IDLH, air-supplying respirators must be used.

f) Obtain the hazard ratio by dividing the measured or estimated concentration of each contaminant by the exposure limit or guideline. When two or more substances are present, consideration needs to be given if there is a synergistic or combined effect of exposure rather than considering each substance individually. Select a respirator with an assigned protection factor greater than the value of the hazard ratio, as listed in Table 7-2. If an air-purifying respirator is selected, continue with (g).

g) If the contaminant(s) is a gas or vapor only, select a device with an assigned protection factor that is greater than the hazard ratio. The concentration shall also be less than the maximum use concentration of the cartridge/canister; go to (m). If an aerosol contaminant is present, go to (h) below.

h) If the contaminant is a paint, lacquer, or enamel, select a respirator approved specifically for paint mists or an air-supplying respirator. (Approval label or regulatory provision may preclude its use for some paints.)

i) If the contaminant is a pesticide, select a respirator and filtration system specifically approved for pesticides or an air-supplying respirator. (Approval label may preclude its use for some pesticides).

j) If the contaminant is an aerosol, with an unknown particle size or less than 2 um, a high efficiency particulate air (HEPA) filter shall be used. If the aerosol has a particle size greater than 2 um, any filter (dust, fumes, mists, or HEPA) may be used.

k) If the contaminant is a fume, use a filter approved for dusts, mists, fumes, or a HEPA filter.

l) If the contaminant is a gas or vapor and has poor warning properties (no smell, taste, etc.) the use of an air-supplying respirator is generally recommended. When air-supplying respirators cannot be used because of the lack of a feasible air supply or because of the need for worker mobility, air-purifying devices should be used only if; 1) the air-purifying respirator has a reliable end-of-service life indicator (ESLI) that will warn the user prior to contaminant break-through or 2) a cartridge change schedule is implemented based on cartridge adsorption studies (unless cartridges are changed daily), expected concentration, pattern of use, duration of exposure, and 3) the chemical does not have a ceiling limit.

m) High purity air shall be used for compressed gaseous air and compressed gaseous oxygen when used for respiration. Compressed gaseous air shall meet the specifications for Type I - Grade D breathing air. Compressed gaseous oxygen may cause an explosion if passed through oil or grease at high pressures. Therefore, compressed gaseous oxygen shall not be used in supplied air respirators or open circuit SCBA’s that have previously used compressed air.

5.3 Atmospheres Immediately Dangerous to Life or Health (IDLH)
A location is considered IDLH when:

a) It is an atmosphere known or suspected to have concentrations above the IDLH level for a given contaminant(s), or

b) It is a confined space that contains less than the normal 20.9% oxygen level, unless the source of oxygen reduction is understood and controlled, or

c) Oxygen content is <12.5% at sea-level atmospheric pressure (95 mm Hg), or

d) It contains total atmospheric pressure less than 450 mm Hg (8.6 psi) equivalent to 14,000-ft altitude or any combination of reduced percentage of oxygen or reduced pressure, which leads to an oxygen partial pressure less than 95 mm Hg.

IDLH conditions caused by the presence of toxic materials and/or a reduced oxygen content necessitate the use of positive-pressure SCBAs or a combination of supplied-air respirators with SCBAS.

When air supplying respirators are worn in IDLH conditions, at least one standby person shall be present in a safe area. The standby person shall have the proper equipment available to assist the respirator wearer in case of difficulty. Communications (visual, voice, signal line, telephone, radio, or other suitable means) shall be maintained between the standby person and the respirator wearer. While working in the IDLH atmosphere, the wearer shall be equipped with a safety harness and safety lines to permit removal/extraction to a safe area in an emergency. Provisions for rescue other than safety harness and lines may be used, if appropriate.

5.4 Special Considerations for Confined Spaces

Confined spaces continue to be the cause of numerous deaths and serious injuries. Therefore, any confined space containing less than 20.9% oxygen is considered IDLH, unless the source of oxygen reduction is understood and controlled, and no other contaminants are present in concentrations considered IDLH. No University employee may enter a location that is considered a permit required confined space without proper written authorization from the OEHS.

6.0 Fit Testing

Not all respirators fit everyone; therefore, each individual must be fitted with a respirator that properly conforms to the features of the user. The OEHS has responsibility for fit testing all respirator users at the time of respirator issuance and annually thereafter. Fit tests will also be performed whenever a visual observation of changes in an employees physical condition has been made. Fit testing is designed to check the integrity of the seal. The use of respirators is prohibited when conditions prevent a good facepiece-to-face seal.

There are two types of fit tests: Quantitative and Qualitative.

a) Quantitative: an analytical determination of the concentration of a test agent inside the mask compared to that outside the mask. This concentration ratio is called the Protection Factor (PF) and is a measure of the relative protection offered by a respirator.

$$PF = \frac{\text{Concentration outside mask}}{\text{Concentration inside mask}}$$

b) Qualitative: the qualitative fit-test is not an analytical measurement. It is a subjective test where an irritant or aroma is used to determine if there is a good facepiece-to-face seal. If the test subject does not respond (by smelling, tasting, coughing, etc.) to the test agent, the worker can wear the tested respirator with an assigned PF for that type of respirator. Table 6-2 lists several types of respirators and their assigned PFs.

A Protection Factor is then used to determine the Maximum Use Limit (MUL) of a successfully fit-tested respirator. The MUL is the highest concentration, not exceeding the (IDLH) concentration, of a specific contaminant in which a given respirator will be worn:

MUL = PF x TLV x 0.10

It shall be the policy of the University of Alabama in Huntsville and the Office of Environmental Health and Safety that all fit tests are conducted qualitatively. Fit test results will be used in conjunction with other criteria to select specific types, makes, and models of respirators for use by individual respirator wearers.

Requirements for acceptable fit tests will follow the protocol in OSHA, Fit Testing Procedures, 29 CFR 1910.134, Appendix A.

TABLE 6-2
SELECTED RESPIRATOR PROTECTION FACTORS

Type of Respirator	OSHA Assigned PF
1. Particulate Air-Purifying	
Half-mask, high-efficiency	10
Full-facepiece, high efficiency	50
Powered, high-efficiency with tight-fitting facepiece	100
Powered, high-efficiency with hood or helmet	100
II. Air-Supplied	
Constant-flow, half-mask	100
Constant-flow, full-facepiece	100
Constant-flow, hood or helmet	100
Pressure-demand, full-facepiece	1000
Open-circuit, pressure-demand self-contained breathing apparatus (SCBA)	10000+
Combination-Type Respirator	
Any combination of air-supplied and air-purifying respirator above for mode of operation used	Minimum protection factor listed
Full-facepiece pressure-demand air-line respirator with auxiliary positive-pressure SCBA	10000+

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7.0 Procedures for Cleaning and Sanitizing Respirators

A respirator may become contaminated with toxic materials during use. If the contamination is light, normal cleaning procedures, as listed below, should provide satisfactory decontamination; otherwise, separate decontamination steps may be required before cleaning.

As described in section 3.2.4 of this document, cleaning and inspection of respirators are the responsibility of the supervisors and individual employees to whom a respirator has been assigned. In all cases, the manufacturer recommendations for cleaning and sanitizing of respirators must be followed. Procedures in addition to the manufacturer's instructions are provided as follows:

a) Remove filters, cartridges, canisters.
b) Disassemble the facepiece and discard or replace any defective parts. The following must be removed for appropriate cleaning:

1) speaking diaphragms

2) valve assemblies

3) any components recommended by the respirator manufacturer

c) Wash components in warm water containing a mild detergent. A stiff bristle (not wire) brush may be used to facilitate removal of dirt or other foreign material.

d) Rinse components in clean, warm water. Drain thoroughly.

e) When cleaners do not contain a disinfecting agent, immerse the respirator for 2 minutes in one of the following solutions:

1) hypochlorite solution (50 parts per million) prepared by diluting one milliliter of laundry bleach to 1 liter of water

2) an aqueous iodine solution (50 parts per million of iodine) prepared by adding 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 milliliters of 45% alcohol) to 1 liter of water

3) other equivalent commercially available disinfectant cleansers may be used as directed, when approved by the respirator manufacturer

f) Dry components with a clean lint free drying cloth or alternatively, air dry.

g) Reassemble parts on respiratory inlet covering assemblies.

h) Attach filters, cartridges, and canisters to respiratory inlet coverings.

i) Visually inspect and, where possible, test parts and respirator assemblies for proper function.

j) Place assembled respirators in appropriate containers for storage.

k) If applicable, complete appropriate maintenance log.

Cleaners/sanitizers which effectively clean the respirator and contain bactericides are commercially available. Strong cleaning and sanitizing agents and many solvents can damage rubber or elastomeric respirator parts. These materials should not be used for cleaning purposes. Immersion times should not be extended beyond the recommended time periods. Respirators should be thoroughly rinsed to remove any traces of cleaning compounds. Contact the UAH OEHS for more information on cleaning/sanitizing materials.

8.0 RESPONSIBILITY AND ENFORCEMENT

The establishment, implementation and enforcement of the respiratory protection program at The University of Alabama in Huntsville are under the auspices of the Office of the Environmental Health and Safety. The OEHS will evaluate procedures and policies relating to respiratory protection on the UAH campus annually. Revisions will be prepared and distributed to responsible parties.

This document outlines guidelines and procedures, which must be followed to insure the health and safety of University employees. Blatant disregard or multiple infractions of this policy may lead to disciplinary actions including termination of employment.

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APPENDIX A

RESPIRATOR FIT TEST RECORD

A. EMPLOYEE NAME:_____ DATE:_____
JOB TITLE:_____

B. EMPLOYER:_____
DIVISION/DEPARTMENT:_____

C. TYPE RESPIRATOR:_____
MANUFACTURER:_____
NIOSH NUMBER:_____
MODEL NUMBER:_____
SIZE:_____

D. CONDITIONS AFFECTING RESPIRATOR FIT:

___CLEAN SHAVEN ___FACIAL SCAR(S)
___1-2 DAY GROWTH ___DENTURES ABSENT
___2+ DAY GROWTH ___GLASSES
___MOUSTACHE ___NONE

E. FIT CHECKS:

NEGATIVE PRESSURE: ___PASS ___FAIL ___NOT DONE
POSITIVE PRESSURE: ___PASS ___FAIL ___NOT DONE

F. FIT TESTING:
___QUANTITATIVE ___ISOAMYL ACETATE ___IRRITANT SMOKE

FIT FACTOR___
QUALITATIVE ___PASS ___FAIL
QUANTITATIVE ___PASS ___FAIL

COMMENTS:

G. EMPLOYEE ACKNOWLEDGEMENT OF TEST RESULTS:

EMPLOYEE SIGNATURE:_____DATE:_____

TEST CONDUCTED BY:_____DATE:_____