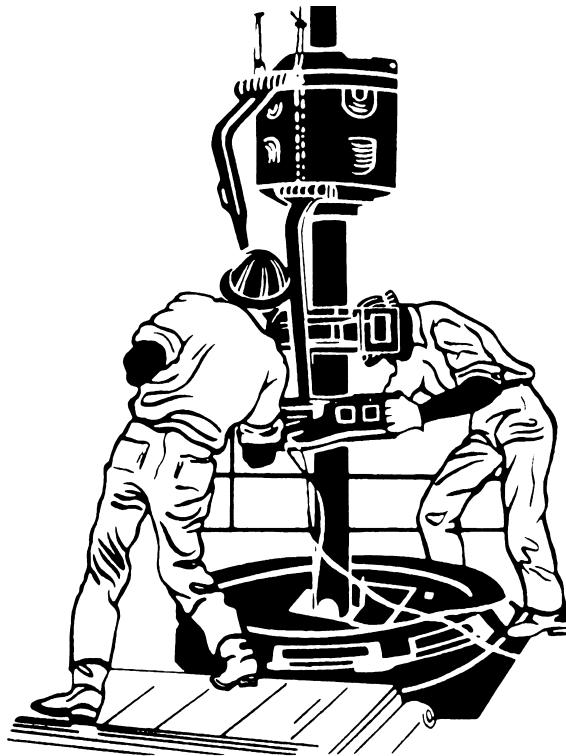


This information does not propose to be a complete **Contractor Compliance Program for the OSHA Respiratory Protection Standard**. Its purpose is to present the results of the IADC's Health, Safety and Environment Committee, Respiratory Protection Subcommittee's research and experience in order to help IADC member companies prepare their own meaningful safety program.

IADC Contractor Compliance Guidelines OSHA Respiratory Protection Standard



Developed by:
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Health, Safety & Environment (HSE) Committee

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FOREWORD

ALL APPLICABLE FEDERAL, STATE AND LOCAL GOVERNMENTAL RULES, REGULATIONS OR RESTRICTIONS, NOW IN EFFECT OR WHICH MAY BE PROMULGATED, TAKE PRECEDENCE OVER THE SUGGESTIONS IN THIS DOCUMENT. NOTHING HEREIN SHALL BE DEEMED TO ESTABLISH ARBITRARY MINIMUM OR MAXIMUM STANDARDS OF DRILLING SAFETY OPERATING PROCEDURES. NO SUGGESTED METHOD, PRACTICE, PRECAUTION OR PROGRAM SET FORTH IN THIS DOCUMENT SHALL BE DEEMED TO ESTABLISH A LEGAL STANDARD OF CONDUCT OR A LEGAL DUTY, THE VIOLATION OF WHICH WOULD CONSTITUTE NEGLIGENCE OF ANY DEGREE IN ANY LEGAL PROCEEDING.

This document is designed to supplement a company's respiratory protection program. It is based on experience and careful study over the course of a year. While this document cannot cover all the problems that may arise, it does give the drilling contractor a basis on which to build its respiratory protection program. Employees and management must be alert to changing conditions and new equipment that may present additional hazards and problems.

The toolpushers, drillers, and other supervisors must share the greatest responsibility for the success of any respiratory protection program. However, the whole-hearted support and cooperation of all personnel is necessary, from top management to the rig trainee.

RESPIRATORY PROTECTION PROGRAM

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OSHA STANDARD
RESPIRATORY PROTECTION
PROGRAM GUIDELINE
29 CFR 1910.134

Purpose

This document is intended to serve as a reminder of safe work practices and is not a complete presentation of this topic. It should be used by individuals trained and competent in this subject. It is not intended to replace or supersede company procedures, industry standards and/or applicable governmental laws and regulations.

Scope

This Guideline applies to all respirator usage. It applies when respirators are worn to protect employee health from exposure to air contaminants or oxygen deficient atmospheres, whether required by statute, by company policy or worn voluntarily. This guide is not intended to be a complete program. For further guidance in developing a program specific to individual requirements, refer to OSHA's "Small Entity Compliance Guide." (See the Reference Section at the end of this guide.)

Application

All employees whose work involves the use of respirators will be medically certified to wear respirators, be fit tested, and trained in proper use and maintenance of respiratory protection equipment in accordance with the 29 CFR 1910.134 (except voluntary use of dust masks).

Guidance is provided for the following topics:

1. Permissible Practice (Purpose)
2. Definitions
3. Program and Program Administrator
4. Selection of Respirators
5. Medical Clearance for Respirator Use
6. Fit Testing
7. Use of Respirators
8. Maintaining Respirators
9. Breathing Air Quality and Quantity
10. Training of Employees
11. Evaluating This Program
12. Records Retention
13. Voluntary Respirator Usage

Permissible Practice (Purpose)

OSHA mandates that hazards (air contaminants or oxygen deficiency) be eliminated or managed through engineering controls. These controls may consist of enclosure and confinement of the contamination, ventilation practices, and/or substitution of less toxic materials. When these controls are determined to be ineffective or not feasible, the employer shall provide appropriate respiratory protection. Employees and affected contractors shall be informed of the hazards in their work areas.

Definitions

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

Fit Factor: a quantitative estimate of the fit of a particular respirator to a specific individual. It typically estimates the ratio of a substance's concentration in ambient air to its concentration inside the facepiece of the respirator when worn.

Immediately Dangerous To Life or 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.

Oxygen Deficient Atmosphere: Any atmosphere with less than 19.5% oxygen content, depending upon altitude.

Physician or other Licensed Health Care Professional (PLHCP): A medical person whose legally permitted scope of practice (i.e., license, registration or certification) allows them to independently provide or be delegated the responsibility to provide some or all the health care services required to evaluate and/or approve a person to wear a respirator (e.g., licensed Physician or Registered Nurse.)

Program Administrator: A qualified person assigned to administer the respiratory protection program, knowledgeable of respiratory requirements and usage.

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.

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

Respirator: A breathing device used for the purposes of purifying ambient atmosphere or supplying air to a user. Respirator types may include the following:

Air Purifying Respirator: 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: A respirator that supplies the respirator user with breathing air for a source independent of the ambient atmosphere, including self contained (SCBA) and supplied air respirators

Filtering Facepiece: (Dusk 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.

Positive Pressure Respirator: A respirator in which the pressure inside the respirator facepiece exceeds the ambient air pressure outside the respirator.

Program and Program Administrator

If respiratory protection is utilized, the employer shall institute a respiratory protection program meeting the requirements of 1910.134 (c). The employer will assign a qualified Program Administrator to manage and evaluate the program. The following checklist can serve as a guide to evaluate the Respiratory Program and outlines the responsibilities of the Program Administrator.

CHECKLIST FOR RESPIRATORY PROTECTION PROGRAMS

Check to ensure that your facility has:

- A written respiratory protection program that is specific to the workplace(s) and covers the following:
 - Procedures for selecting respirators.
 - Medical evaluations of employees required to wear respirators.
 - Fit testing procedures.
 - Routine use procedures and emergency respirator use procedures.
 - Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and maintaining respirators.
 - Procedures for ensuring adequate air quality for supplied air respirators.
 - Training in respiratory hazards.
 - Training in proper use and maintenance of respirators.
 - Program evaluation procedures.
 - Procedures for ensuring that workers who voluntarily wear respirators (excluding filtering face pieces) comply with the medical evaluation, and cleaning, storing and maintenance requirements of the standard.
- A designated program administrator who is qualified to administer the respiratory protection program.
- Updated the written program as necessary to account for changes in the workplace affecting respirator use.
- Provided equipment, training, and medical evaluations at no cost to employees.

General Respirator Selection

Before selecting any protective respiratory equipment it is necessary to determine the following: **1)** what hazards are present in the workplace(s), either by monitoring or information supplied by the facility operator, **2)** what level of protection is necessary and **3)** what respirators are available to protect against those hazards. Use the following checklist to determine respirators necessary to protect employees.

CHECKLIST FOR RESPIRATOR SELECTION

Check that at your facility:

- Respiratory hazards in the workplace have been identified and evaluated.
- Employee exposures that have not been, or cannot be, evaluated are considered IDLH.
- Respirators are NIOSH certified, and used under the conditions of certification.
- Respirators are selected based on the workplace hazards evaluated and workplace and user factors affecting respirator performance and reliability.
- A sufficient number of respirator sizes and models are provided to be acceptable and correctly fit the users.
- For (IDLH) atmospheres:
 - Full-face piece pressure demand SARs with auxiliary SCAB unit or full facepiece pressure demand SCBAs, with a minimum service life of 30 minutes, are provided.
 - Respirators used for escape only are NIOSH certified for the atmosphere in which they will be used.
 - Oxygen deficient atmospheres are considered IDLH.
- For Non-IDLH atmospheres:
 - Respirators selected are appropriate for the chemical state and physical form of the contaminant.
 - Air-purifying respirators used for protection against gases and vapors are equipped with ESLIs or a change schedule has been implemented.
 - Air-purifying respirators used for protection against particulates are equipped with NIOSH-certified, HEPA filters or other filters certified by NIOSH for particulates under 42 CFR part 84.

Types of Hazards

Air Contaminants - Hydrogen sulfide (H_2S), natural gas, mists or vapors from chemicals, cutting & welding fumes, lead based paint particulates, excessive dust, spray painting, carbon dioxide (CO_2), nitrogen, NORM, asbestos, and benzene may be respiratory hazards in the oil industry. Many areas where employees work may be IDLH (well work, tank gauging, spill sites, maintenance operations, etc.).

Oxygen Deficiency - There may be occasions where oxygen deficiencies exist, such as during confined space entry, venting/flaring of gasses, or upset conditions at a CO_2 or nitrogen facility.

Medical Clearance for Respirator Use

Employees who are required to use respiratory protection on the job shall receive medical evaluation for respirator use prior to any actual respirator use or fit testing. This clearance is obtained by having employees complete a *Respirator Medical Questionnaire (Mandatory)*, (see Appendix C to 1910.134) (Sample questionnaire is attached to this guideline.) Employees will complete the form during on-duty hours or at a time convenient to the employee. The completed form is considered "medically sensitive" and only the PLHCP or authorized medical physician can view employee responses.

The PLHCP will review the employee responses and interview employees who have any positive responses to questions 1 through 8 (and 10 through 15 for SCBA users). The PLHCP will determine if a medical examination is necessary to evaluate fitness to wear a respirator. The PLHCP only recommends their opinion on the employee's ability to use a respirator. The ultimate responsibility for respirator use approval rests with the employer. Once the employee is approved for use, the employee may be trained and fit tested. After this process is completed, the employee may use respirators on which they have been trained and fit tested. OSHA has set no frequency for medical evaluation, however they established four conditions (last four items in the checklist below), which could require additional medical evaluation. Employers may consider establishing a periodic medical evaluation policy.

Employees who are not medically recommended for respirator use cannot work in a job position that requires the use of respirators. Use the following checklist to implement medical evaluations.

CHECKLIST FOR MEDICAL EVALUATION

Check that at your facility:

- All employees have been evaluated to determine their ability to wear a respirator prior to being fit tested for or wearing a respirator for the first time in your workplace.
- A Physician or other Licensed Health Care Professional (PLHCP) has been identified to perform the medical evaluations.
- The medical evaluations obtain the information requested in Sections 1 and 2, Part A of Appendix C of the standard, 29 CFR 1910.134
- Employees are provided follow-up medical exams if they positively answer any of questions 1 through 8 in Section 2, Part A of Appendix C, or if their initial medical evaluation reveals that a follow-up exam is needed.
- Medical evaluations are administered confidentially during normal work hours, and in a manner that is understandable to employees.
- Employees are provided the opportunity to discuss the medical evaluation results with the PLHCP.
- The following supplemental information is provided to the PLHCP before he or she makes decision about respirator use:
 - Type and weight of the respirator.
 - Duration and frequency of respirator use.
 - Expected physical work effort.
 - Additional protective clothing to be worn.
 - Potential temperature and humidity extremes.
 - Written copies of the respiratory protection program and the Respiratory Protection standard.
- Written recommendations are obtained from the PLHCP regarding each employee's ability to wear a respirator, and that the PLHCP has given the employee a copy of these recommendations.
- Employees who are medically unable to wear a negative pressure respirator are provided with a Powered Air-Purifying Respirator (PAPR) if they are found by the PLHCP to be medically able to use a PAPR.
- Employees are given additional medial evaluations when:
 - The employee reports symptoms related to his or her ability to use a respirator.
 - The PLHCP, Respiratory Protection Program administrator or supervisor determines that a medical re-evaluation is necessary.

- Information from the respiratory protection program suggests a need for re-evaluation.
- Workplace conditions have changed in a way that could potentially place an increased burden on the employee's health.

Fit Testing

Fit testing shall be done at annual training sessions. Personnel performing fit testing will observe the fit test subject(s) during fit testing for symptoms that indicate potential problems with respirator use. A partial list of concerns are listed below:

- 1) Anxiety or fears that make it difficult to wear a respirator
- 2) Complaints of chest pain with deep breathing or shortness of breath, coughing or wheezing.
- 3) Eye Irritation, skin rashes or allergies
- 4) General weakness or fatigue

If the fit tester observes any of the above, or has other concerns, the employee should be referred for medical evaluation. Use the checklist below to implement and evaluate the fit testing processes.

CHECKLIST FOR FIT TESTING

Check that at your facility:

- Employees who are using tight fitting respirator face pieces have passed an appropriate fit test prior to being required to use a respirator.
- Fit testing is conducted with the same make, model, and size that the employee will be expected to use at the work-site.
- Fit tests are conducted annually and when different respirator face pieces are used.
- Provisions are made to conduct additional fit tests in the event of physical changes in the employee that may affect respirator fit.
- Employees are given the opportunity to select a different respirator face-piece, and be re-tested, if their respirator fit is unacceptable to them.
- Fit tests are administered using OSHA-accepted QNFT or QLFT protocols.
- QLFT is only used to fit test either PAPRs, SCBAs, or negative pressure APRs that must achieve a fit factor of 100 or less.
- QNFT is used in all situations where a negative pressure respirator is intended to protect workers from contaminant concentrations greater than 10 times the PEL.
- When QNFT is used to fit negative pressure respirators, a minimum fit factor of 100 is achieved for tight- fitting half-face pieces and 500 for full-face pieces.
- For tight-fitting atmosphere-supplying respirators and powered air-purifying respirators:
 - Fit tests are conducted in the negative pressure mode.
 - QLFT is achieved by temporarily converting the face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure APR.
 - QNFT is achieved by modifying the face piece to allow for sampling inside the mask midway between the nose and mouth. The face piece is restored to its NIOSH approved configuration before being used in the work place.

User Seal Check

Respirator users should perform one of the user seal checks immediately prior to using any respirator.

- Positive Pressure Test - The exhaust valve is closed and user exhales. A slight positive pressure buildup indicates a good face seal.
- Negative Pressure Test - The air inlet valve is closed and user inhales gently, holding breath for 10 seconds. If mask collapses slightly and holds, the seal is good.

Use of Respirators

Processes must be established to ensure that respirators are used properly by employees. These include prohibiting conditions that may affect respirator usage, including: employees with beards, corrective lenses (soft contacts are approved) or unusual facial characteristics, or any or all of the following four conditions:

- Facepiece seal leakage, (around glass frames or beards)
- Preventing employees from removing respirators in hazardous environments,
- Ensuring effective respirator operation throughout the workday, and
- Establishing procedures for use of respirators inIDLH atmospheres.

Use the following checklist to evaluate use of respirators.

CHECKLIST FOR PROPER USE OF RESPIRATORS

Check your facility to be certain that:

- Workers using tight-fitting respirators have no conditions, such as facial hair, that would interfere with a face-to-face piece seal or valve function.
- Workers wear corrective glasses, goggles, or other protective equipment in a manner that does not interfere with the face-to-face piece seal or valve function.
- Workers perform user seal checks prior to each use of a tight-fitting respirator.
- There are procedures for conducting ongoing surveillance of the work area for conditions that affect respirator effectiveness, and that, when such conditions exist, you take steps to address those situations.
- Employees are permitted to leave their work area to conduct respirator maintenance, such as washing the face piece, or to replace respirator parts.
- Employees do not return to their work area until their respirator has been repaired or replaced in the event of breakthrough, a leak in the face piece, or a change in breathing resistance.
- There are procedures for respirator use in IDLH atmospheres and during interior structural fire fighting, ensuring that: the appropriate number of standby personnel are deployed; standby personnel and employees in the IDLH environment maintain communication; and that standby personnel are properly trained, equipped, and prepared. You will be notified when standby personnel enter an IDLH atmosphere; and you will respond to this notification.
- Standby personnel are quipped with a pressure demand or other positive pressure SCBA, or a positive pressure supplied air respirator with an escape SCBA, and appropriate retrieval equipment or other means for rescue.
- Procedures for interior structural fire fighting require that: at least two employees enter the IDLH atmosphere and remain in contact with one another at all times; at least two standby personnel are used; and all fire fighting employees use SCBA's.

Inspection, Cleaning and Maintenance

Respirators will be properly maintained to ensure continued effectiveness. Refer to the following checklist.

CHECKLIST FOR RESPIRATOR MAINTENANCE AND CARE

Check to make sure that your facility has met the following requirements:

Cleaning and Disinfecting

- Respirators are provided that are clean, sanitary, and in good working order.
- Respirators are cleaned and disinfected using the procedures specified in Appendix B-2 of the standard.
- Respirators are cleaned and disinfected:
 - As often as necessary when issued for the exclusive use of one employee.
 - Before being worn by different individuals.
 - After each use for emergency use respirators.
 - After each use for respirators used for fit testing and training.

Storage

- Respirators are stored to protect them from damage from the elements, and from becoming deformed.
- Emergency respirators are stored:
 - To be accessible to the work area.
 - In compartments marked as such.
 - In accordance with manufacturer's recommendations.

Inspections

- Routine-use respirators are inspected before each use and during cleaning.
- SCBA's and emergency respirators are inspected monthly and checked for proper function before and after each use.
- Emergency escape-only respirators are inspected before being carried into the workplace for use.
- Inspections include:
 - Check of respirator function
 - Tightness of connections
 - Condition of the face piece, head straps, valves, and cartridges.
 - Condition of elastomeric parts.

- For SCBA's, inspection includes checking that cylinders are fully charged, and that regulators and warning devices function properly.
- Emergency use respirators are certified by documenting the inspection, and by tagging the information either to the respirator or its compartment, or storing it with inspection reports.

Repairs

- Respirators that have failed inspection are taken out of service.
- Repairs are made only by trained personnel.
- Only NIOSH-approved parts are used.
- Reducing and admission valves, regulators and alarms are adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

Breathing Air Quality and Quantity

Breathing air will meet the following checklist requirements.

CHECKLIST FOR BREATHING AIR QUALITY AND USE

Check that at your facility:

General

- Compressed breathing air meets the requirements for Grade D breathing air.
- Compressed oxygen is not used in respirators that have previously used compressed air.
- Oxygen concentrations greater than 23.5 percent are used only in equipment designed for oxygen service or distribution.
- Breathing air couplings are incompatible with outlets for other gas systems.
- Breathing gas containers are marked with appropriate NIOSH certification.

Breathing Air Cylinders

- Cylinders are tested and maintained according to DOT 49 CFR Part 173 and 178.
- A certificate of analysis for breathing air has been obtained from the supplier.
- Moisture content in the cylinder does not exceed a dew point of -50°F at 1 atmosphere pressure.

Compressors

- Are constructed and situated to prevent contaminated air from getting into the system.
- Are set up to minimize the moisture content.
- Are equipped with in-line air-purifying sorbent beds and/or filters that are maintained or replaced following manufacturer's instructions.
- Are tagged with information on the most recent change date of the filter and an authorizing signature.
- Carbon monoxide does not exceed 10 PPM in the breathing air from compressors that are not oil-lubricated.
- High-temperature and carbon monoxide alarms are used on oil-lubricated compressors, or that the air is monitored often enough to ensure that carbon monoxide does not exceed 10 PPM if only a high-temperature alarm is used.

Training of Employees

Employees will be trained annually on potential respiratory hazards. Training should make employees knowledgeable of the physical and medical effects of the potential hazards. This training should be comprehensive and easily understood. The following checklist may be used to evaluate the respirator training and information provided to the employees.

TRAINING AND INFORMATION CHECKLIST

Check that at your facility:

- Employees can demonstrate knowledge of:
 - Why the respirator is necessary and the consequences of improper fit, use, or maintenance.
 - Limitations and capabilities of the respirator.
 - How to effectively use the respirator in emergency situations.
 - How to inspect, put on, remove, use, and check the seal of the respirator.
 - Maintenance and storage procedures.
 - The general requirements of the respirator standard.
- Training is understandable to employees.
- Training is provided prior to employee use of a respirator.
- Retraining is provided:
 - Annually.
 - Upon changes in workplace conditions that affect respirator use.
 - Whenever retraining appears necessary to ensure safe respirator use.
- Appendix D of the standard is provided to voluntary users.

Evaluating This Program

The Program Administrator, assisted by supervisors, employees and safety personnel should periodically and annually evaluate and inspect the effectiveness of the Respiratory Protection Program, making corrections where necessary. Respirator wearers should be consulted to determine if they: 1) have plan improvement suggestions; 2) are experiencing medical or physical problems; or 3) have problems with their respirators.

Use the following checklist to evaluate the Respirator Program.

PROGRAM EVALUATION CHECKLIST

Check that at your facility:

- Workplace evaluations are being conducted as necessary to ensure that the written respiratory protection program is being effectively implemented.
- Employees required to wear respirators are being regularly consulted to assess the employees' views and to identify problems with respirator fit, selection, use and maintenance.
- Any problems identified during assessments are corrected.

Records Retention

The following records shall be maintained:

RECORDKEEPING CHECKLIST

Check that at your facility:

- Records of medical evaluations have been retained.
- Fit testing records have been retained until the next fit is accomplished.
- A copy of the current respiratory protection program has been retained.
- Access to these records is provided to affected employees.

Voluntary Respirator Usage

Situations may arise, where there is no exposure requiring mandatory respirator usage, but an employee requests permission to **voluntarily** use a respirator. In this instance, the employer may provide the respirator or permit employees to use their own respirator, if the employer determines that the use of such a respirator will not create a hazard. If a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. If the employer determines that voluntary use of a respirator by an employee is permissible, the employer will obtain a medical clearance for respirator use. Additionally, the employer will ensure that the respirator is cleaned, stored and maintained so that its use will not present a health hazard, and provide voluntary respirator use employees with the information sheet provided as **Attachment 1**. A limited written program is also required when respirators are being voluntarily worn by the employees.

Medical Clearance Forms

OSHA considers the **OSHA Medical Evaluation Questionnaire** mandatory (1910.134 Appendix C, Part A, questions 1 - 9 and 10 – 15 for SCBA.) It must be completed by the employer, the employee, and reviewed by a PLHCP. OSHA has included other questions (1910.134 Appendix C Part B, questions 1 - 19) and they are non-mandatory but may be included at the discretion of the PLHCP.

A written **Medical Respirator Recommendation** shall be used to comply with 1910.34(e)(6). The PLHCP shall provide copies of the Medical Respirator Recommendation to the employee and the employer, indicating their opinion of the employees' ability to use respirators. The employer should indicate their concurrence or non-concurrence with the medical recommendation.

Note: The Medical Evaluation Questionnaire and the Medical Respirator Recommendation may be obtained from your PLHCP or companies that provide such documents.

References

- OSHA 29 CFR191.134 Respiratory Protection
- Compressed Gas Association G-7 (Compressed Air for Human Respiration)
- ANSI Z-88.2 (Respiratory Protection)
- OSHA Small Entity Compliance Guide, (and associated documents) available from OSHA at their web site: <http://www.osha.gov> (Under "News Room"- -Publications - - in "Booklets & Publications")
- 49 CFR Part 173 and 178 (DOT Regulations for Shipping Containers (Compressed Gas Cylinders))
- 42 CFR part 84 (Respirator Filter Testing)

ATTACHMENT 1

Information for Employees Using Respirators, When the Respirator Use is Not Required by the OSHA Respiratory Protection Standard (29CFR 1910.134, Respiratory Protection, Appendix D)

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 hazard exposures, 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, or 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 care, and warnings regarding the respirator 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 gasses, vapors or very small solid particle of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Employee Name (Print): _____

Employee Signature: _____

Date: _____

OSHA Standard

Respiratory Protection

Written Program

29 CFR 1910.134

Purpose of Respiratory Protection Program

In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination.

This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials).

When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this section.

Respirators shall be provided when such equipment is necessary to protect the health of the employee. Respirators shall be provided which are applicable and suitable for the purpose intended.

(company name) shall be responsible for the establishment and maintenance of a respiratory protection program, which shall include the requirements outlined in this respiratory protection program.

Definitions

The following definitions are important terms used in the respiratory protection standard in this section.

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.

Medical evaluation means having a PLHCP perform a review of the medical questionnaire filled out by the employee.

Medical examination means an exam by a PLHCP, which may include medical tests, consultations, or diagnostic procedures.

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 medical evaluation section of this program.

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 the 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.

This section means this respiratory protection standard.

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 sealed to the face.

Scope of Respiratory Program

Respiratory Protection Program

- A. *(company name)* has developed and implemented a written respiratory protection program with required work site-specific procedures and elements for required respirator use.

A suitably trained program administrator will administer the respiratory program. In addition, certain program elements may be required for voluntary use to prevent potential hazards associated with the use of the respirator.

1. In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required, *(company name)* will/has establish(ed) and implement(ed) a written respiratory protection program with work site-specific procedures. The program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use. The respiratory program includes the following provisions, as applicable:
 - a. Procedures for selecting respirators for use in the workplace;
 - b. Medical evaluations of employees required to use respirators;
 - c. Fit testing procedures for tight-fitting respirator;
 - d. Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;
 - e. Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;
 - f. Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators;
 - g. Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;
 - h. Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance; and
 - i. Procedures for regularly evaluating the effectiveness of the program.
2. Where respirator use is not required:
 - a. *(company name)* may provide respirators at the request of the 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 it is determined that any voluntary respirator use is permissible, *(company name)* shall provide the respirator users with the information contained in Appendix D to this section ("Information for Employees Using Respirators When Not Required Under the Standard"); and
 - b. In addition, *(company name)* will establish and implement those elements of a written respiratory protection program necessary to 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.

Exception: Employers are not required to include in a written respiratory protection program those employees whose only use of respirators involves the voluntary use of filtering facepieces (dust masks).

3. *(company name)* has designated (*identified by name or job title*) as program administrator. The administrator 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.
4. *(company name)* shall provide respirators, training, and medical evaluations at no cost to the employee.

B. Selection of respirators. *(company name)* has evaluated respiratory hazard(s) in the workplace, identified relevant workplace and user factors, and based respirator selection on these factors. The section also specifies appropriately protective respirators for use in IDLH atmospheres, and limits the selection and use of air-purifying respirators.

1. General requirements.
 - a. *(company name)* shall select and provide an appropriate respirator based on the respiratory hazard(s) to which the worker is exposed and performance and reliability.
 - b. A NIOSH-certified respirator will be selected for use. The respirator shall be used in compliance with the conditions of its certification.
 - c. *(company name)* has identified and evaluated the respiratory hazard(s) in the workplace; this evaluation includes a reasonable estimate of employee exposures to respiratory hazard(s) and identifies the contaminant's chemical state and physical form. Where hazards cannot be identified or where employee exposure cannot be reasonably estimated, the atmosphere shall be considered to be IDLH.
 - d. Respirators have been chosen so that the respirator is acceptable to, and correctly fits, the user.
2. Respirators for IDLH atmospheres.
 - a. *(company name)* shall provide the following respirators for employee use in IDLH atmospheres:
 - b. A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
 - c. A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
 - d. Respirators provided only for escape for IDLH atmospheres shall be NIOSH –certified for escape from the atmosphere in which they will be used.
 - e. All oxygen-deficient atmospheres shall be considered IDLH.

Exception: If it has been demonstrated that, under all foreseeable conditions, the oxygen concentration can be maintained within the ranges specified in Table I of this section (i.e., for the altitudes set out in the table), then any atmosphere-supplying respirator may be used.

3. Respirators for atmospheres that are not IDLH.
- a. A respirator shall be provided that is adequate to protect the health of the employee and ensure compliance with all OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.
 - b. The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.
 - c. For protection against gases and vapors, (*company name*) shall provide:
 - I) An atmosphere-supplying respirator, or
 - II) An air-purifying respirator, provided that:
 - i. The respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or
 - ii. If there is no ESLI appropriate for conditions, a change schedule for canisters and cartridges that is based on objective information, or data that will ensure that canisters and cartridges are changed before the end of their service life, will be implemented.
 - d. For protection against particulates, (*company name*) shall provide:
 - I) An atmosphere-supplying respirator; or
 - II) 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
 - III) For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least two (2) micrometers, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.

Table I

Altitude (ft.) Oxygen-deficient Atmospheres (%O₂) for which the employer may rely on atmosphere-supplying respirators.

Altitude (ft)	Oxygen-deficient Atmospheres(%O ₂)
Less than 3,001	16.0 - 19.5
3,001-4,000	16.4 - 19.5
4,001-5,000	17.1 - 19.5
5,001-6,000	17.8 - 19.5
6,001-7,000	18.5 - 19.5
7,001-8,000	19.3 - 19.5

Note: Above 8,000 feet the exception does not apply. Oxygen-enriched breathing air must be supplied above 14,000 feet.

- C. **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. Accordingly, this section specifies the minimum requirements for medical evaluation that employers must implement to determine the employee's ability to use a respirator.

1. General.

(*company name*) shall provide a medical evaluation to determine the employee's ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace. The use of employee medical evaluations may be discontinued when the employee is no longer required to use a respirator.

2. Medical evaluation procedures.

- a. (*company name*) has identified 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. The medical evaluation shall obtain the information requested by the questionnaire in Sections 1 and 2, Part A of Appendix C of this section.

3. Follow-up medical examination.

- a. (*company name*) shall 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 Section 2, Part A of Appendix C or whose initial medical examination demonstrates the need for a follow-up medical examination.
- b. The follow-up medical examination may include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

4. Administration of the medical questionnaire and examinations.

- a. The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place not unduly inconvenient to the employee. The medical questionnaire shall be administered in a manner that ensures that the employee understands its content.
- b. Employees will be provided with an opportunity to discuss the questionnaire and examination results with the PLHCP.

5. Supplemental information for the PLHCP.

- a. The following information must be provided to the PLHCP before the PLHCP makes a recommendation concerning an employee's ability to use a respirator:
 - I) The type and weight of the respirator to be used by the employee.
 - II) The duration and frequency of respirator use (including use for rescue and escape).
 - III) The expected physical work effort.
 - IV) Additional protective clothing and equipment to be worn.
 - V) Temperature and humidity extremes that may be encountered.
- b. 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.
- c. The PLHCP will be provided with a copy of the written respiratory protection program and a copy of this section.

Note: When *(company name)* replaces a PLHCP, the company 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, *(company name)* is not expected to have employees medically reevaluated solely because a new PLHCP has been selected.

6. Medical determination.

In determining the employee's ability to use a respirator, the *(company name)* shall:

- a. Obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation shall provide only the following information:
 - I) 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.
 - II) At a minimum, follow-up medical evaluations may be conducted over the telephone.
 - III) A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

Note - Company may want to omit the following paragraph:

- b. 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, *(company name)* may provide a 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 the employee is no longer required to wear a PAPR.

7. Additional medical evaluations.

At a minimum, *(company name)* shall provide additional medical evaluations that comply with the requirements of this section if:

- a. An employee reports medical signs or symptoms that are related to ability to use a respirator; or
- b. A PLHCP, supervisor, or the respirator program administrator informs the employer that an employee needs to be reevaluated; or
- c. Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or
- d. A change occurs in workplace conditions (e.g., physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.

D. Fit testing. This section requires that, 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. This section specifies the kinds of fit tests allowed, the procedures for conducting them, and how the results of the fit tests must be used.

1. Employees must use a tight-fitting facepiece respirator and pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT).
2. The employee will use a tight-fitting facepiece respirator to fit test prior to initial use of the respirator. Whenever a different respirator facepiece (size, style, model or make) is used, it will be necessary for the employee to be fit tested again. Fit testing will be done annually thereafter.
3. *(company name)* shall conduct an additional fit test whenever the employee reports, or the 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.
4. If after passing a QLFT or QNFT, the employee subsequently notifies the program administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator facepiece and to be retested.
5. The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol. The OSHA-accepted OLFT and QNFT protocols and procedures are contained in Appendix A of this section.
6. QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.
7. 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.
8. Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.
 - a. Qualitative fit testing of these 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.
 - b. Quantitative fit testing of these 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. Any respirator facpiece modified for fit testing shall be completely restored to NIOSH-approved configuration, **before that facepiece can be used in the workplace.**

E. Use of respirators. These requirements include prohibiting conditions that may result in facepiece seal leakage, preventing employees from removing respirators in hazardous environments, taking actions to ensure continued effective respirator operation throughout the work

shift, and establishing procedures for the use of respirators in IDLH atmospheres or in interior structural fire fighting situations.

1. Facepiece seal protection.

- a. (*company name*) shall not permit respirators with tight-fitting facepieces to be worn by employees who have:
 - I) Facial hair that comes between the sealing surface of the facepiece and the face, or that interferes with valve function; or
 - II) Any condition that interferes with the face-to-facepiece seal or valve function.
- b. If an employee wears corrective glasses or goggles or other personal protective equipment, it must be worn in a manner that does not interfere with the seal of the facepiece to the face of the user.
- c. For all tight-fitting respirators, employees must perform a user seal check each time they put on the respirator using the procedures in Appendix B-1 or procedures recommended by the respirator manufacturer.

2. Continuing respirator effectiveness.

- a. Appropriate surveillance shall be maintained of work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, the continued effectiveness of the respirator will be re-evaluated.
- b. Employees must leave the respirator use area:
 - I) To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or
 - II) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece; or
 - III) To replace the respirator or the filter, cartridge, or canister elements.
- c. If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, the respirator must be replaced or repaired before employees are allowed to return to the work area.

3. Procedures for IDLH atmospheres. For all IDLH atmospheres:

- a. One employee or, when needed, more than one employee must be located outside the IDLH atmosphere to observe and monitor;
- b. Visual, voice, or signal line communication must be maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere;
- c. The employee(s) located outside the IDLH atmosphere must be trained and equipped to initiate effective emergency rescue;
- d. Supervisory personnel must be notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;

- e. The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation;
 - f. Employee(s) located outside the IDLH atmospheres will be equipped with:
 - Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either:
 - I) Appropriate retrieval equipment necessary for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or
 - II) Equivalent means for rescue where retrieval equipment is not required under OSHA paragraph 29CFR 1910.134 (g)(3)(vi)(B).
4. Procedures for interior structural firefighting. In addition to the requirements set forth under OSHA paragraph 29CFR 1910.134 (g)(3), in interior structural fires, (*company name*) shall ensure that:
- a. At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;
 - b. At least two employees are located outside the IDLH atmosphere; and
 - c. All employees engaged in interior structural firefighting must use SCBAs.

Note 1 to OSHA paragraph 29CFR 1910.134(G): One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.

Note 2 to OSHA paragraph 29CFR 1910.134(G): Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

F. Maintenance and care of respirators. This section refers to providing for the cleaning and disinfecting, storage, inspection, and repair of respirators used by employees.

- 1. Cleaning and disinfecting. Each respirator user must have a respirator that is clean, sanitary, and in good working order. Cleaning and disinfecting procedures in Appendix B-2 will be used, or procedures recommended by the respirator manufacturer, provided that such procedures are of equivalent effectiveness. The respirators shall be cleaned and disinfected at the following intervals:
 - a. Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;
 - b. Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals;
 - c. Respirators maintained for emergency use shall be cleaned and disinfected after each use; and
 - d. Respirators used in fit testing and training shall be cleaned and disinfected after each use.

2. Storage. The following procedures will be used to ensure that respirators are stored properly:
 - a. All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve.
 - b. In addition to the requirements of paragraph **(2)(a)** of this section, emergency respirators shall be:
 - I) Kept accessible to the work area;
 - II) Stored in compartments or in covers that are clearly marked as containing emergency respirators; and
 - III) Stored in accordance with any applicable manufacturer instructions.
3. Inspection.
 - a. Respirators are inspected as follows:
 - I) All respirators used in routine situations shall be inspected before each use and during cleaning;
 - II) Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.
 - III) Emergency escape-only respirators shall be inspected before being carried into the workplace for use.
 - b. Respirator inspections will include the following:
 - I) A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the facepiece, head strips, valves, connecting tube, and cartridges, canisters or filters; and
 - II) A check of elastic or plastic parts for pliability and signs of deterioration.
 - c. In addition to the requirements of paragraphs **(3)(a) and (b)** of this section, self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. It shall also be determined that the regulator and warning devices function properly.
 - d. For respirators maintained for emergency use shall:
 - I) Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and
 - II) Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.
4. Repairs. The employer shall ensure that respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:

- a. Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;
- b. Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- c. Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

G. Breathing air quality and use.

1. Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall be in accordance with the following specifications:
 - a. Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
 - b. Compressed breathing air shall 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:
 - I) Oxygen content (v/v) of 19.5-23.5%;
 - II) Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
 - III) Carbon monoxide (CO) content of 10 ppm or less; and
 - IV) Carbon dioxide content of 1,000 ppm or less; and
 - V) Lack of noticeable odor.
2. Compressed oxygen must not be used in atmosphere-supplying respirators that have previously used compressed air.
3. Oxygen concentrations greater than 23.5% must be used only in equipment designed for oxygen service or distribution.
4. Cylinders used to supply breathing air to respirators must meet the following requirements:
 - a. 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);
 - b. 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; and
 - c. The moisture content in the cylinder does not exceed a dew point of -50 deg F (-45.6 deg C) at 1 atmosphere pressure.
5. Compressors used to supply breathing air to respirators must be constructed and situated so as to:
 - a. Prevent entry of contaminated air into the air-supply system;
 - b. Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56 deg C) below the ambient temperature;

- c. Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.
 - d. Have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change. The tag shall be maintained at the compressor.
6. For compressors that are not oil-lubricated, carbon monoxide levels in the breathing air must not exceed 10 ppm.
 7. For oil-lubricated compressors, a high-temperature or carbon monoxide alarm, or both, must be used to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.
 8. Breathing air couplings must not be compatible with outlets for nonrespirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.
 9. Breathing gas containers must be marked in accordance with the NIOSH respirator certification standard, 42 CFR part 84.

H. Identification of filters, cartridges, and canisters. All filters, cartridges and canisters used in the workplace must be labeled and color-coded with the NIOSH approval label and that the label is not removed and remains legible.

I. Training and information. This section requires the employer to provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable, and recur annually, and more often if necessary. This section also requires the employer to provide the basic information on respirators in Appendix D of this section to employees who wear respirators when not required by this section or by the employer to do so.

1. Each employee must demonstrate knowledge of at least the following:
 - a. Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
 - b. What the limitations and capabilities of the respirator are;
 - c. How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
 - d. How to inspect, put on and remove, use, and check the seals of the respirator;
 - e. What the procedures are for maintenance and storage of the respirator;
 - f. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
 - g. The general requirements of this section.
2. The training shall be conducted in a manner that is understandable to the employee.
3. This training will be provided prior to requiring the employee to use a respirator in the workplace.

4. Employees that have documentation that they have received respiratory training within the last 12 months that addresses the elements specified in paragraph (k)(1)(I) through (vii) is not required to repeat such training provided that, as required by paragraph (k)(1), the employee can demonstrate knowledge of those elements(s). Previous training not repeated initially must be provided no later than 12 months from the date of the previous training.
5. Retraining shall be administered annually, and when the following situations occur:
 - 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.
6. The basic advisory information on respirators, will be provided in any written or oral format, to employees who wear respirators when such use is not required by this section or by the employer.

J. Program evaluation.

1. Evaluations of the workplace will be conducted as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.
2. (*company name*) 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 shall be corrected. Factors to be assessed include, but are not limited to:
 - a. Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
 - b. Appropriate respirator selection for the hazards to which the employee is exposed.
 - c. Proper respirator use under the workplace conditions the employee encounters; and
 - d. Proper respirator maintenance.

K. Recordkeeping. (*Company name*) will establish and retain written information regarding medical evaluations, fit testing, and the respirator program. This information will facilitate employee involvement in the respirator program, assist in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.

1. Medical evaluation. Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020.
2. Fit testing.
 - a. A record of the qualitative and quantitative fit tests administered to an employee will include:
 - I) The name or identification of the employee tested;

- II) Type of fit test performed;
 - III) Specific make, model, style, and size of respirator tested;
 - IV) Date of test; and
 - V) The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs.
- b. Fit test records shall be retained for respirator users until the next fit test is administered.
3. A written copy of the current respirator program shall be retained by (*company name*).
4. Written materials that are required to be retained under This section shall be made available upon request to affected employees and to the Assistant Secretary or designee for examination and copying.

L. Appendices.

- (1) Compliance with Appendix A, Appendix B-1, Appendix B-2, and Appendix C is mandatory.
- (2) Appendix D is non-mandatory and is not intended to create any additional obligations not otherwise imposed, or to detract from any existing obligations.

Note: These OSHA Appendices can be ordered directly from OSHA or can be found on OSHA's web site (www.osha.gov).