

## **RESPIRATORY EQUIPMENT PROGRAM**

### **A. BASIS**

About 32 million workers are potentially exposed to one or more chemical hazards on a daily basis. There are an estimated 575,000 existing chemical products, and hundreds of new ones being introduced annually. This poses a serious problem for exposed workers and their employer. The OSHA Respiratory Protection Standard establishes uniform requirements to make sure that the respiratory hazards of all U.S. workplaces are evaluated, and that engineering controls, and work practice controls are implemented, and where not feasible, a respiratory protection program instituted.

### **B. GENERAL**

**“EAGLE INDUSTRIAL INSTRUMENTATION”** will ensure that respiratory hazards within our facility are evaluated, and that information concerning these hazards is transmitted to all employees. This standard practice instruction is intended to address comprehensively the issues of; evaluating the potential respiratory hazards, communicating information concerning these hazards, and establishing appropriate engineering, work practice, or respiratory protective measures for employees. This program will be evaluated and updated by the Safety Officer/HSE Coordinator annually or as regulatory changes require.

### **C. RESPONSIBILITY**

**“EAGLE INDUSTRIAL INSTRUMENTATION”** Safety Officer is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The Safety Officer will develop written detailed instructions covering each of the basic elements in this program, and is the sole person authorized to amend these instructions. This Eagle Industrial Instrumentation has expressly authorized the Safety Officer to halt any operation of **“EAGLE INDUSTRIAL INSTRUMENTATION”** where there is danger of serious personal injury. This policy includes respiratory hazards.

### **D. INTRODUCTION**

This respiratory program has been established to ensure that employees and contractors under **“EAGLE INDUSTRIAL INSTRUMENTATION”**'s supervision are provided with proper respiratory protection. This program shall be administered by the location Manager and shall describe the conditions in which personnel will be required to wear respirators. The manager, in conjunction with the Safety Coordinator, shall be authorized to review respiratory protection policy, initiate policy changes, and to clarify areas of ambiguity. If the policy does not cover a specific situation, the location manager shall designate

proper operating procedures. In order to provide an effective program, the following standard operating procedures have been established.

In many cases, the respirator protection equipment selection will have been already identified for specific operations regularly performed at “**EAGLE INDUSTRIAL INSTRUMENTATION**” facilities and/or job sites. However, proper selection of respiratory protection equipment must be made at job sites where the environmental variables and site conditions have not been evaluated. In such cases, a qualified person will evaluate the site specific conditions and determine respirator selection.

#### **E. EMPLOYER AND EMPLOYEE RESPONSIBILITY.**

1. Employer's Responsibility.
  - a. Respirators will be provided by this employer when they are necessary to protect employee health.
  - b. The respirator provided will be suitable for the intended use.
  - c. This employer will offer at least three types of respirators for employees to select from.
  - d. “**EAGLE INDUSTRIAL INSTRUMENTATION**” will be responsible for establishing and maintaining a respiratory program whenever respirators are used. A program administrator (HSE Coordinator) will oversee the program.
  
2. Employee's Responsibility.
  - a. The employee will use the respiratory protection in accordance with instructions and training received or contracted by “**EAGLE INDUSTRIAL INSTRUMENTATION**”.
  - b. The employee will guard against damage to the respirator, and immediately replace suspect respirators.
  - c. The employee will report any trouble with or malfunction of the respirator to his/her supervisor.

#### **F. POLICY STATEMENT**

1. Engineering controls. To control and/or minimize the threat of occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors. The primary objective of this program will be to prevent atmospheric contamination. This will 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 will be used.

2. Respirators. Respirators will be provided by this employer during emergency situations or when such equipment is necessary to protect the health of the employee. This employer will:
  - a. Provide the respirators, which are applicable and suitable for the purpose intended. Oxygen deficient (<19.5%) atmospheres, or airborne contaminants.
  - b. Be responsible for the establishment and maintenance of a written respiratory protective program which will include the requirements outlined in 29 CFR 1910.134.
3. The employee will use the provided respiratory protection in accordance with instructions and training received.
4. Respirators will be selected on the basis of hazards to which the worker is exposed.
5. The user will be instructed and trained in the proper use of respirators and their limitations.
6. Respirators will be regularly cleaned and disinfected. Those used by more than one worker will be thoroughly cleaned and disinfected after each use.
7. Respirators will be stored in a convenient, clean, and sanitary location.
8. Respirators used routinely will be inspected during cleaning. Worn or deteriorated parts will be replaced. Respirators for emergency use such as self-contained devices will be thoroughly inspected at least once a month and after each use.
9. Appropriate surveillance of work area conditions and degree of employee exposure or stress will be maintained.
10. There will be regular inspection and evaluation to determine the continued effectiveness of the program.
11. 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 will determine what health and physical conditions are pertinent. The respirator user's medical status will be reviewed on an annual basis.
12. NIOSH approved or accepted respirators will be used when they are available. The respirator furnished will provide adequate respiratory protection against the particular hazard for which it is designed.

## **G. PROGRAM REQUIREMENTS**

This program as a minimum will include the following program elements:

1. Procedures for selecting respirators for use in the workplace;
2. Medical evaluations of employees required to use respirators;
3. Fit testing procedures for tight-fitting respirators;
4. Procedures for proper use of respirators in foreseeable emergency situations;
5. Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;
6. Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators;
7. Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations.

## **H. RESPIRATORY SELECTION POLICY**

This employer will allow employees to select respirators from at least three different types of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user. Selection of respirators will be made according to the specific hazard involved 29 CFR 1910.1000 and will be selected in accordance with the manufacturer's instructions or other related requirements (OSHA or ANSI standards, NIOSH, etc.).

1. Filter cartridges and canisters. Filter cartridges and canisters will be used and stored according to manufacturer's guidelines. Change-out of filters will be done based on the individual job.
2. Identification of filters, cartridges, and canisters. This employer will ensure that all filters, cartridges and canisters used in the workplace are labeled and color coded with the NIOSH approved label and that the label is not removed and remains legible.
3. Where a specific OSHA standard exists. Each task/job having the potential for respiratory hazards will be evaluated to determine worker protection requirement. The specific OSHA standard will be consulted to determine delineated respiratory requirements. The standards are listed in the "Z" tables to 29 CFR 1910.1000-1101.

4. Where a specific OSHA standard does not exist, prudent Industrial Hygiene practices will be used. After all criteria have been identified and evaluated and after the requirements and restrictions of the respiratory protection program have been met, the class of respirators that should provide adequate respiratory protection will be determined.
5. Air quality. Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration will be of high purity.
  - a. Oxygen will meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen.
  - b. Breathing air will meet at least the requirements of the specification for Grade D breathing air as described in Compressed Gas Association Commodity Specification G-7.1-1966.
  - c. Compressed oxygen will not be used in supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed air. Oxygen must never be used with air line respirators. Breathing air may be supplied to respirators from cylinders or air compressors.
    - 1) Compressed breathing air will meet at least the requirements for Type 1-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.

**Note:** Compressed oxygen may not be used in atmosphere-supplying respirators that have previously used compressed air.

- d. Compressed oxygen will not be used in supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed oxygen.
- e. This employer will ensure that cylinders used to supply breathing air to respirators meet the following requirements:
  - 1) 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);
  - 2) Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Type 1--Grade D breathing air;
  - 3) The moisture content in the cylinder does not exceed a dew point of -50°F (-45.6°C) at 1 atmosphere pressure. Cylinders will be tested and maintained as prescribed in the

Shipping Container Specification Regulations of the  
Department of Transportation (49 CFR part 178).

6. Use of Respirators. This employer may provide respirators at the request of employees or permit employees to use their own respirators, if it is determined that such respirator use will not in itself create a hazard. If voluntary respirator use is permissible, this employer will provide the respirator user(s) with the necessary information for safe and effective use. In addition, we will ensure that any employee using a respirator voluntarily is medically able to use that respirator, and that the respirator is cleaned, stored, and maintained so that its use does not present a health hazard to the user. This employer will provide respirators, training, and medical evaluations at no cost to the employee. There are five conditions under which respirators must be used:
  1. In regulated areas within the facility;
  2. In emergencies;
  3. Where engineering and work practice controls are inadequate;
  4. Where exposures exceed permissible limits, and;
  5. During maintenance and repair activities during brief or intermittent operations where engineering and work practice controls are not feasible or required.
  - a. This document will specify standard procedures for respirator use. These will include all information and guidance necessary for their proper selection, use, and care. Possible emergency and routine uses of respirators will be, where possible, anticipated and planned for.
  - b. The correct respirator will be specified for each job. The respirator type will be specified in the work procedures by Safety Coordinator who supervises the respiratory protective program. The individual issuing them will be adequately instructed to ensure that the correct respirator is issued.
  - c. Fit instructions. Every respirator wearer will receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators will not be worn when conditions prevent a good face seal. Such conditions may be a growth of beard, sideburns, a skull cap that projects under the facepiece, jewelry or temple pieces on glasses. Also, the absence of one or both dentures can seriously affect the fit of a facepiece and interfere with the face-to-facepiece seal or valve function.
  - d. Fit Evaluation (wearer). The facepiece fit will be checked by the wearer each time he/she puts on the respirator. This will be done by following the manufacturer's facepiece fitting instructions.

- e. Fit Evaluation (Eagle Industrial Instrumentation). Checks of employees while wearing respirators will be done periodically in accordance with the manufacturer's facepiece fitting instructions.
- f. Hair/apparel. If hair growth or apparel interfere with a satisfactory fit, then they will be altered or removed so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the employee must use a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.
- g. Corrective vision requirements (full-face respirators). Full-face respirators having provisions for optical inserts will be reviewed for use by this Eagle Industrial Instrumentation. These inserts when used will be used according to the manufacturer's specification. When employees must wear optical inserts as part of the facepiece, the facepiece and lenses will be fitted by qualified individuals to provide good vision, comfort, and a gas-tight seal. This Eagle Industrial Instrumentation will provide corrective lenses for respirators based on optometry recommendations from an optometrist.
  - 1) Conventional eye glasses. Conventional eye glasses will not be used with full-face respirators. A proper seal cannot be established if the temple bars of eye glasses extend through the sealing edge of the full facepiece.
  - 2) Contact lenses. Contact lenses will not be used with full-face respirators. Wearing of contact lenses in contaminated atmospheres with a respirator will not be allowed.
  - 3) If corrective spectacles or goggles are required, they will be worn so as not to affect the fit of the facepiece. Proper selection of equipment will minimize or avoid this problem.
- h. Use of personal protective equipment. If an employee wears corrective glasses or goggles or other personal protective equipment, the equipment must be worn in a manner that does not interfere with the seal of the facepiece to the face of the user.
- i. User seal check procedures. The following procedures must be performed to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and/or negative pressure checks listed below will be performed, or the respirator manufacturer's recommended user seal check method is to be used:

I. Facepiece Positive and/or Negative Pressure Checks.

A. Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B. Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II. Manufacturer's Recommended User Seal Check Procedures.

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that it can be demonstrated that the manufacturer's procedures are equally effective.

7. Hazard Evaluation. This employer will identify and evaluate the respiratory hazard(s) in the workplace using the "Job Hazard Analysis Program," this evaluation will include a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. Where exposure cannot be identified or reasonably estimated, the area or location will consider the atmosphere to be immediately dangerous to life or health (IDLH).
  - a. Respirators for IDLH atmospheres. This employer will provide the following respirators for employee use in IDLH atmospheres:
    - 1) A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
    - 2) A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
    - 3) Respirators provided only for escape from IDLH atmospheres will be NIOSH-certified for escape from the atmosphere in which they will be used.
    - 4) All oxygen-deficient atmospheres will be considered IDLH. Exception: If it can be demonstrated that, under all

foreseeable conditions, the oxygen concentration can be maintained within the acceptable ranges specified in 29 CFR 1910.134 (i.e., for the altitudes set out in the table), then any atmosphere-supplying respirator approved by the Safety Officer may be used.

5) Available brands/sizes

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b. Respirators for atmospheres that are not IDLH. This employer will provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.

- 1) The respirator selected will be appropriate for the chemical state and physical form of the contaminant.
- 2) Available brands/sizes

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c. Respirators for protection against gases and vapors. This employer will provide:

- 1) An atmosphere-supplying respirator, or
- 2) An air-purifying respirator, provided that the respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or if there is no ESLI appropriate for conditions a change schedule for canisters and cartridges will be implemented that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. This employer will describe in the respirator program the information and data relied upon and the basis for the canister and cartridge change schedule and the basis for reliance on the data.
- 3) Available brands/sizes

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d. Respirators for protection against particulates. This employer will provide:

- 1) An atmosphere-supplying respirator; or

- 2) An air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR part 84; or
  - 3) For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.
  - 4) Available brands/sizes
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- e. Standby personnel must be provided when using SAR/SCBA equipment in order to maintain communication with user.
  - f. Approved retrieval equipment will be accessible whenever personnel are working down in areas deeper than 5’.
  - g. All Air Purifying Respirators (APR) will be furnished at no cost to employees.
8. Inspection, Maintenance, and Care of Respiratory Equipment. This employer will provide for the cleaning and disinfecting, storage, inspection, and repair of respirators used by our employees. Equipment will be properly maintained to retain its original state of effectiveness.
- a. Cleaning and disinfecting. This employer will provide each respirator user with a respirator that is clean, sanitary, and in good working order. This employer will ensure that respirators are cleaned and disinfected using OSHA approved procedures or procedures recommended by the respirator manufacturer, provided that such procedures are of equivalent effectiveness. The respirators will be cleaned and disinfected at the following intervals:
    - 1) Exclusive use respirators. Respirators issued for the exclusive use of an employee will be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.
    - 2) Respirators issued to more than one employee. Respirators issued to more than one employee will be cleaned and disinfected before being worn by different individuals.
    - 3) Respirators maintained for emergency. Respirators maintained for emergency use will be cleaned and disinfected after each use.
    - 4) Respirators used in fit testing. Respirators used in fit testing and training will be cleaned and disinfected after each use.
    - 5) Procedures for Cleaning Respirators:

- a) Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure – demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
  - b) Wash components in warm (43°C [110°F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
  - c) Rinse components thoroughly in clean, warm (43°C [110°F] maximum), preferably running water. Drain.
  - d) When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
    - i. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43°C (110°F); or,
    - ii. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43°C (110°F); or,
    - iii. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
  - e) Rinse components thoroughly in clean, warm (43°C [110°F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
  - f) Components should be hand-dried with a clean lint-free cloth or air-dried.
  - g) Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
  - h) Test the respirator to ensure that all components work properly.
- b. Storage of respirators. Respirators will be stored as follows:

- 1) All respirators will be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they will be packed or stored to prevent deformation of the facepiece and exhalation valve.
  - c. Emergency respirators. Emergency respirators will be:
    - 1) Kept accessible to the work area;
    - 2) Stored in compartments or in covers that are clearly marked as containing emergency respirators; and
    - 3) Stored in accordance with any applicable manufacturer instructions.
  - d. Inspection. Respirators will be inspected as follows:
    - 1) All respirators used in routine situations will be inspected before each use and during cleaning in accordance with manufacturer's specifications.
    - 2) Inspection records will be maintained in the main office.
  - e. Routine use respirators. All routine use respirators will be inspected before and after each use. The respirator manufacturer's inspection criteria will be used as the basis for the inspection. Routinely used respirators will be collected, cleaned, and disinfected as frequently as necessary to ensure that proper protection is provided for the wearer.
    - 1) Routine use respirators. Routinely used respirators, such as dust respirators, may be placed in plastic bags. Respirators having removable cartridges with imbedded compounds that could evaporate into a sealed bag should be removed so as not to permeate into the rubber parts of the respirator. Respirators should not be stored in such places as lockers or tool boxes unless they are in carrying cases or cartons.
9. Respiratory Protection Training Program. This Eagle Industrial Instrumentation will develop a standardized training format to meet the requirement for a respiratory protection training program. The training will be comprehensive, understandable, and recur annually, and more often if necessary.
- a. Previous training. If a new employee is able to demonstrate that he or she has received training within the last 12 months that addresses the training required by 29 CFR 1910.134 the employee will not be required to repeat the training provided that the employee can demonstrate knowledge. Training not repeated initially by this employer must be provided no later than 12 months from the date of the previous training.
  - b. Basic advisory information. The basic advisory information on respirators, as presented in 29 CFR 1910.134, Appendix D, will be provided by this employer in any written or oral format to employees who wear respirators.

- c. Program evaluation. This employer will conduct evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented. We will consult employees to determine and ensure that they are using their respirators properly.
- d. Workplace evaluations. This employer will conduct evaluations of the workplace as necessary to ensure that the provisions of this written program are being effectively implemented and that it continues to be effective.
- e. When training will be provided. Training will be provided to each affected employee:
  - 1) Before the employee is first assigned duties that require respiratory protection.
  - 2) Before there is a change in assigned duties.
  - 3) Whenever there is a change in operations that present a hazard for which an employee has not previously been trained.
  - 4) Whenever this employer has reason to believe that there are deviations from established respiratory procedures required by this instruction or inadequacies in the employee's knowledge or use of these procedures.
- f. The training content that will be provided. Training of employees will as a minimum include:
  - 1) Putting on and removing respirators (donning and doffing).
  - 2) Any limitations on their use.
  - 3) Maintenance requirements.
  - 4) Procedures for regularly evaluating the effectiveness of the program.
  - 5) Where respirator use is not required.
- g. Demonstration of knowledge. This employer will ensure that the administrator of the program as well as each employee can demonstrate knowledge of at least the following:
  - 1) Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
  - 2) What the limitations and capabilities of the respirator are;
  - 3) How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
  - 4) How to inspect, put on and remove, use, and check the seals of the respirator;
  - 5) What the procedures are for maintenance and storage of the respirator;
  - 6) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
  - 7) The general requirements of 29 CFR 1910.134.

- h. Employee involvement. This employer will 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 will be corrected. Factors to be assessed include, but are not limited to:
    - 1) Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
    - 2) Appropriate respirator selection for the hazards to which the employee is exposed;
    - 3) Proper respirator use under the workplace conditions the employee encounters; and
    - 4) Proper respirator maintenance.
  - i. Employee proficiency. The training will establish employee proficiency in the duties required by this instruction and will introduce new or revised procedures, as necessary, for compliance with this instruction or when future revisions occur.
  - j. Trainer qualification. This employer will 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.
  - k. Training certification. This employer will certify that the training required by 29 CFR 1910.134 has been accomplished. The certification will contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification will be available for inspection by employees and their authorized representatives.
10. Retraining and Refresher Training. Retraining will be administered annually. Retraining will reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary. Retraining will be administered when the following situations occur (as a minimum):
- a. Changes in the workplace or the type of respirator render previous training obsolete;
  - b. Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or
  - c. Any other situation arises in which retraining appears necessary to ensure safe respirator use.
11. Continuing Respirator Effectiveness. Appropriate surveillance will 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, this employer will reevaluate the continued effectiveness of the respirator.

- a. This employer will ensure that employees leave the respirator use area under the following conditions:
    - 1) To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or
    - 2) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece; or
    - 3) To replace the respirator or the filter, cartridge, or canister elements.
    - 4) If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, this employer must replace or repair the respirator before allowing the employee to return to the work area.
12. Respirator Fit Testing. This employer will conduct fit testing before an employee is required to use any respirator. The employee must be fit tested with the same make, model, style, and size of respirator that will be used.
- a. This employer will establish a record of the qualitative and quantitative fit tests administered to an employee including:
    - Date of test;
    - Type of fit test performed;
    - The name or identification of the employee tested;
    - Specific make, model, style, and size of respirator tested;
    - Fit test records will be retained for respirator users until the next fit test is administered;
  - b. 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.
    - 1) Qualitative Fit Test – Qualitative fit testing of respirators shall be accomplished by temporarily converting the respirator user’s actual facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator facepiece.
    - 2) Quantitative Fit Test – Quantitative fit testing of respirators shall be accomplished by modifying the facepiece to allow sampling inside the facepiece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate facepiece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the facepiece.

- c. The employer shall ensure that employees using a tight-fitting facepiece respirator pass an appropriate qualitative fit test (QLFT), or quantitative fit test (QNFT).
  - d. Any employee using a tight-fitting facepiece respirator must be fit tested prior to initial use of the respirator, whenever a different respirator facepiece (size, style, model or make) is used, and at least annually thereafter.
  - e. An additional fit test shall be conducted whenever the employee reports, or the employer, PLHCP, supervisor, or program administrator makes visual observations of, changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.
  - f. The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol.
  - g. QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.
  - h. If the fit factor, as determined through an OSHA-accepted QNFT protocol, is equal to or greater than 100 for tight-fitting half facepieces, or equal to or greater than 500 for tight-fitting full facepieces, the QNFT has been passed with that respirator.
13. Medical Evaluation. Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. This employer will provide a medical evaluation, at no cost to the employee, 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. This employer may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.
- a. Medical evaluation procedures. This employer will identify a Physician or other Licensed Health Care Professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire.
  - b. Follow-up medical examination. This employer will ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions 1 through 8 in the medical evaluation questionnaire (See Section 14. Forms Used In Conjunction With This Instruction.) and/or demonstrates the need for a follow-up medical examination. The follow-up medical examination will include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.
  - c. Administration of the medical questionnaire and examinations. The medical questionnaire and examinations will be administered

confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire will be administered in a manner that ensures that the employee understands its content. This employer will provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP.

d. Information to be provided to the PLHCP. The following information will be provided to the PLHCP before he or she makes a recommendation concerning an employee's ability to use a respirator:

- The expected physical work effort;
- Additional protective clothing and equipment to be worn;
- Temperature and humidity extremes that may be encountered;
- The type and weight of the respirator to be used by the employee;
- The duration and frequency of respirator use (including use for rescue and escape);
- Any supplemental information provided previously to the PLHCP regarding an employee need not be provided for a subsequent medical evaluation if the information and the PLHCP remain the same;
- Copy of the written respiratory protection program;
- Copy of the 29 CFR 1910.134 plus Appendices.

**Note:** When this employer replaces a PLHCP, we will ensure that the new PLHCP obtains this information, either by providing the documents directly to the PLHCP or having the documents transferred from the former PLHCP to the new PLHCP. However, employees do not have to be medically reevaluated solely because a new PLHCP has been selected.

e. Medical determination. In determining the employee's ability to use a respirator, this employer will accomplish the following:

- Obtain a written recommendation regarding the employee's ability to use the respirator;
- Determine any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;
- Determine the need, if any, for follow-up medical evaluations; and
- Ensure that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.
- If the respirator is a negative pressure respirator and the PLHCP finds a medical condition that may place the employee's health at increased risk if the respirator is used,

this employer will provide a powered air-pressure respirator (PAPR) if the PLHCP's medical evaluation finds that the employee can use such a respirator; if a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then this employer is no longer required to provide a PAPR.

- f. Additional medical evaluations. As a minimum, this employer will provide additional medical evaluations based on the following conditions:
- If an employee reports medical signs or symptoms that are related to his or her ability to use a respirator;
  - If a PLHCP, supervisor, or the respirator program administrator informs this employer that an employee needs to be reevaluated;
  - If information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or
  - If a change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee.
- g. All records regarding medical evaluations, fit testing, training, and testing will be maintained by the Program Administrator/HSE Coordinator in a confidential file.

#### 14. Definitions

Air-purifying respirator means: A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Atmosphere-supplying respirator means: A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

Canister or cartridge means: A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Demand respirator means: An atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

Emergency situation means: Any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment

that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure means: Exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-service-life indicator (ESLI) means: A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Escape-only respirator means: A respirator intended to be used only for emergency exit.

Filter or air purifying element means: A component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering facepiece (dust mask) means: A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit factor means: A quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test means: The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

Helmet means: A rigid respiratory inlet covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter means: A filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood means: A respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH) means: An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Interior structural firefighting means: The physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155)

Loose-fitting facepiece means: A respiratory inlet covering that is designed to form a partial seal with the face.

Negative pressure respirator (tight fitting) means: A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere means: An atmosphere with an oxygen content below 19.5% by volume.

Physician or other licensed health care professional (PLHCP) means: An individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by the respiratory protection standard.

Positive pressure respirator means: A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered air-purifying respirator (PAPR) means: An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator means: A positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

Qualitative fit test (QLFT) means: A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT) means: An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering means: That portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA) means: An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life means: The period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

Supplied-air respirator (SAR) or airline respirator means: An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-fitting facepiece means: A respiratory inlet covering that forms a complete seal with the face.

User seal check means: An action conducted by the respirator user to determine if the respirator is properly seated to the face.