Respiratory Protection Policy Part II

Revised: September 2010

Related Documents:

1. UAMS Administrative Guide Number: 11.4.14
2. Occupational Safety and Health Administration (OSHA), Respiratory Protection Standard, 29 Code of Federal Regulations (CFR) Part 1910.134
3. National Institute for Occupational Safety and Health (NIOSH) Respirator Decision Logic
4. Respiratory Protection A Manual and Guideline, 2nd Edition, American Industrial Hygiene Association

Contents

I. Purpose

The purpose of this plan is to establish a program and procedures for respiratory protection at the University of Arkansas for Medical Sciences (UAMS). This program supports compliance with the OSHA, Respiratory Protection Standard, 29 CFR 1910.134.

This program describes the procedures for identifying airborne hazards, selecting and using proper respirators, maintenance and care of respirators, medical evaluations of employees, fit testing of respirators, training, and record keeping requirements.

The program outlines the policy and procedures necessary to implement a Respiratory Protection program. Instructions and procedures specific to each work area are located in the Worksite Specific Procedures.

II. Scope

This program applies to all UAMS employees who are required to wear air-purifying respirators to prevent overexposure to airborne contaminants. However, Appendix D applies to employees who voluntarily wear respirators although respirators are not required and such respirator use will not itself create a hazard.

This program does not cover the use of atmosphere supplying respirators in oxygen deficient atmospheres, high concentration atmospheres, or unknown atmospheres.

III. Definitions

1. *Administrative Controls*: administrative changes in work schedules or procedures that reduce employee exposure to respiratory hazards.

2. *Air Purifying Respirator (APR)*: A respirator with an air purifying filter, cartridge or canister that removes specific air contaminants by passing ambient air through the air purifying element.

3. *Atmosphere Supplying Respirator*: A respirator that supplies the wearer with breathing air from a source independent of the ambient air, including supplied air respirators (SARs) and self-contained breathing apparatus (SCBA).

4. *Canister or Cartridge*: A container with a filter, absorbent or catalyst, or a combination of these items, which removes specific contaminants from the air passed through the container.

5. *Contaminants*: Substances in the air that can cause immediate (acute) or long term (chronic) health problems.

6. *Concentration*: The amount of contaminant in the air, measured in parts per million (ppm) or milligrams per cubic meter (mg/m^3).

7. *Demand Respirator*: An atmosphere-supplying respirator that admits breathing air to the face piece only when a negative pressure is created inside the face piece by inhalation.

8. *Dusts*: Are fine particles that are created when solid material breaks down. Operations that typically create dust are grinding, crushing, drilling, sanding and milling.

9. Dust *Masks (Filtering Face pieces):* A negative pressure particulate respirator with a filter as an integral part of the face piece, or with the entire face piece composed of the filtering medium.

10. *Emergency Situation*: 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.

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

12. *End of Service Life Indicator (ESLI)*: A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the absorbent is approaching saturation or is no longer effective.

13. *Engineering Controls*: Specialized equipment, processes or practices that can reduce employee exposure to respiratory hazards.

14. *Escape Only Respirator*: A respirator intended to be used only for emergency exit.

15. *Exposure*: Contact with a hazardous substance through inhalation, ingestion, skin contact or absorption.

16. *Filter or Air Purifying Element*: A component used in respirators to remove solid or liquid aerosols from the inspired air.

17. *Fit Factor*: 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.

18. *Fit Test*: The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

19. *Fumes*: Are created when solid materials vaporize under extreme heat. As the vapor cools it condenses into an extremely small particle, e.g., fumes are created during welding and cutting of steel.

20. *Gases*: Like air has the ability to diffuse and spread throughout an enclosure or area. Examples of gases are nitrogen, carbon monoxide and carbon dioxide.

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

22. *Immediately Dangerous to Life and Health (IDLH)*: 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.

23. *Loose Fitting Face piece*: A respirator with an inlet covering that is designed to form a partial seal with the face.

24. *Mists*: Created when liquids are atomized and condensed. Typical sources of mists are spraying operations, mixing and cleaning operations.

25. *Material Safety Data Sheet (MSDS)*: A written or printed material from the product manufacturer which has information about the hazards of a material.

26. *Maximum Use Limit (MUL)*: The maximum amount of protection provided by a respirator. MUL is calculated by multiplying the respirators protection factor by the OEL for the contaminant.

27. N95 Respirator: A negative pressure respirator that has 95% or greater efficiency in filtering particulates free of oil.

28. *Negative Pressure Respirator*: A tight fitting respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air outside the respirator.

29. *NIOSH*: A federal agency which establishes minimum performance standards for respirators and approves respirators for various uses.

30. *Occupational Exposure Level (OEL):* A health-based workplace standard to protect workers from adverse exposure.

31. *Oxygen Deficiency*: An oxygen level less than 19.5% by volume in the air, which can result in illness or injury to employees.

32. *Powered Air Purifying Respirator (PAPR)*: A respirator that uses a blower to force the ambient air through air purifying elements to the inlet covering.

33. *Physician or other Licensed Health Care Provider (PLHCP)*: Professionals who are legally permitted scope of practice allows him or her to independently provide or be delegated the responsibility to provide some or all of the health care services required by this program.

34. *Positive Pressure Respirator*: A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

35. *Personal Protective Equipment (PPE)*: Any equipment used to protect an employee from danger, including hard hats, boots, gloves, hoods, goggles, and respirators.

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

37. *Quantitative Fit Test (QNFT)*: An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

38. *Respiratory Inlet Covering*: 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 face piece, helmet, hood, suit or a mouthpiece respirator with nose-clamp.

39. *Self-Contained Breathing Apparatus (SCBA):* An atmosphere supplying respirator for which the breathing air source is designed to be carried by the user.

40. *Supplied Air Respirator (SAR):* An atmosphere supplying respirator for which the source of breathing air is not designed to be carried by the user. (e.g., airline respirator).

41. *Tight Fitting Face piece*: A respirator with an inlet covering that forms a complete seal with the face.

42. *Threshold Limit Values (TLVs)*: Airborne concentrations of substances and represent conditions under which it is that nearly all workers may be repeatedly exposed day after day without adverse health effects established by the American Conference of Governmental Industrial Hygienists (ACGIH).

43. *Time Weighted Average* (*TWA)*: A weighted average exposure level over a given amount of time, usually 8 hours a day or 40 hours per week of work.

44. *User Seal Check*: The respirator user's action to determine if his or her respirator is properly sealed to the face
45. *Vapors*: Formed through the evaporation of liquids or solids. Examples include gasoline, paint thinners, and solvents.

IV. Responsibilities

A. Occupational Health and Safety (OH&S):

1. Maintain a written Respiratory Protection Program and Worksite Specific Procedures with instructions for each work area requiring respiratory protection.
2. Coordinate hazard assessments, respirator selection and training, medical evaluations and fit tests.
3. Maintain records and a current list of approved respirator wearers, including training, fit tests, and the types of respirators which have been approved for use.
4. Audit the program for continued effectiveness.

B. Department Head:

1. Comply with this policy.
2. Supervisors and approved wearers follow outlined procedures.
3. Adequate respirator maintenance and cleaning program is in place.
4. Fund routine medical evaluations of their employees who wear Respirator on the job

C. Supervisors:

1. Know the hazards in their areas that require respiratory protection.
2. Know the types of respirators their employees wear.
3. Ensure the respirator program and worksite specific procedures are followed.
4. Enforce respirator wear where it is required.
5. Ensure their employees receive training and medical evaluations when necessary.
6. Coordinate initial training and annual re-training with Occupational Health and Safety (OH&S).
7. Notify OH&S of any problems with respirator use, or any changes in work processes that would impact airborne contaminant levels.
8. Purchase and provide approved respirators and replacement cartridges.
9. Fund routine medical evaluations and fit tests for employees who wear respirators.
10. Notify OH&S of tasks/jobs that involve the potential for air contaminant concentrations greater than the OEL for evaluation.

D. Employee:

1. Participate in all required training.
2. Wear the respirator in accordance with the program policies and worksite specific procedures.
3. Report any malfunctions or concerns to their immediate supervisor.

E. Employee/Student Preventive Health Services:

1. Determine the employee's medical fitness to wear a respirator.
2. Communicating this to OH&S prior to fit testing procedure.
3. Maintain the medical records

F. Respirator Fit Test Cards

Occupational Health and Safety (OH&S) will issue a respirator fit test card to everyone who has completed all of the requirements outlined in the UAMS Respiratory Protection Policy Part II. The wearer of the respirator must be able to produce this card at all times. If the card becomes damaged or lost please contact OH&S for a replacement.

V. Program Elements

1. Identification of Airborne Contaminants

A. *Types of Contaminants:* The two main types of respiratory hazards are oxygen deficiency and a airborne contaminants. This program covers only airborne contaminants such as:

1. Dusts: solid particles, released during work operations such as grinding and sawing.
2. Mists: liquid particles, released during operations such as spray painting.
3. Vapors: gaseous forms of a liquid, such as paint solvents.
4. Fumes: vaporized condensed metals, as present in welding operations.
5. Gases: such as nitrogen, methane, and carbon monoxide.
6. Microorganisms: such as tuberculosis (TB), SARS, varicella, etc.

B. *Workplace Evaluations/Hazard Assessments:* Occupational Health and Safety (OH&S) will evaluate each workplace for possible airborne contaminants. A hazard assessment will be conducted in workplaces with the possibility of over exposure. Once a respiratory hazard has been identified, the work area will be monitored for any changes in concentration level or for new hazards, when appropriate. Changes in work processes, substitution of materials, or changes in the ventilation of an area may necessitate a re-evaluation. Supervisors are responsible for monitoring their daily operations and report promptly any changes to OH&S.

2. Selection of Respiratory Protection

A. *Controlling airborne hazards*: When controlling airborne hazards, engineering and administrative controls will first be considered as a means to reduce the hazards. Engineering controls are enclosure, substitution, process modification, and ventilation. Administrative controls include scheduling changes to reduce time spent in contaminated areas.

B. *Required Use of Respirators:* In situations where engineering and administrative controls do not sufficiently reduce exposure to levels below OEL, respirators are required.

C. *Selection of Respirators:*

1. Select a respirator based on the employee's occupational exposure (e.g., concentration of the contaminant) or exposure hazards in the workplace. **NOTE:** The atmosphere must be considered IDLH, if the employee's exposure cannot be identified or estimated.
2. Single strap disposable comfort masks are not approved respirators.
3. Use only NIOSH approved respirators.
4. Wear assigned respirator that been fit tested and approved for his or her use only.
5. Respirator types, models, sizes, and cartridges are not interchangeable.
6. For protection against **particulates**, provide one of the following respirators:
   a. An atmosphere supplying respirator or
   b. An air-purifying respirator equipped with a NIOSH certified High Efficiency Particulate Air (HEPA) filter
   c. An air-purifying respirator equipped with a NIOSH certified filter for particulate.
   d. For contaminants consisting primarily of particulates with a mass median aerodynamic diameter (MMAD) of at least 2 micrometers, an air purifying respirator with any NIOSH certified filter for particulate.
   e. N95 air purifying respirator for protection against biological microorganisms.
7. For protection against **gases and vapors**, provide one of following respirators:
   a. An atmosphere supplying respirator or
   b. An air-purifying respirator equipped with a NIOSH certified chemical cartridge for the contaminant and has an end of service life indicator (ESLI). If there is no appropriate ESLI, a replacement schedule must be in place for cartridges and filters based on information that will assure the cartridges are changed before their end of service life. The replacement schedule must be included in the worksite specific instructions. OHS will assist in determining the cartridge change schedule.
8. Consult Appendix A,"Respirator Types" and Appendix B, "Respirator Selection Guidelines" for more information.

D. *Voluntary Use of Respirators:*

1. Employees will not wear respirators voluntarily where there is no potential overexposure to hazardous air contaminant in their workplace or the respirator itself will create a hazard.
2. Employees whose only use of a respirator is the voluntary use of a dust mask for air contaminants are not subject to the requirements of the written program.
3. Employees voluntarily wearing respirators other than dust masks are subject to the requirements of this program, including medical evaluations, training, and maintenance procedures. Fit tests are not required for voluntary users, but are encouraged. All employees voluntarily wearing respirators will be provided a copy of the information contained in Appendix D, "Information for Employees Using Respirators When Not Required Under the Standard."

3. Maintenance and Care of Respirators

A. Cleaning and Disinfecting: Provide each employee with a clean, sanitary and in good working order respirator. Employee must clean and disinfect their respirator using the procedures in Appendix C or the manufacturers recommended procedures if they are equally effective. The frequency for cleaning and disinfecting is as follows:

a. Employee must clean and disinfect their assigned respirator as often as necessary to maintain in a sanitary condition.
b. Shared respirators must be cleaned and disinfected prior to employee's use.
c. Emergency use respirators must be cleaned and disinfected after each use.
d. Clean and disinfect each respirator used in fit testing and training exercises.
e. N95 type respirators are typically for single use and should be disposed of if known to be contaminated with blood or other body fluid. However, the respirator can be used more than once if the integrity is not compromised (crushed, bent, broken strap, etc.)
f. Patient care areas should refer to UAMS Infection Control Policy for disposal and re-use of disposal of N95 respirators.

B. *Storage:*

a. Respirators must be stored as to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture and damaging chemicals.
b. Respirators must be stored in such a manner as to prevent deformation of the face piece and valves.
c. Emergency use respirators must be kept accessible to the work area, in compartments or covers that are clearly marked as containing emergency respirators, and stored in accordance with the manufacturer's instructions.

C. *Inspection:*

a. Respirators used in routine situations must be inspected before each use and during cleaning.
b. Emergency use respirators must be inspected at least monthly, and in accordance with the manufacturer's instructions.
c. Emergency use respirators must also be checked for proper function before and after each use.
d. Escape-only respirators must be inspected before being brought into the work area.
e. A respirator inspection includes the following: a check of respirator function, tightness of connections, condition of the various parts such as the face piece, head straps, valves, connecting tubes, cartridges, canisters and filters, and a check of the elastic parts for pliability or deterioration.

D. Repairs:

a. Remove or discard respirators that fail inspections or are otherwise found defective.
b. Appropriately trained persons will adjust or repair defective respirator with NIOSH approved parts in accordance with the manufacturer's specifications.
c. Only the manufacturer or manufacturer's technicians are allowed to adjust or repair respirators valves, regulators and alarms.

E. Identification of Filters, Cartridges and Canisters: *Filters, cartridges and canisters are labeled and* color coded with the NIOSH approval label. This label must not be removed and must remain legible.

4. Limitations of Air Purifying Respirators

A. *IDLH Atmospheres:* Do not wear air-purifying respirators in an oxygen deficient atmosphere, IDLH atmospheres, or unknown but suspected hazardous atmospheres. All confined spaces must be considered (either qualitative or quantitative depends on the respirator type and use) IDLH unless proven otherwise. If assistance is required to determine an unknown atmosphere, contact OHS.

B. Respirator Types: Respirator types, models, and sizes are not interchangeable. EMPLOYEE MUST ONLY WEAR A RESPIRATOR WHICH HAS BEEN FIT TESTED AND APPROVED FOR HIS OR HER USE.

C. *Cartridges and Filters:* Cartridges and filters are specific to certain hazards. Use the cartridge approved for the task. Do not interchange manufacturer's cartridges or filters.

D. *Concentration:* There are limits to the concentration levels that can be used with half mask and full face respirators. Consult the cartridge's Maximum Upper Limit and OHS to determine if you have the proper level of protection.

E. *Face Seal Protection:* Anything that breaks the seal of a respirator will reduce its effectiveness. Facial hair, temple bars of glasses and head coverings are not to be worn. Corrective lenses can be fitted inside a full face respirator with a special insert kit.

5. Medical Evaluations

A. *Initial Evaluations:*

1. Every employee must be medically evaluated prior to fit testing and initial use of a respirator.
2. A physician or other licensed health care (PLHCP) will conduct medical evaluations. The recommended PLHCP is the Student/Employee Health Services.
3. Medical evaluations shall consist of either a medical questionnaire or an initial medical examination that obtains the same information as the questionnaire. Appendix E, "OSHA Respirator Medical Evaluation Questionnaire" (Non-Substance Specific Exposure) are mandatory.
4. Medical questionnaires and examinations are administered confidentially and during normal work hours.
5. PLHCP must use the medical questionnaire for employees whose need for respiratory protection is based primarily on one of the OSHA substance specific standards.

B. *Follow up Medical Examinations:*

1. Follow up medical examinations is necessary if an employee gives a positive response to any of the questions numbered 1 through 8 in section 2 of the questionnaire.
2. 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. *Supplemental Information for the PLHC:* The following information must be supplied to the PLHCP before a recommendation is made:

1. Type and weight of the respirator to be used.
2. Duration and frequency of use.
3. Expected physical effort.
4. Additional protective clothing and equipment to be worn.
5. Temperature and humidity that may be encountered.
6. A copy of the written program and the regulation.

D. *Medical Determination:*

1. Occupational Health and Safety Department must obtain a written recommendation from the PLHCP on whether or not the employee is medically able to use the respirator.
2. The recommendation must include only the following information:
   a. Any limitations on respirator use related to the medical condition of the employee or workplace conditions including whether the employee is medically able to wear the respirator.
   b. The need, if any, for a follow up medical examination.
   c. A statement that the PLHCP has provided the employee with a copy of the recommendation.
   d. If the PLHCP finds an employee cannot use a negative pressure respirator, a PAPR will be provided, if suitable.

E. *Additional Medical Evaluations:* Additional medical evaluations shall be provided if:

a. An employee reports medical signs or symptoms related to the ability of wearing a respirator.
b. A PLHCP, supervisor, or the program administrator deems an employee needs re-evaluation.
c. Information from the program, observations during fit tests, or evaluations indicate the need for re-evaluation.
d. Changes in the workplace conditions result in increased physiological burden on the employee.

F. *Employee Access:*

a. The employee has an opportunity to discuss the questionnaire and examination with the PLHCP.

6. Fit testing

A. *Initial Fit Tests:*

a. Before wearing a tight fitting respirator, employees must be fit tested with the same make, model, style and size of respirator that they will be using on the job.
b. A sufficient number of respirator models and sizes shall be available so that the respirator is acceptable to and correctly fits the user.
c. Employees must wear only respirators that have been fit tested and approved for their own use.

B. *Fit Test Procedures:*

a. Follow the fit test procedures outlined in OSHA Standard 1910.134. Fit tests are either qualitative or quantitative, depending on the respirator type and use.
b. The recommended fit test provider is the Industrial Hygiene Officer.

C. *Frequency:* Fit testing are conducted initially, annually, and whenever changes in an employee's physical condition that could affect respirator fit, and whenever requested by the employee because the fit is unacceptable.

D. *Records:* OH&S must maintain the fit test records that include names, dates, types of tests, results and make, model, style and size of the respirator fitted.

7. Face Seal Protection

A. *Prohibitions*: Tight fitting face pieces are not to be worn by the employees*:*

a. Who have facial hair that comes between the sealing surface and the face, or interfere with the respirator's valve function .
b. Who have any condition that interferes with the seal, such as missing dentures, jewelry, or head gear.
c. If corrective glasses, goggles or other PPE interfere with the seal.

B. *User Seal Checks:* Employees must perform a user seal check each time they put on the respirator according to the procedures in Appendix F.

C. *Continued Respirator Effectiveness:* The supervisor and OH&S will maintain an appropriate surveillance of the work area and employees' exposure. Respirator effectiveness must be re-evaluated when there is a change in work area conditions or degree of employee exposure or stress.

D. *Leaving the Respirator Work Area:* Employees must be allowed to leave the respirator use area:

a. To wash their faces and respirators as necessary to prevent eye or skin irritation.
b. If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece.
c. To replace the respirator or the filter cartridges or canisters.
d. To replaced or repaired the defective respirator before returning to the work area.

8. Training and Information

A. *For Required Users of Respirators:* All employees who are required to wear respirators must receive initial training in their use and maintenance.

a. Employees must be trained sufficiently to demonstrate:
1. Knowledge of why the respirator is required.
2. How improper respirator fit, usage or maintenance can compromise their protection?
3. Capabilities and limitations of the respirator
4. How to deal with emergencies or malfunctions.
5. How to inspect, don and remove, and check the seal of the respirator.
6. Maintenance and storage procedures.
7. Symptoms and signs that may limit or prevent the effective use of respirators (Appendix E).
8. General requirements of this standard.

b. Qualified persons who are familiar with the requirements of the Respiratory Protection Standard will train respirator user. The Occupational Health and Safety Department is the recommended trainer.

B. *For Voluntary Users of Respirators:* Employees who volunteer to wear a respirator must be given the information in Appendix D.

C. *Frequency of Re-Training:* Re-training is required annually and whenever the following occur:

a. Changes in the workplace or type of respirator used.
b. Inadequacies in the employee's knowledge or use of the respirator are apparent.
c. Any other situation in which re-training is necessary to ensure safe respirator use.

9. Recordkeeping

The Industrial Hygiene Division will keep records of training and fit testing of the wearer's employment duration. Records of medical evaluations shall be kept for the duration of the wearer's employment and 30 years following.

10. Program Evaluation

Occupational Health and Safety will evaluate the workplace as necessary to ensure the provisions of this written program are being effectively implemented. The program evaluation includes consulting with employees required to wear respirators, to assess the employee's views on program effectiveness and to identify any problems. Any problems identified must be corrected. Factors to be assessed include respirator fit, appropriate respirator selection, proper use and maintenance.

VI. Summary of Program Requirements:

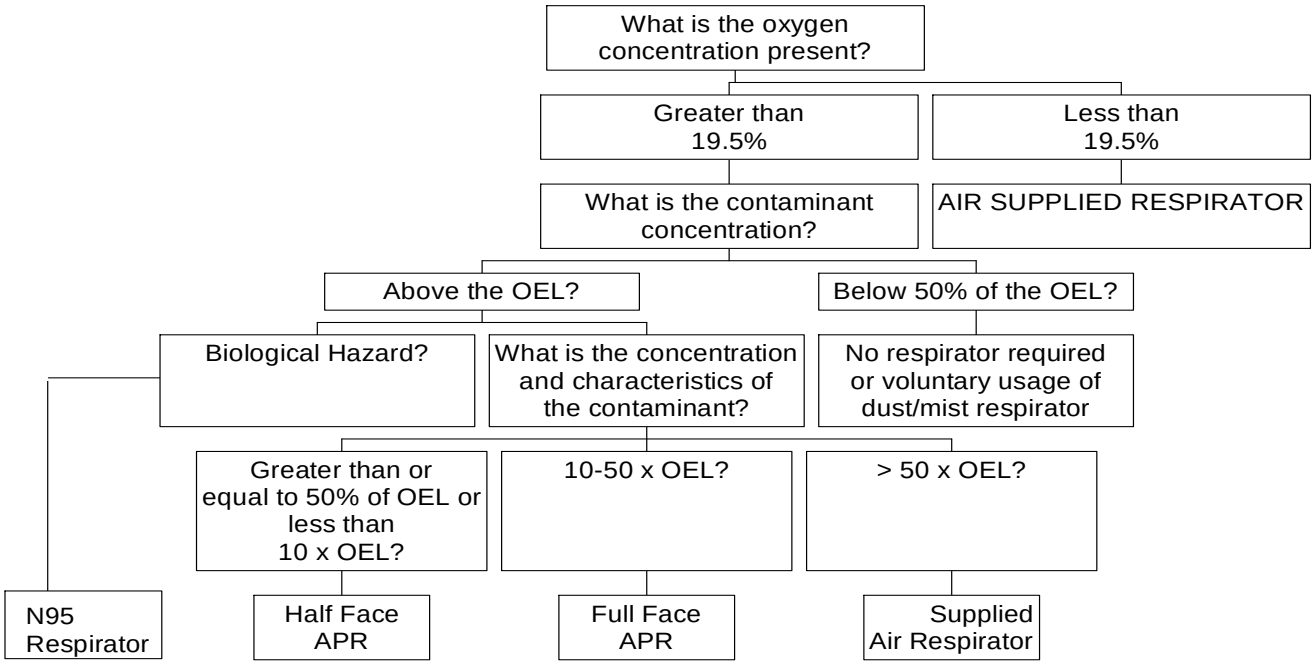
Element	Frequency	Documentation	Responsibility
Hazard Assessment	Initial or whenever work processes change	Written hazard assessment	Occupational Health and Safety
Cleaning and Disinfecting	Clean as often as needed their assigned respirators	None	Employee
	Shared respirators must be cleaned prior to use	None	Employee/ Physical Plant
	Emergency respirators must be cleaned after each use	None	Employee
User Seal Check	Each time a respirator is worn	None	Employee
Inspections	Inspect respirators before wearing and during cleaning	None	Employee
	Emergency respirators must be inspected monthly	Record of inspection	Supervisor
Medical Evaluations	Initially as necessary	Records kept	Student Employee Health
Fit Testing	Initially as necessary Annually	Records kept	Occupational Health and Safety
Training Annually	Initially as necessary	Records kept	Occupational Health and Safety
Program Evaluation	As Necessary (At least annually)	Written evaluation	Occupational Health and Safety

Appendix A: Respirator Types

Type	Capabilities	Fit Test	Limitations
Filtering Facepiece Half-face	No Cartridges Nuisance Dusts or other dusts at < 50% of OEL	none	Not for use in atmospheres with concentrations above the OEL. Not for use in IDLH atmospheres. Voluntary usage.
Filtering Facepiece and N95 Half Face	Nuisance Dusts or other dusts at OEL ≥ Concentration ≥ 50% OEL or biological microorganisms	qualitative	Not for use in atmospheres with concentrations > OEL, IDLH atmospheres, or Oxygen deficiency
Air Purifying, Chemical Cartridge, Half-face	Chemical Specific Cartridge APF=10	qualitative or quantitative	Not for use in atmospheres with concentrations above 10 times the OEL. Not for use with any chemical not listed on the cartridge, IDLH or unknown atmospheres.
Air Purifying, Chemical Cartridge, Full-face	Chemical Specific Cartridge APF=50	qualitative or quantitative	Qualitative fit testing is not approved for respirator use in atmospheres above 10 times the OEL. Not for use for any chemical not listed on the cartridge, IDLH or unknown atmospheres.
Powered Air Purifying, Chemical Cartridge, Full-face	Chemical Specific Cartridge APF=50	qualitative or quantitative	Not for use for any chemical not listed on the cartridge, IDLH or unknown atmospheres.
Supplied Air Respirator (SAR) Full-face	No Cartridges APF=>50	qualitative or quantitative	Amount of supplied air limits length of usable time.

APF= assigned protection factor
Reference: NIOSH Respirator Decision Logic

Appendix B: Respirator Selection Guide



Appendix C: Respirator Cleaning Procedures

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 deg. C [110 deg. 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 deg. C [110 deg. F] maximum), preferably running water. Drain.

D. Disinfect components. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,

2. 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 deg. C (110 deg. F); or,
3. 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 deg. C [110 deg. 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. Dry components. Components should be hand-dried with a clean lint-free cloth or air-dried. **WARNING:** Do not air-dry in a contaminated work area.

G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all components work properly.

Appendix D: Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers.

However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards.

If your employer provides respirators for your voluntary use, of if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning, and care, and warnings regarding the respirator's limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Appendix E: OSHA Respirator Medical Evaluation Questionnaire (Non-Substance Specific Exposure)

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee: Can you read (circle one): Yes/No
Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A
Section 1 (Mandatory)

Every employee who has been selected to use any type of respirator must provide the following information.

(Please print)

1. Today's date: _____

2. Your name: _____

3. Your age (to nearest year): _____

4. Sex (circle one): Male/Female

5. Your height: _____ ft. _____ in.

6. Your weight: _____ lbs.

7. Your job title: _____

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code):_____

9. The best time to phone you at this number: _____

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No

11. Check the type of respirator you will use (you can check more than one category):

a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).

b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one): Yes/No
If "yes", what type(s): _____

Part A
Section 2 (Mandatory)

Every employee who has been selected to use any type of respirator must answer questions 1 through 9 below (please circle “yes”' or “no”).

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No

2. Have you ever had any of the following conditions?
   a. Seizures (fits): Yes/No
   b. Diabetes (sugar disease): Yes/No
   c. Allergic reactions that interfere with your breathing: Yes/No
   d. Claustrophobia (fear of closed-in places): Yes/No
   e. Trouble smelling odors: Yes/No

3. Have you ever had any of the following pulmonary or lung problems?
   a. Asbestosis: Yes/No
   b. Asthma: Yes/No
   c. Chronic bronchitis: Yes/No
   d. Emphysema: Yes/No
   e. Pneumonia: Yes/No
   f. Tuberculosis: Yes/No
   g. Silicosis: Yes/No
   h. Pneumothorax (collapsed lung): Yes/No
   i. Lung cancer: Yes/No
   j. Broken ribs: Yes/No
   k. Any chest injuries or surgeries: Yes/No
   l. Any other lung problem that you've been told about: Yes/No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?
   a. Shortness of breath: Yes/No
   b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
   c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
   d. Have to stop for breath when walking at your own pace on level ground: Yes/No
   e. Shortness of breath when washing or dressing yourself: Yes/No
   f. Shortness of breath that interferes with your job: Yes/No
   g. Coughing that produces phlegm (thick sputum): Yes/No
   h. Coughing that wakes you early in the morning: Yes/No
   i. Coughing that occurs mostly when you are lying down: Yes/No
   j. Coughing up blood in the last month: Yes/No
   k. Wheezing: Yes/No
   l. Wheezing that interferes with your job: Yes/No
   m. Chest pain when you breathe deeply: Yes/No
   n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you ever had any of the following cardiovascular or heart problems?
   a. Heart attack: Yes/No
   b. Stroke: Yes/No
   c. Angina: Yes/No
   d. Heart failure: Yes/No
   e. Swelling in your legs or feet (not caused by walking): Yes/No
   f. Heart arrhythmia (heart beating irregularly): Yes/No
   g. High blood pressure: Yes/No
   h. Any other heart problem that you've been told about: Yes/No

6. Have you ever had any of the following cardiovascular or heart symptoms?

a. Frequent pain or tightness in your chest: Yes/No
b. Pain or tightness in your chest during physical activity: Yes/No
c. Pain or tightness in your chest that interferes with your job: Yes/No
d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
e. Heartburn or indigestion that is not related to eating: Yes/No
f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you currently take medication for any of the following problems?

a. Breathing or lung problems: Yes/No
b. Heart trouble: Yes/No
c. Blood pressure: Yes/No
d. Seizures (fits): Yes/No

8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

a. Eye irritation: Yes/No
b. Skin allergies or rashes: Yes/No
c. Anxiety: Yes/No
d. General weakness or fatigue: Yes/No
e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

* **Every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA) must answer questions 10 to 15 below.** For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever-lost vision in either eye (temporarily or permanently): Yes/No

11. Do you currently have any of the following vision problems?

a. Wear contact lenses: Yes/No
b. Wear glasses: Yes/No
c. Color blind: Yes/No
e. Any other eye or vision problem: Yes/No

12. Have you ever had an injury to your ears, including a broken eardrum: Yes/No

13. Do you currently have any of the following hearing problems?

a. Difficulty hearing: Yes/No
b. Wear a hearing aid: Yes/No
c. Any other hearing or ear problem: Yes/No

14. Have you ever had a back injury: Yes/No

15. Do you currently have any of the following musculoskeletal problems?

a. Weakness in any of your arms, hands, legs, or feet: Yes/No
b. Back pain: Yes/No
c. Difficulty fully moving your arms and legs: Yes/No
d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
e. Difficulties fully moving your head up or down: Yes/No
f. Difficulty fully moving your head side to side: Yes/No
g. Difficulty bending at your knees: Yes/No
h. Difficulty squatting to the ground: Yes/No
i. Climbing a flight of stairs or a ladder carrying more than 25 lbs.: Yes/No
j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B

Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No
   If "yes", do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No
   If "yes", name the chemicals if you know them: _____
_____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

a. Asbestos: Yes/No
b. Silica (e.g., in sandblasting): Yes/No
c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No
d. Beryllium: Yes/No
e. Aluminum: Yes/No
f. Coal (for example, mining): Yes/No
g. Iron: Yes/No
h. Tin: Yes/No
i. Dusty environments: Yes/No
j. Any other hazardous exposures: Yes/No

If "yes", describe these exposures: _____

_____

4. List any second jobs or side businesses you have: _____
_____

5. List your previous occupations: _____
_____

6. List your current and previous hobbies: _____
_____

7. Have you been in the military services? Yes/No
If "yes", were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No
If "yes", name the medications if you know them: _____

10. Will you be using any of the following items with your respirator(s)?

a. HEPA Filters: Yes/No
b. Canisters (for example, gas masks): Yes/No
c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

a. Escape only (no rescue): Yes/No
b. Emergency rescue only: Yes/No
c. Less than 5 hours per week: Yes/No
d. Less than 2 hours per day: Yes/No
e. 2 to 4 hours per day: Yes/No
f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort:

a. Light (less than 200 kcal per hour): Yes/No
If "yes", how long does this period last during the average shift: _____hrs. _____mins.

Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

b. Moderate (200 to 350 kcal per hour): Yes/No
If "yes", how long does this period last during the average shift: _____hrs. _____mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. Heavy (above 350 kcal per hour): Yes/No
If "yes", how long does this period last during the average shift: _____hrs. _____mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No
If "yes", describe this protective clothing and/or equipment: _____

_____

14. Will you be working under hot conditions (temperature exceeding 77 degrees F): Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s): _____

_____

_____

_____

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

_____

_____

_____

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

Name of the second toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

Name of the third toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

The name of any other toxic substances that you'll be exposed to while using your respirator:

_____

_____

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well being of others (for example, rescue, security): _____

_____
_____

_____

Appendix F: User Seal Check Procedures

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on.

Either the positive and negative pressure checks listed below, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

I. Positive and/or Negative Pressure Checks

A. Positive pressure check.

1. Close off the exhalation valve and exhale gently into the facepiece.
2. 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.
3. 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.

1. 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).
2. Inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds.
3. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be perform by covering the inlet opening of the cartridge with a thin latex or nitrile glove.
4. 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 the employer demonstrates that the manufacturer's procedures are equally effective.