PAGODA
ELECTRICAL Inc.
Progressive · Professional · Prestigious

Respiratory Protection Program

Policy:

All employees will be protected from exposure to airborne radioactive, chemical, or biological contamination by installing, implementing, or instituting feasible engineering or administrative controls. If these controls do not prove feasible, or while they are being installed/instituted, appropriate respiratory protection will be provided. For some experiments, respiratory protection may be provided as an additional safeguard against exposure.

It is Pagoda Electrical, Inc.'s policy to provide employees with a safe and healthful working environment. This is accomplished by utilizing facilities and equipment that have all feasible safeguards incorporated into their design. When effective engineering controls are not feasible, or when they are being initiated, protection shall be used to ensure personnel protection.

This program does not apply to contractors as they are responsible for providing their own respiratory protection programs and respiratory protective equipment.

Respiratory equipment will be provided for employee's use against harmful vapors and oxygen deficient atmospheres.

In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this section.

A respirator shall be provided to each employee when such equipment is necessary to protect the health of such employee. Pagoda Electrical, Inc. shall provide the respirators which are applicable and suitable for the purpose intended.

Pagoda Electrical, Inc. shall provide respirators, training, and medical evaluations at no cost to the employee.

Definitions:

a. Respirator – A device provided to protect the wearer from inhalation of harmful or nuisance atmospheres. Respirators may function by air purifying and/or air supplying techniques.

b. Air Purifying Respirator – A respirator that filters and/or absorbs contaminants from the ambient air being inhaled by the wearer.

c. Supplied Air Respirator – A respirator in which clean air is supplied to the facepiece from an auxiliary source away from the wearer.

d. Self-Contained Breathing Apparatus – A respirator in which the air supply is carried by the wearer.

e. Atmospheric Contamination – The term applies equally to gases such as nitrogen, carbon monoxide, and carbon dioxide; the vapors of volatile substances such as benzene and carbon tetrachloride; toxic dusts and fumes; radioactive materials; and so forth.

f. Respirator Fit Test – A test used to determine a proper match or fit between the facepiece of the respirator and face of the wearer.

Procedures:

In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by Pagoda Electrical, Inc., Pagoda Electrical, Inc. shall establish and implement a written respiratory protection program with worksite specific procedures. The program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use. Pagoda Electrical, Inc. shall include in the program the following provisions of this section, as applicable:

- Procedures for selecting respirators for use in the workplace;
- Medical evaluations of employees required to use respirators;
- Fit testing procedures for tight-fitting respirators;
- Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;

- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;
- Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators;
- Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;
- Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance; and
- Procedures for regularly evaluating the effectiveness of the program.

General Requirements:

Pagoda Electrical, Inc. shall select and provide an appropriate respirator based on the respiratory hazard(s) to which the worker is exposed and workplace and user factors that affect respirator performance and reliability.

Pagoda Electrical, Inc. shall select a NIOSH-certified respirator. The respirator shall be used in compliance with the conditions of its certification.

Pagoda Electrical, Inc. shall identify and evaluate the respiratory hazard(s) in the workplace; this evaluation shall include a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. Where Pagoda Electrical, Inc. cannot identify or reasonably estimate the employee exposure, Pagoda Electrical, Inc. shall consider the atmosphere to be **IDLH** (***Immediately Dangerous to Life or Health***).

Pagoda Electrical, Inc. shall select respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

Respirators for IDLH atmospheres.

Pagoda Electrical, Inc. shall provide the following respirators for employee use in IDLH atmospheres:

- A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or

- A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

Respirators provided only for escape from IDLH atmospheres shall be NIOSH certified for escape from the atmosphere in which they will be used.

All oxygen-deficient atmospheres shall be considered IDLH.

Procedures for IDLH atmospheres.

For all IDLH atmospheres, Pagoda Electrical, Inc. shall ensure that:

- One employee or, when needed, more than one employee is located outside the IDLH atmosphere;

- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere;

- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;

- Pagoda Electrical, Inc. or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;

- Pagoda Electrical, Inc. or designee authorized to do so by Pagoda Electrical, Inc., once notified, provides necessary assistance appropriate to the situation;

- Employee(s) located outside the IDLH atmospheres are equipped with:

    - Pressure demand or other positive pressure SCBAs (self contained breathing apparatus), or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either

- Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or

- Equivalent means for rescue where retrieval equipment is not required under the previous sentence

Responsibilities:

a. Supervisor

Supervisors will ensure each employee under his or her supervision using a respirator has received appropriate training in its use and an annual medical evaluation. Supervisors will ensure the availability of appropriate respirators and accessories, provide adequate storage facilities, and encourage proper respirator equipment maintenance. Supervisors must be aware of tasks requiring the use of respiratory protection, and ensure all employees engaged in such work use the appropriate respirators at all times. The Supervisors are responsible for the following:

1. Ensures that all employees who wear respiratory protective devices are thoroughly trained in their use.

2. Provides employees with the respiratory protection appropriate for the operation, and ensures the use of such devices.

3. Identifies potentially hazardous conditions and immediately notifies the Safety and Health Manager for corrective action.

Supervisors shall contact the Safety and Health Manager prior to non-routine work which may expose workers to hazardous substances or oxygen deficient atmospheres. Examples of work which may require the use of respirators includes, but are not limited to:

• Asbestos abatement activities

- Abrasive blasting
- Cutting or melting lead or stripping lead-based paints from surfaces
- Welding or burning
- Painting, especially with epoxy or organic solvent coatings
- Using solvents, thinners, or degreasers
- Any work which generates large amounts of dust
- Working in a confined space
- Using formaldehyde to decontaminate a space
- Bioaerosols

b. Employee

1. Uses respiratory protective equipment as instructed and required under hazardous agent protocols.

2. Stores respirator properly to prevent damage and inspects prior to each use.

3. Reports any malfunction of respiratory protective equipment to the immediate supervisor.

Responsibilities: (continued)

c. Others

Personnel, such as employees, inspectors, and visitors, who must enter an area where the use of respiratory protective equipment is required, even when their stay time in the area may be 15 minutes or less, shall be provided with and use appropriate equipment, including instructions regarding use and limitations. Personnel shall be fit tested and medically qualified to wear the respirator being issued prior to entry to the site.

Contractors are required to develop and implement a respiratory protection program for their employees who must enter into or work in areas where exposure to hazardous materials can not be controlled or avoided. This program must meet

OSHA regulations and include issuance of respirators, medical evaluations, fit testing and training.

d. Safety and Health Manager

Pagoda Electrical, Inc. shall designate a program administrator who is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer or oversee the respiratory protection program and conduct the required evaluations of program effectiveness. That program administrator is designated as the Safety and Health Manager.

The Safety and Health Manager shall be properly trained and:

1. Develops, evaluates and implements all aspects of the respiratory protection program.

2. Develops training programs and standard operating procedures to fulfill the requirements of existing OSHA regulations and amendments.

3. Purchases, selects, inspects, maintains, cleans, stores, and fit tests respiratory protective equipment.

4. Periodically inspects and replaces all respiratory protective devices stored for emergency use.

Procedures:

a. Selection – Respirators shall be selected on the basis of the potential hazards to which the worker is exposed. The following factors shall be ascertained by the Health and Safety Branch to ensure that the device selected for the employee will provide satisfactory protection when used properly:

1. Chemical, physical, and toxicological properties of the contaminant(s).

2. Review of actual and potential hazards to assess extent of injurious effects produced under all conditions of potential exposure.

3. Evaluation of the duties to be performed by the wearer as they relate to restriction of movement and duration of potential exposure.

4. An understanding of the principles, design, scope of use, limitations, advantages, and disadvantages of the available respirators. Respiratory equipment selected will be approved by Pagoda Electrical, Inc. or will otherwise be in accordance with existing OSHA regulations.

b. Medical Evaluations – It is the responsibility of the Health and Safety Branch to review the health status of all employees who may be required to wear respiratory equipment. In the event of prolonged respirator use, the wearer should have a medical examination to determine if he/she is medically able to wear respiratory protective equipment without aggravating a pre-existing medical condition

Pagoda Electrical, Inc. shall provide a medical evaluation to determine the employee's ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace. Pagoda Electrical, Inc. may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

Administration of the medical questionnaire and examinations.

The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire shall be administered in a manner that ensures that the employee understands its content.

Pagoda Electrical, Inc. shall provide the employee with an opportunity to discuss the questionnaire and examination results with the Physician or other licensed health care professional (PLHCP).

Medical considerations include, but are not limited to the following:

- History of asthma or emphysema
- Difficulty in breathing
- Previously documented lung problems
- High blood pressure
- Artery diseases
- Documented heart problems
- Missing or arthritic fingers
- Facial scars
- Claustrophobia
- Poor eyesight

c. Fitting – Each individual required to use a respirator of any type will be fitted by the Safety and Health Manager prior to using any such device. The fit test will include a demonstration of proper donning, wearing, and field fit testing techniques, an extensive leak test using a solution of isoamyl acetate as the test vapor and a quantitative fit test using a respirator fit tester. Any individual with a beard or other facial hair that may prevent a proper facepiece-to-face seal will not be fit tested until the hair has been removed. A separate Respirator Fitting and Training Record shall be maintained for each participating individual.

Before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.

Respirator Fit testing

A fit test shall be used to determine the ability of each individual respirator wearer to obtain a satisfactory fit with any air-purifying respirator. Both quantitative and qualitative fit tests will be performed. Personnel must successfully pass the fit test before being issued an air-purifying respirator.

No Pagoda Electrical, Inc. employee is permitted to wear a negative-pressure respirator in a work situation until he or she has demonstrated that an acceptable fit can be obtained. Respirator fitting is conducted initially upon assignment to a task requiring use of a respirator. Refitting is conducted annually thereafter upon successful completion of the respirator training.

Fit testing will be conducted by the Safety and Health Manager and the test results will be the determining factor in selecting the type, model, and size of negative-pressure respirator for use by each individual respirator wearer.

Fit Checking-

Each time a respirator is donned, the user will perform positive and negative pressure fit checks. These checks are not a substitute for fit testing. Respirator users must be properly trained in the performance of these checks and understand their limitations.

A. Negative Pressure Check

Applicability/Limitations:This test cannot be carried out on all respirators; however, it can be used on facepieces of air purifying respirators equipped with tight-fitting respirator inlet covers and on atmosphere supplying respirators equipped with breathing tubes which can be squeezed or blocked at the inlet to prevent the passage of air.

Procedure: Close off the inlet opening of the respirator's canister(s), cartridge(s), or filter(s) with the palm of the hand, or squeeze the breathing air tube or block its inlet so that it will not allow the passage of air. Inhale gently and hold for at least 10 seconds. If the facepiece collapses slightly and no inward leakage of air into the facepiece is detected, it can be reasonably assumed that the respirator has been properly positioned and the exhalation valve and facepiece are not leaking.

B. Positive Pressure Check

Applicability/Limitations: This test cannot be carried out on all respirators; however, respirators equipped with exhalation valves can be tested.

Procedure: Close off the exhalation valve or the breathing tube with the palm of the hand. Exhale gently. If the respirator has been properly positioned, a slight positive pressure will build up inside the facepiece without detection of any outward air leak between the sealing surface of the facepiece and the face.

Qualitative Fit Testing (QLFT)

Federal regulations (29 CFR 1910.1001) require qualitative fit tests of respirators and describe step-by-step procedures. This test checks the subject's response to a chemical introduced outside the respirator facepiece. This response is either voluntary or involuntary depending on the chemical used. Several methods may be used. The two most common are the irritant smoke test, and the odorous vapor test.

a. Irritant Smoke

The irritant smoke test is an involuntary response test. Air purifying respirators must be equipped with a high efficiency particulate air (HEPA) filter for this test. An irritant smoke, usually either stannic chloride or titanium tetrachloride, is directed from a smoke tube toward the respirator. If the test subject does not respond to the irritant smoke, a satisfactory fit is assumed to be achieved. Any response to the smoke indicates an unsatisfactory fit.

The irritant smoke is an irritant to the eyes, skin, and mucous membranes. It should not be introduced directly onto the skin. The test subject must keep his or her eyes closed during the testing if a full facepiece mask is not used.

b. Odorous Vapor

The odorous vapor test is a voluntary response test. It relies on the subject's ability to detect an odorous chemical while wearing the respirator. Air purifying respirators must be equipped with an organic cartridge or canister for this test. Isoamyl acetate (banana oil) is the usual test. An isoamyl acetate-saturated gauze pad is placed near the facepiece-to-face seal of the respirator of the test subject's skin. If the test subject is unable to smell the chemical, than a satisfactory fit is assumed to be achieved. If the subject smells the chemical, the fit is unsatisfactory.

If the subject cannot smell the chemical, the respirator will be momentarily pulled away from the subject's face. If the subject is then able to smell the chemical, a satisfactory fit is assumed. If the subject cannot smell the chemical with the respirator pulled away from the face, this test is inappropriate for this subject, and a different test will be used.

This test is limited by the wide variation of odor thresholds among individuals and the possibility of olfactory fatigue. Since it is a voluntary response test it

depends upon an honest response.

Quantitative Fit Testing (QNFT)

Quantitative fit testing, using the Portacount Plus fit test system, is generally performed on both full-face and half-face negative pressure respirators. Fit factors are determined by comparing the particle concentration outside the respirator with the concentration inside the respirator facepiece. An acceptable fit is achieved when the respirator wearer successfully completes a series of six programmed exercises (normal breathing, deep breathing, moving head up and down, moving head side to side, reading, and normal breathing) with a fit factor of 100 or more.

Special Problems

Pagoda Electrical, Inc. will establish and implement procedures for the proper use of respirators. These requirements include prohibiting conditions that may result in facepiece seal leakage, preventing employees from removing respirators in hazardous environments, taking actions to ensure continued effective respirator operation throughout the work shift, and establishing procedures for the use of respirators in IDLH atmospheres or in interior structural firefighting situations.

Facepiece seal protection.

For all tight-fitting respirators, Pagoda Electrical, Inc. shall ensure that employees perform a user seal check each time they put on the respirator

Pagoda Electrical, Inc. shall not permit respirators with tight-fitting facepieces to be worn by employees who have:

A. Facial Hair

No attempt is made to fit a respirator on an employee who has facial hair which comes between the sealing periphery of the facepiece and the face, or if facial hair interferes with normal functioning of the exhalation valve of the respirator.

B. Glasses and Eye/Face Protective Devices

Proper fitting of a respiratory protective device facepiece for individuals wearing corrective eyeglasses or goggles, may not be established if temple bars or straps extend through the sealing edge of the facepiece. If eyeglasses, goggles, face shield or welding helmet must be worn with a respirator, they must be worn so as not to adversely affect the seal of the facepiece. If a full-facepiece respirator is used, special prescription glasses inserts are available if needed.

Continuing Respirator Effectiveness.

Appropriate surveillance shall be maintained of work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, Pagoda Electrical, Inc. shall reevaluate the continued effectiveness of the respirator.

Pagoda Electrical, Inc. shall ensure that employees leave the respirator use area:

- To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or

- If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece; or
- To replace the respirator or the filter, cartridge, or canister elements.

If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, Pagoda Electrical, Inc. must replace or repair the respirator before allowing the employee to return to the work area.

d. Training – Appropriate training and instructions in the proper use of each type of respirator shall be provided by the Safety and Health Manager. Respirator users and their supervisors will receive training on the contents of this Respiratory Protection Program and their responsibilities under it. They will be trained on the proper selection and use, as well as the limitations of the respirator. Training also covers how to ensure a proper fit before use and how to determine when a respirator is no longer providing the protection intended.

The Safety and Health Manager provides training of respirator wearers in the use, maintenance, capabilities, and limitations of respirators is initially upon assignment of personnel to tasks requiring the use of respirators. Retraining is given annually thereafter and only upon successful completion of the medical evaluation.

Pagoda Electrical, Inc. will provide effective training to employees who are required to use respirators. The training shall be comprehensive, understandable, and recur annually, and more often if necessary.

Pagoda Electrical, Inc. shall ensure that each employee can demonstrate knowledge of at least but not limited to the following:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
- What the limitations and capabilities of the respirator are;
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
- How to inspect, put on and remove, use, and check the seals of the respirator;
- What the procedures are for maintenance and storage of the respirator;
- Nature and degree of respiratory hazard
- Respirator selection, based on the hazard and respirator capabilities and limitations
- Donning procedures and fit tests including hand's-on practice to ensure an effective face piece to face seal
- Actual handling of the respirator and wearing it for a period in a test atmosphere.
- A discussion of respirators construction, operating principles and limitations.
- Care of the respirator, e.g., need for cleaning, maintenance, storage, and/or replacement
- Instruction on the nature of the hazard, including information on its physical properties, possible concentrations, modes of physiological action and means of detection.
- Discussions of maintenance and inspection procedures.
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
- The general requirements of this section.

The training shall be conducted in a manner that is understandable to the employee.

Pagoda Electrical, Inc. shall provide the training prior to requiring the employee to use a respirator in the workplace.

Retraining shall be administered annually, and when the following situations occur:

- Changes in the workplace or the type of respirator render previous training obsolete;
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

Respirator training will be properly documented (Appendix A) and will include the type and model of respirator for which the individual has been trained and fit-tested.

e. Inspection – For sanitary and health reasons, clean respirators shall be used by one individual only and shall be returned to the Safety and health Manager for cleaning, maintenance, and repairs.

Cleaning and disinfecting of reusable components of a respirator unit will be performed by utilizing recognized procedures corresponding to the exposure atmosphere. Disposable respirators will be discarded properly after use by the individual. Inspection frequency for all unused devices shall be monthly. Units receiving routine use shall be inspected by the employee before and after each use. The inspection shall include the following checks when applicable.

1.Tightness of connections

2. Condition of facepiece, headbands, exhalation and inhalation valves, connecting tube, and canister

3. Pressure in cylinders (do not use if less than 1500 psi)

4. Deterioration of all rubber parts

5. Regulator mechanism

6. Lens of facepieces

7. Warning alarm (self-contained units)

8. Seal on cartridge package

f. Location and Storage of Respirators – Location and storage of all respiratory devices shall be controlled by the Safety and Health Manager. When the need for respiratory equipment is anticipated, approval by the Safety and Health Manager should be obtained in advance.

After inspection, cleaning, and any necessary minor repairs, store respirators to protect against sunlight, heat, extreme cold, excessive moisture, damaging chemicals or other contaminants. Respirators placed at stations and work areas for emergency use shall be stored in compartments built for that purpose, shall be quickly accessible at all times and will be clearly marked. Routinely used respirators, such as half-mask or full-face air-purifying respirators, shall be placed in sealable plastic bags. Respirators may be stored in such places as lockers or tool boxes only if they are first placed in carrying cases or cartons. Respirators shall be packed or stored so that the facepiece and exhalation valves will rest in a normal position and not be crushed. Emergency use respirators shall be stored in a sturdy compartment that is quickly accessible and clearly marked.

Storage. Pagoda Electrical, Inc. shall ensure that respirators are stored as follows:

- All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve.

- In addition to the requirements of the previous sentence, emergency respirators shall be:

    - Kept accessible to the work area;

    - Stored in compartments or in covers that are clearly marked as containing emergency respirators; and

    - Stored in accordance with any applicable manufacturer instructions.

Inspection. Pagoda Electrical, Inc. shall ensure that respirators are inspected as follows:

- All respirators used in routine situations shall be inspected before each use and during cleaning;

- All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use; and

- Emergency escape-only respirators shall be inspected before being carried into the workplace for use.

g. Self-Contained Breathing Apparatus – Emergency respirators in carrying cases shall be located in areas designated by the Safety and Health Manager. These respirators are provided for emergency situations only, and for use by authorized personnel. Any conditions requiring the use of these devices shall be reported to Safety and Health Manager.

h. Special Requirements for Confined Spaces – In areas immediately hazardous to life or health, self-contained breathing apparatus, air line respirators or hose masks with blowers shall be used. For emergency rescue, a standby person with suitable self-contained breathing apparatus shall be at the nearest fresh air base. Communications (visual, voice or signal line) shall be maintained between all individuals present.

Persons using air line respirators and hose masks with blowers shall be equipped with safety harnesses and safety lines for lifting or removing them from hazardous atmospheres, or other equivalent provisions for rescue from hazardous atmospheres shall be used. More details concerning respiratory protection for confined space entry can be found in Pagoda Electrical, Inc.’s Confined Space Program.

Types of Respirators-

A. Air-Purifying Respirator

These respirators remove air contaminants by filtering, absorbing, adsorbing, or chemical reaction with the contaminants as they pass through the respirator canister or cartridge. This respirator is to be used only where adequate oxygen (19.5 to 23.5 percent by volume) is available. Air-purifying respirators can be classified as follows:

1. Particulate removing respirators, which filter out dusts, fibers, fumes and mists. These respirators may be single-use disposable respirators or respirators with replaceable filters.

NOTE: Surgical masks do not provide protection against air contaminants. They are never to be used in place of an air-purifying respirator. They are for medical use only.

2. Gas- and vapor-removing respirators, which remove specific individual contaminants or a combination of contaminants by absorption, adsorption or by chemical reaction. Gas masks and chemical-cartridge respirators are examples of gas- and vapor-removing respirators.

3. Combination particulate/gas- and vapor-removing respirators, which combine the respirator characteristics of both kinds of air-purifyingrespirators.

B. Supplied-Air Respirators

These respirators provide breathing air independent of the environment. Such respirators are to be used when the contaminant has insufficient odor, taste or irritating warning properties, or when the contaminant is of such high concentration or toxicity that an air-purifying respirator is inadequate.

Supplied- air respirators, also called air-line respirators, are classified as follows:

1. Demand

This respirator supplies air to the user on demand (inhalation) which creates a negative pressure within the facepiece. Leakage into the facepiece may occur if there is a poor seal between the respirator and the user's face.

2. Pressure-Demand

This respirator maintains a continuous positive pressure within the facepiece, thus preventing leakage into the facepiece.

3. Continuous Flow

This respirator maintains a continuous flow of air through the facepiece and prevents leakage into the facepiece.

C. Self-Contained Breathing Apparatus (SCBA)

This type of respirator allows the user complete independence from a fixed source of air and offers the greatest degree of protection but is also the most complex. Training and practice in its use and maintenance is essential. This type of device will be used in emergency situations only.

<u>Breathing Air Quality and Use:</u>

(Please refer to OSHA regulations 29 CFR 1910. 134(i) for more guidance/detail)

Pagoda Electrical, Inc. will provide employees using atmosphere-supplying respirators (supplied-air and SCBA) with breathing gases of high purity.

Pagoda Electrical, Inc. shall ensure that compressed oxygen is not used in atmosphere-supplying respirators that have previously used compressed air.

Pagoda Electrical, Inc. shall ensure that oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.

Pagoda Electrical, Inc. shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

- Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and

- Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:

    - Oxygen content (v/v) of 19.5-23.5%;

    - Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;

    - Carbon monoxide (CO) content of 10 ppm or less;

    - Carbon dioxide content of 1,000 ppm or less; and

    - Lack of noticeable odor.

Pagoda Electrical, Inc. shall ensure that cylinders used to supply breathing air to respirators meet the following requirements:

- Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178);

- Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and

- The moisture content in the cylinder does not exceed a dew point of -50 deg.F (-45.6 deg.C) at 1 atmosphere pressure.

Pagoda Electrical, Inc. shall ensure that compressors used to supply breathing air to respirators are constructed and situated so as to:

- Prevent entry of contaminated air into the air-supply system;

- Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56 deg.C) below the ambient temperature;

- Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.

- Have a tag containing the most recent change date and the signature of the person authorized by Pagoda Electrical, Inc. to perform the change. The tag shall be maintained at the compressor.

For compressors that are not oil-lubricated, Pagoda Electrical, Inc. shall ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.

For oil-lubricated compressors, Pagoda Electrical, Inc. shall use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

Identification of Respirator Cartridges and Gas Mask Canisters

Respirator cartridges and canisters are designed to protect against individual or a combination of potentially hazardous atmospheric contaminants, and are specifically labeled and color coded to indicate the type and nature of protection they provide.

An approved label on the respirator will also specify the maximum concentration of contaminant(s) for which the cartridge or canister is approved. For example, a label may read:

"DO NOT WEAR IN ATMOSPHERES IMMEDIATELY DANGEROUS TO LIFE. MUST BE USED IN AREAS CONTAINING AT LEAST 20 PERCENT OXYGEN. DO NOT WEAR IN ATMOSPHERES CONTAINING MORE THAN ONE-TENTH PERCENT ORGANIC VAPORS BY VOLUME. REFER TO COMPLETE LABEL ON RESPIRATOR OR CARTRIDGE CONTAINER FOR ASSEMBLY, MAINTENANCE, AND USE."

Warning Signs of Respirator Failure

A. Particulate Air-Purifying

When breathing difficulty is encountered with a filter respirator (due to partial clogging with increased resistance), the filter(s) must be replaced. Disposable filter respirators must be discarded.

B. Gas or Vapor Air-Purifying

If, when using a gas or vapor respirator (chemical cartridge or canister), any of the warning properties (e.g., odor, taste, eye irritation, or respiratory irritation) occur, promptly leave the area and check the following:

- Proper face seal
- Damaged or missing respirator parts
- Saturated or inappropriate cartridge or canister

If no discrepancies are observed, replace the cartridge or canister. If any of the warning properties appear again, the concentration of the contaminants may have exceeded the cartridge or canister design specification. When this occurs an airline respirator or SCBA is required.

C. Service Life of Air-Purifying Respirator Canisters and Cartridges

The canisters or cartridges of air-purifying respirators are intended to be used until filter resistance precludes further use, or the chemical sorbent is expended as signified by a specific warning property, e.g., odor, taste, etc. New canisters, cartridges or filters shall always be provided when a respirator is reissued. When in doubt about the previous use of the respirator, obtain a replacement canister or cartridge.

D. Supplied Air Respirator

When using an airlines respirator, leave the area immediately when the compressor failure alarm is activated or if an air pressure drop is sensed. When using an SCBA leave the area as soon as the air pressure alarm is activated.

Maintenance, Cleaning and Issuance of Respirators:

Maintenance

The maintenance of respiratory protective devices involves a thorough visual inspection for cleanliness and defects (i.e., cracking rubber, deterioration of straps, defective exhalation and inhalation valves, broken or cracked lenses, etc.). Worn or deteriorated parts will be replaced prior to reissue. No respirator with a known defect is reissued for use. No attempt is made to replace components, make adjustments or make repairs on any respirator beyond those recommended by the manufacturer.

Under no circumstances will parts be substituted as such substitutions will invalidate the approval of the respirator. Any repair to reducing or admission valves, regulators, or alarms will be conducted by either the manufacturer or a qualified trained technician.

Cleaning of Respirators

All respirators in routine use shall be cleaned and sanitized on a periodic basis. Respirators used non-routinely shall be cleaned and sanitized after each use and filters and cartridges replaced. Routinely used respirators are maintained individually by the respirator wearer. Replacement cartridges and filters are obtained by contacting the Safety and Health Manager.

Cleaning and disinfection of respirators must be done frequently to ensure that skin-penetrating and dermatitis-causing contaminants are removed from the respirator surface. Respirators maintained for emergency use or those used by more than one person must be cleaned after each use by the user.

Pagoda Electrical, Inc. shall provide each respirator user with a respirator that is clean, sanitary, and in good working order. Pagoda Electrical, Inc. shall ensure that respirators are cleaned and disinfected. The respirators shall be cleaned and disinfected at the following intervals:

- Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;
- Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals;
- Respirators maintained for emergency use shall be cleaned and disinfected after each use; and
- Respirators used in fit testing and training shall be cleaned and disinfected after each use.

The following procedure is recommended for cleaning and disinfecting respirators:

1. Remove and discard all used filters, cartridges, or canisters.
2. Wash facepiece and breathing tube in a cleaner-disinfectant solution. A hand brush may be used to remove dirt. Solvents which can affect rubber and other parts shall not be used.
3. Rinse completely in clean, warm water.
4. Air dry in a clean area in such a way as to prevent distortion.
5. Clean other respirator parts as recommended by the manufacturer.
6. Inspect valves, headstraps, and other parts to ensure proper working condition.
7. Reassemble respirator and replace any defective parts.
8. Place in a clean, dry plastic bag or other suitable container for storage after each cleaning and disinfection.

Issuance of Respirators

Respiratory protective equipment shall not be ordered, purchased, or issued to personnel unless the respirator wearer has received respirator training and a fit test. New employees who require respiratory protective equipment, must be placed into the respirator program before being issued equipment.

Program Evaluation.

This section requires Pagoda Electrical, Inc. to conduct evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented, and to consult with and ask employees to ensure that they are using the respirators properly.

Pagoda Electrical, Inc. shall conduct evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

Pagoda Electrical, Inc. shall regularly consult employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
- Appropriate respirator selection for the hazards to which the employee is exposed;

- Proper respirator use under the workplace conditions the employee encounters; and
  Proper respirator maintenance.

Recordkeeping.
This section requires Pagoda Electrical, Inc. to establish and retain written information regarding medical evaluations, fit testing, and the respirator program. This information will facilitate employee involvement in the respirator program, assist Pagoda Electrical, Inc. in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.

Medical evaluation.
Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020.

Fit testing.
Pagoda Electrical, Inc. shall establish a record of the qualitative and quantitative fit tests administered to an employee including:

- The name or identification of the employee tested;
- Type of fit test performed;
- Specific make, model, style, and size of respirator tested;
- Date of test; and
- The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs. (Qualitative fit test QLFT and Quantitative fit test QNFT)

Fit test records shall be retained for respirator users until the next fit test is administered.

A written copy of the current respirator program shall be retained by the Safety and Health Manager for Pagoda Electrical, Inc.

Written materials required to be retained under this paragraph shall be made available upon request to affected employees and to the Assistant Secretary or designee for examination and copying.

APPENDIX A

RESPIRATOR TRAINING CERTIFICATION

I hereby certify that I have been trained in the proper use and limitations of the respirator issued to me. The training included the following:

1. Instruction on putting on, fitting, testing and wearing the respirator.

2. Instruction on inspection, cleaning, and maintaining the respirator.

3. Explanation of dangers related to misuse.

4. Instructions on emergency situations.

I further certify that I understand the use, care, and inspection of the respirator and have tested and worn the unit.

Date: _____

Signed:_____ SSN: _____

Respirator Type Issued: _____

Training Coordinator: _____

APPENDIX B – FIT TEST WORKSHEETS

QUALITATIVE RESPIRATOR FIT TEST

Name: _____ SSN: _____

Clean Shaven? __Yes __No

Spectacle Kit? ___Yes ___No

Manufacturer/Model _____ Size: ___S ___M ___L

Irritant Smoke ___Pass ___Fail

Isoamyl Acetate ___Pass ___Fail

Manufacturer/Model_____ Size: ___S___M___L

Irritant Smoke ___Pass ___Fail

Isoamyl Acetate ___Pass ___Fail

Examiner _____

Date_____

Employee _____

Date _____

APPENDIX B – FIT TEST WORKSHEETS

QUANTITATIVE RESPIRATOR FIT TEST REPORT

LAST NAME _____

FIRST NAME_____

ID NUMBER_____

NEXT TEST DUE_____

OPERATOR NAME_____

RESPIRATOR MODEL_____

•SIZE_____ •MANUFACTURER_____

•APPROVAL NUMBER_____

NOTES_____

TEST DATE_____

TEST TIME_____

TEST DATA

Fit Factor Pass Level: 100
Ex. Ambient
(Part/cc) Mask
(Part/cc) Fit FactorPass/FailNB
DB
SS
UD
R
NB
OVERALL FIT FACTOR = _____
Operator _____ Date _____
Subject_____ Date_____