

Desert Research Institute



Respiratory Protection Program

Desert Research Institute Respiratory Protection Program

Table of Contents

I.	Introduction	1
II.	Purpose and Scope	1
III.	Responsibilities	2
	A. Environmental Health and Safety (EH&S)	2
	B. Principle Investigators (PIs)/Supervisors	2
	C. Employees	3
IV.	Respiratory Protection Program Elements	3
	A. Hazard Evaluation	3
	B. Respiratory Protection Selection Procedures	4
	1. General Requirements on the Selection of Respirators:	4
	2. Respirators for Immediately Dangerous to Life and Health (IDLH) Atmospheres	4
	3. Respirators for non-IDLH Atmospheres	5
	C. Medical Evaluations	5
	D. Use of Respirators	6
	1. General Requirements for Respirator Use	6
	2. Voluntary Respirator Use	7
	3. Fit Testing	8
	4. Proper Use of Respirators	9
	a. Facepiece Seal Protection	9
	b. User Seal Check Procedures	9
	c. Continuing Respirator Effectiveness	9
	d. Respirator Cleaning Guidelines	10
	e. Maintenance and Inspection	10
	f. Cartridge Change Schedule	11
	g. Storage	12
	5. Defective Respirators	12
V.	Training of Employees	13
VI.	Program Evaluation	14
VII.	Documentation and Recordkeeping	14
VIII.	References	14
	Appendix A - Respirator Selection Guide	1
	Appendix B - NIOSH Flow Chart for Selecting Part 84 Particulate Filters S	1
	Appendix C - Appendix B-1 to § 1910.134: User Seal Check Procedures (Mandatory)	1
	Appendix D - Voluntary Use of Respirators	1
	Appendix E - Qualitative Fit Test Certification Form	1
	Appendix F - Appendix B-2 to § 1910.134: Respirator Cleaning Procedures (Mandatory)	1

Desert Research Institute Respiratory Protection Program

I. Introduction

The Desert Research Institute (DRI) Respiratory Protection Program describes policy and procedures for the use of respirators to protect the health of employees in accordance with OSHA 1910.134. This document outlines the minimal acceptable requirements for a respiratory protection program, delineates responsibilities, provides selection criteria for determination of respiratory protection needs, and discusses program evaluation and training requirements. This Program will be reviewed annually by the Department of Environmental Health & Safety (EH&S) and updated as necessary to reflect changes in workplace conditions that affect respirator use.

II. Purpose and Scope

- The DRI Respiratory Protection Program is established to protect employees from exposure to respirable contaminants in the work place. In general, the use of respiratory protection is only allowed when respirable hazards cannot be eliminated through substitution or engineering controls or where engineering controls or work practices are inadequate or not feasible.
- This Program covers all DRI employees who are required to wear respiratory protection for certain work activities identified through a personal protective equipment (PPE) assessment and those employees who anticipate the need to wear respiratory equipment during an emergency incident. The program also covers employees who may use respirators (either Institute issued or their own) on a voluntary basis during certain operations (for example, certain maintenance and cleaning operations) that do not require respiratory protection.
- All use of respirators must be approved by the DRI Environmental Health and Safety. In addition, any employee who voluntarily wears a respirator¹ when not required is subject to the medical evaluation, cleaning, maintenance, and storage elements of this Program, and must be provided with certain information specified Appendix D of the OSHA standard.
- Employees participating in the DRI Respiratory Protection Program do so at no personal cost. The expense associated with training, medical evaluations and respiratory protective equipment will be covered by DRI, either through the employee's project, Department or Division.
- This Program does not discuss the use of supplied air respirators (SARs) required for permit confined space entry or large chemical spill clean-up. DRI does not have the equipment or trained personnel to conduct these operations.

¹Employees who voluntarily wear filtering facepieces (e.g., N95 dust masks) are not subject to the medical evaluation, cleaning, storage, and maintenance provisions of this program.

Desert Research Institute Respiratory Protection Program

III. Responsibilities

A. Environmental Health and Safety (EH&S)

EH&S is responsible for administering and overseeing the Respiratory Protection Program and for conducting evaluations of program effectiveness. Duties include, but are not limited to:

1. Assisting Principal Investigators (PIs)/Supervisors in hazard assessments to identify work areas or tasks that require respiratory protection and in completing the PPE assessment.
2. Selecting respiratory protection options for each hazardous situation.
3. Scheduling and/or conducting training.
4. Conducting fit testing.
5. Administering the medical evaluation/surveillance program.
6. Periodically auditing compliance with use, maintenance and storage of respiratory protection.
7. Maintaining records required by the Program.
8. Evaluating the Program annually and updating the Program, as needed.

B. Principle Investigators (PIs)/Supervisors

PIs/Supervisors are responsible for ensuring that the DRI Respiratory Protection Program is implemented in their particular areas. In addition to being knowledgeable about the Program requirements for their own protection, Supervisors and PIs must ensure that the Program is understood and followed by the employees under their charge. Duties of the Supervisor/PI include:

1. Ensuring that employees under their supervision (including new hires) have received appropriate training, fit testing and annual medical evaluation.
2. Ensuring the availability of appropriate respirators and accessories.
3. Being aware of tasks requiring the use of respiratory protection.
4. Enforcing the proper use of required respiratory protection.
5. Ensuring that respirators are properly cleaned, maintained, and stored accordance with the DRI Respiratory Protection Program.

Desert Research Institute Respiratory Protection Program

6. Continually monitoring work areas and operations to identify respiratory hazards.
7. Coordinating with EH&S to address respiratory hazards or other concerns regarding the Program.

C. Employees

Employees have the responsibility to wear a respirator when and where required in the manner in which they were trained. Additional employee duties include:

1. Completing annual medical surveillance, training and fit testing.
2. Caring for and maintaining their respirators as instructed.
3. Storing their respirator in a clean, sanitary location.
4. Informing their supervisor if the respirator no longer fits well, and requesting a new one that fits properly.
5. Informing their supervisor or EH&S of any respiratory hazards that they feel is not adequately addressed in the work place and of other concerns that they have regarding the Program.

IV. Respiratory Protection Program Elements

A. Hazard Evaluation

EH&S will assist PIs/Supervisors in selecting respirators based on the hazards to which workers are exposed and in accordance with all OSHA standards. The first step is conducting a hazard evaluation for each operation, process, or work area where airborne contaminants may be present in routine operations or during an emergency. The hazard evaluation will include:

1. Developing of a list of hazardous substances used in the workplace by project, department, or work process via reviewing the Chemtracker™ chemical inventory.
2. Reviewing use of the identified hazardous substances to determine where potential airborne exposures may occur.
3. Conducting industrial hygiene monitoring, as needed, to quantify potential hazardous exposures.

The PI/Supervisor must revise and update the hazard assessment when applicable (i.e., any time work process or material changes may potentially affect exposure). If an employee feels respiratory protection is needed during a particular activity, they

Desert Research Institute Respiratory Protection Program

shall contact their immediate supervisor or EH&S. The PI/Supervisor and EH&S will evaluate the potential hazard and communicate the results of the assessment back to the employees. If it is determined that respiratory protection is necessary, all other elements of this Program will be in effect for those tasks.

B. Respiratory Protection Selection Procedures

1. General Requirements on the Selection of Respirators:

- a. Each supervisor is to conduct and complete a PPE assessment to evaluate the respiratory hazards in the workplace, identify relevant workplace and user factors, and base respirator selection on these factors. The evaluation of respiratory hazards must include a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. If the hazard cannot be identified or the employee's exposure reasonably estimated, the atmosphere is to be considered IDLH (immediately dangerous to life and health).
- b. Respirators are to be selected based on the respiratory hazard(s) to which the worker is exposed along with workplace and user factors that affect respirator performance and reliability (see Appendix A, Respirator Selection Guide).
- c. Respirators are to be obtained only after EH&S has approved the type and model.
- d. Employees will be provided the opportunity to order a different model and size respirator if the one they have at the time of their fit-test is not acceptable to or does not correctly fit the employee.
- e. All respirators and all filters, cartridges, and canisters must be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall be used in accordance with the terms of that certification. The certification labels must not be removed or defaced while the respirator is in use.

2. Respirators for Immediately Dangerous to Life and Health (IDLH) Atmospheres

All oxygen-deficient atmospheres, less than 19.5% oxygen, are considered IDLH. Entering a permit required confined space or a work involving a large hazardous chemical spill may also involve an IDLH atmosphere. The following respirators are to be used in IDLH atmospheres:

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

Desert Research Institute Respiratory Protection Program

- b. A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
 - c. Respirators provided only for escape from IDLH atmospheres are to be NIOSH-certified for escape from the atmosphere in which they will be used.
3. Respirators for non-IDLH Atmospheres
- a. The project/department must provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.
 - b. The respirator selected is to be appropriate type for the chemical state and physical form of the contaminant.
 - c. For protection against gases and vapors, either an atmosphere-supplying respirator (SAR) or an air purifying respirator (APR) may be selected. If an APR is selected, the respirator is to be equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant, or the supervisor must implement a change schedule described in the department/project SOP 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.
 - d. For protection against particulates, an atmosphere-supplying respirator, or an air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR part 84.
 - e. All filters, cartridges and canisters used in the workplace are to be labeled and color coded with a legible NIOSH approval label and the label is not to be removed.
 - f. Filtering facepieces- Dust/mist respirators must be selected based on whether oil mist is present and for the efficiency required (see Appendix B).

C. Medical Evaluations

- 1. Employees, including volunteers, who are either required to wear respirators, or who choose to wear an APR voluntarily must pass a medical exam documenting they are medically able before being permitted to wear a respirator. Any employee refusing the medical evaluation will not be allowed to work in an area requiring respirator use.

Desert Research Institute Respiratory Protection Program

2. DRI utilizes the 3M on-line medical evaluation (see www.respexam.com). The on-line evaluation utilizes the questions required by OSHA in 29 CFR 1910.134, Appendix C.
3. Medical follow-up, if recommended after the on-line evaluation, will be conducted at one of the following locations:

Concentra Medical Center
5850 Polaris Ave., Suite 100
Las Vegas, Nevada 89118
Hours: Open 24/7
Ph: 702-739-9957

Specialty Health Clinic
330 East Liberty St., Suite 100
Reno, NV 89501
Hours: 8-5 M- F
Ph: 75-398-3630

4. Costs associated with medical evaluations will be the responsibility of the Division, Department or project.
5. Documentation that the employee is physically able to wear respiratory protection must be provided to EH&S before training and fit testing will be scheduled.

D. Use of Respirators

1. General Requirements for Respirator Use
 - a. Employees will use their respirators under conditions specified by this Program, and in accordance with the training they receive on the use of each particular model.
 - b. A respirator shall not be used in a manner that is not certified by NIOSH or by the manufacturer.
 - c. All employees shall conduct user seal checks each time that they wear their respirator. Employees may use either the positive and negative pressure check or the manufacturer's recommended seal check method, depending on which test works best for them (see Appendix C for details).
 - d. All employees are permitted to leave the work area to maintain their respirator. Such activities may include cleaning their respirator, if the respirator is impeding their ability to work; changing filters or cartridges; replacing parts or inspecting the respirator if it stops functioning as intended. Employees should notify their supervisor before leaving the area.

Desert Research Institute Respiratory Protection Program

- e. Employees are not permitted to wear tight-fitting respirators if they have any condition (such as facial scars, facial hair, or missing dentures) that would prevent them from achieving a good seal.
- f. Employees are not permitted to wear headphones, jewelry, or other articles that may interfere with the facepiece-to-face seal.
- g. For any malfunction of an APR (e.g., such as breakthrough, facepiece leakage, or improperly working valve), the respirator wearer should inform their supervisor that the respirator no longer functions as intended, and go to a safe area to replace/maintain the respirator. The supervisor must ensure that the employee receives the needed parts to repair the respirator, or is provided with a new respirator.

2. Voluntary Respirator Use

- a. Respirators may be provided at the request of employees, or employees may use their own respirators, if such use will not in itself create a hazard. For either, the applicable sections of the DRI Respiratory Protection Program as it related to voluntary respiratory use shall apply.
- b. As a general policy EH&S will review all voluntary respirator use to verify that the situation does not require the use of a respirator to protect the health and safety of the employee. The voluntary use of respiratory protection will be approved if it will not jeopardize the health or safety of the workers. Approval will depend on specific workplace conditions and the results of the required medical evaluation.
- c. The following requirements apply to the voluntary use of respirators²:
 - i. Medical determination that the employee is able to use the respirator;
 - ii. The respirator must be cleaned, stored, and maintained so that its use does not present a health hazard to the user; and,
 - iii. Employees must be provided a copy of 29 CFR 1910.134, Appendix D "Information for Employees Using Respirators When Not Required Under the Standard" (see Appendix D).
- d. Filtering facepieces (dust masks) are approved against low concentrations of certain dusts (nuisance dusts, pollen, animal dust, etc.).
 - i. There are two main limitations to dust masks:
 - they provide no protection against gases and vapors, and

² See Section IV.D.2.d.ii requirements for the voluntary use of filtering facepieces (dust masks).

Desert Research Institute Respiratory Protection Program

- they supply no oxygen and therefore cannot be used in oxygen deficient areas.
- ii. Anyone using a filtering facepiece on a voluntary basis must receive respiratory protection training and be provided a copy of Appendix D of OSHA's Respirator Protection Standard.
- iii. Single strap disposable dust masks (surgical masks) may not be used at DRI.

3. Fit Testing

- a. EH&S will conduct fit tests following the OSHA approved Qualitative Fit Test (QLFT) Protocol in the Respiratory Protection Standard³. Records will be maintained on the QLFT Certification Form in Appendix E.
- b. Fit testing is required for employees wearing tight-fitting respirators. Employees voluntarily wearing half-facepiece APRs may also be fit tested upon request.
- c. Employees who are required to wear tight-fitting respirators will be fit tested:
 - i. Prior to initial use.
 - ii. When there are changes in the employee's physical condition that could affect respiratory fit (e.g., facial hair, obvious change in body weight, facial scarring, etc.).
 - iii. Whenever an employee switches to a different respirator.
- d. Employees will be provided with a sufficient number of respirator models and sizes so that they may find an optimal fit.
- e. Employees will be fit tested with the make, model, and size of respirator that they will actually wear.
- f. Fit testing of powered air-purifying respirators (PAPRs) will be conducted in the negative pressure mode.
- g. If conditions affecting respirator use change, the EH&S will evaluate on a case-by-case basis whether Quantitative Fit Test (QNFT) is required.

³ Detailed Fit Testing Procedures are found in 29 CFR 1910.134, Appendix A, http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9780

Desert Research Institute Respiratory Protection Program

h. EH&S will maintain fit test records.

4. Proper Use of Respirators

a. Facepiece Seal Protection

Respirators with tight-fitting facepieces must be worn in a manner that does not interfere with the facepiece's seal. Employees with facial hair, or any other condition, that interferes with the sealing surface of the facepiece and the face, or with valve function, are not permitted to wear tight fitting facepieces. Corrective glasses or goggles or other personal protective equipment must be worn in a manner that does not interfere with the seal of the facepiece to the face of the user. For all tight-fitting respirators, employees are to perform a user seal check each time they put on the respirator using the procedures described below, or equivalent procedures recommended by the respirator manufacturer.

b. User Seal Check Procedures⁴

The individual who uses a tight-fitting respirator must perform a user seal check each time the respirator is put on to ensure that an adequate seal is achieved. Either the positive and negative pressure checks or the respirator manufacturer's recommended user seal check method is to be used.

c. Continuing Respirator Effectiveness

i. Supervisors are to maintain surveillance of work area conditions and the 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 supervisor is to reevaluate the continued effectiveness of the respirator. The supervisor must ensure that employees leave the respirator use area:

- To wash their faces and/or respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or
- If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece; or
- To replace the respirator or the filter, cartridge, or canister elements.

⁴ See Appendix C for mandatory User Seal Check Procedures detailed in 29 CFR 1910.134, Appendix B-2.

Desert Research Institute Respiratory Protection Program

- ii. If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, the employee should immediately leave the work area. The respirator must be replaced or repaired before the employee is allowed to return to the work area.
- d. Respirator Cleaning Guidelines⁵
- i. Respirators are to be regularly cleaned and disinfected.
 - ii. Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary.
 - iii. Disassemble the respirator, removing any filters, canisters, or cartridges.
 - iv. Wash the facepiece and associated parts in a mild detergent with warm water. Do not use organic solvents.
 - v. Rinse completely in clean warm water.
 - vi. Wipe the respirator with disinfectant wipes (70% Isopropyl Alcohol) to kill germs.
 - vii. Air dry respirator and parts in a clean area.
 - viii. Reassemble the respirator, replacing any defective parts.
 - ix. Place respirator in a clean, dry plastic bag or other air tight container.
 - x. Atmosphere supplying respirators⁶ are to be cleaned and disinfected after each use.
 - xi. Departments/projects will ensure an adequate supply of appropriate cleaning and disinfecting materials at the cleaning station. If supplies are low, employees should contact their supervisor.
- e. Maintenance and Inspection
- i. Each employee issued a respirator shall inspect the respirator prior to each use to ensure that it is in good condition. c
 - ii. Respirators are to be properly maintained at all times in order to ensure that they function properly and adequately protect the employee.

⁵ See Appendix F for cleaning procedures detailed in 29 CFR 1910.134, Appendix B-2

⁶ DRI currently has no air supplied respirators (SARs) or respirator systems.

Desert Research Institute Respiratory Protection Program

Maintenance involves a thorough visual inspection for cleanliness and defects.

- iii. Worn or deteriorated parts will be replaced prior to use. No components will be replaced or repairs made beyond those recommended by the manufacturer.
 - iv. Repairs to regulators or alarms of atmosphere-supplying respirators will be conducted by the manufacturer.
 - v. The following checklist will be used when inspecting respirators:
 - Facepiece: cracks, tears, or holes; facemask distortion; cracked or loose lenses/face shield.
 - Head straps: breaks or tears; broken buckles; rigid or worn.
 - Valves: residue or dirt; cracks or tears in valve material.
 - Filters/Cartridges: approval designation; gaskets; cracks or dents in housing; proper cartridge for hazard.
 - Air Supply Systems^{6 (page 10)}: breathing air quality/grade; condition of supply hoses; hose connections; settings on regulators and valves.
 - vi. Employees are permitted to leave their work area to perform limited maintenance (replace the filter, cartridge or canister, etc., if they detect vapor or gas breakthrough or leakage in the facepiece or if they detect any other damage to the respirator or its components) in a designated area that is free of respiratory hazards.
- f. Cartridge Change Schedule
- i. Employees wearing APRs or PAPRs with HEPA filters for protection against particulates shall change the cartridges on their respirators based on the manufacturer's recommendations or when they first begin to experience difficulty breathing (i.e., resistance) while wearing their masks.
 - ii. When an APR is selected for protection against gases and vapors a system must be in effect that will reliably warn respirator wearers of contaminant breakthrough. DRI will use the following systems:
 - Respirators equipped with an end of life indicator (ESLI) certified by NIOSH for the contaminant, or

Desert Research Institute Respiratory Protection Program

- An established and enforced cartridge/canister change-out schedule that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life.
- iii. Disposable filtering facepieces (dust masks) shall not be worn more than 8 hours. Depending on the usage, more frequent changing might be necessary.

g. Storage

- i. Respirators must be stored in a clean, dry area, protected against damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals and in accordance with the manufacturer's recommendations. The facepiece and exhalation valve must be stored in a manner that will prevent deformation. Each respirator should be positioned so that it retains its natural configuration.
- ii. Each employee will clean and inspect their own APR in accordance with the provisions of this Program and will store their respirator in a plastic bag. Employees will have their name on the bag and that bag will only be used to store that employee's respirator.
- iii. Departments will store their supply of respirators and respirator components in their original manufacturer's packaging.
- iv. Respirators intended for emergency use must be kept accessible to the work area, but not in an area that might itself be involved in the emergency because such an area may become contaminated or inaccessible.

5. Defective Respirators

- i. Respirators that are defective or have defective parts shall be taken out of service immediately.
- ii. If, during an inspection, an employee discovers a defect in a respirator, they are to notify their supervisor.
- iii. Supervisors, with the assistance of EH&S, will decide whether to:
 - Temporarily take the respirator out of service until it can be repaired.

Desert Research Institute Respiratory Protection Program

- Fix the problem on the spot.
- Dispose of the respirator due to an irreparable problem or defect.

V. Training of Employees

- A. EH&S will provide training to respirator users and their supervisors. Employees will be trained prior to using a respirator in the workplace. Supervisors will also be trained prior to using a respirator in the workplace or prior to supervising employees that must wear respirators.
- B. Respiratory protection training will cover the following topics:
1. Potential hazards of respirable contaminants encountered at DRI and their health effects.
 2. Description of the types of respiratory protection available and the limitations of each type.
 3. Cleaning and storage methods to employ.
 4. Inspection and maintenance procedures.
 5. Medical signs and symptoms that may limit or prevent the effective use of respirators.
 6. The general requirements of the OSHA Respiratory Protection Standard.
 7. Fit testing, which includes respirator donning and user seal (fit) checks, including demonstration and practice
- C. Employees will be retrained annually and when the following occur:
1. Changes in the workplace or the type of respirator render previous training obsolete;
 2. Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or
 3. A situation arises in which retraining appears necessary to ensure safe respirator use.
- D. Employees must demonstrate their understanding of the topics covered in the training and fit testing through hands-on exercises and a written test.

Desert Research Institute Respiratory Protection Program

- E. EH&S will document respirator training. The documentation will include the type, model, and size of respirator for which each employee has been trained and fit tested.

VI. Program Evaluation

- A. EH&S will conduct periodic evaluation of the workplace to ensure that the provisions of this Program are being implemented. The evaluation can include regular consultation with the employees who use respirators and their supervisors, site inspections, air monitoring and a review of records.
- B. EH&S shall conduct an annual evaluation of the Program and make revisions as necessary.

VII. Documentation and Recordkeeping

- A. The DRI Respiratory Protection Program is posted on the DRI EH&S Occupational Safety page at <http://www.dri.edu/ehs-programs/occupational-safety>. PIs and Supervisors of employees required to use respiratory protection are encouraged to download a copy of the Program so it is readily available in the affected work area and available to all employees who wish to review it.
- B. A hard copy of the Program and the OSHA respiratory protection standard is kept on file in the EH&S Offices.
- C. EH&S maintains copies of training and fit test records. These records are updated as new employees are trained, as existing employees receive refresher training, and as new fit tests are conducted.
- D. The completed medical questionnaire and the physician's documented findings are confidential and will be maintained at the Business Center North Risk Management office. DRI EH&S will retain only the physician's written recommendation regarding each employee's ability to wear a respirator.

VIII. References (checked and updated Jan 2014)

- A. Major Requirements of OSHA's Respiratory Protection Standard, 29 CFR 1910.134, (December 2006),
http://www.osha.gov/dte/library/respirators/major_requirements.html
- B. NIOSH Guide to the Selection and Use of Particulate Respirators Certified Under 42 CFR 84, NIOSH Publication No. 96-101, (January 1996),
<http://www.cdc.gov/niosh/docs/96-101/>
- C. NIOSH Respirator Selection Logic 2004, NIOSH Publication No. 2005-100,
<http://www.cdc.gov/niosh/docs/2005-100/pdfs/05-100.pdf>

Desert Research Institute Respiratory Protection Program

- E. OSHA Bulletin: General Respiratory Protection Guidance for Employers and Workers, http://www.osha.gov/dts/shib/respiratory_protection.pdf
- F. OSHA's Respirator Cartridge Change Schedule e-tool, http://www.osha.gov/SLTC/etools/respiratory/change_schedule.html

DRI Respiratory Protection Program

Appendix A - Respirator Selection Guide¹

Hazard

Respirator

*Immediately dangerous to life or health (IDLH)**

<p>Oxygen deficiency</p> <p>Gas, vapor contaminants and other highly toxic air contaminants</p>	<p>Full-facepiece, pressure demand SCBA certified for a minimum service life of 30 minutes.</p> <p>A combination full-facepiece, pressure-demand SAR with an auxiliary self-contained air supply.</p>
<p>Contaminated atmospheres —for escape</p>	<p>Positive-pressure SCBA.</p> <p>Gas mask.</p> <p>Combination positive-pressure SAR with escape SCBA.</p>

* “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.

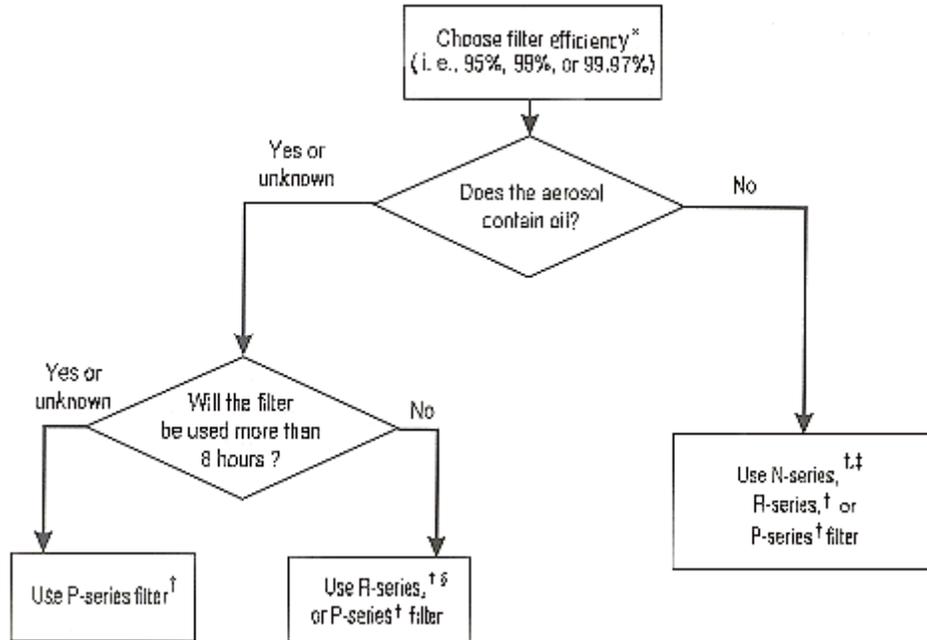
Not immediately dangerous to life or health

<p>Gas and vapor contaminants</p>	<p>Positive-pressure SAR.</p> <p>Gas mask.</p> <p>Chemical-cartridge or canister respirator.</p>
<p>Particulate contaminants</p>	<p>Positive-pressure SAR including abrasive blasting respirator.</p> <p>Powered air-purifying respirator equipped with high-efficiency filters.</p> <p>Any air-purifying respirator with a specific particulate filter.</p>
<p>Gaseous and particulate contaminants</p>	<p>Positive-pressure supplied respirator.</p> <p>Gas mask.</p> <p>Chemical-cartridge respirator with mechanical filters.</p>
<p>Smoke and other fire-related contaminants</p>	<p>Positive-pressure SCBA.</p>

¹ Taken from Respiratory Protection, OSHA 3079, 2002 (revised) (See Section VIII.E for the URL of the OSHA Bulletin.)

DRI Respiratory Protection Program

Appendix B - NIOSH Flow Chart for Selecting Part 84 Particulate Filters S⁸



*The higher the filter efficiency, the lower the filter leakage.

[†]Limited by considerations of hygiene, damage, and breathing resistance.

[‡]High (200 mg) filter loading in the certification test is intended to address the potential for filter efficiency degradation by solid or water-based (e.g., non-oil) aerosols in the workplace. Accordingly, there is no recommended service time in most workplace settings. However, in dirty workplaces (high aerosol concentrations), service time should only be extended beyond 8 hours of use (continuous or intermittent) by performing an evaluation in specific workplace settings that demonstrates (a) that extended use will not degrade the filter efficiency below the certified efficiency level, or (b) that the total mass loading of the filter is less than 200 mg (100 mg per filter for dual filter respirators).

[§]No specific service time limit when oil aerosols are not present. In the presence of oil aerosols, service time may be extended beyond 8 hours of use (continuous or intermittent) by demonstrating (a) that extended use will not degrade the filter efficiency below the certified efficiency level, or (b) that the total mass loading of the filter is less than 200 mg (100 mg per filter for dual-filter respirators).

This page was last updated on April 9, 1996

⁸ See Section VIII.B for the URL of complete document.

DRI Respiratory Protection Program

Appendix C - Appendix B-1 to § 1910.134: User Seal Check Procedures (Mandatory)

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 in this appendix, 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. Facepiece Positive and/or Negative Pressure Checks

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

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

II. Manufacturer's Recommended User Seal Check Procedures

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

[63 FR 1152, Jan

DRI Respiratory Protection Program

Appendix D - Voluntary Use of Respirators

This appendix is provided for those individuals who wish to wear respiratory protection, but are not required to do so under the OSHA. The conditions do not warrant the use of a respirator and the use is for nuisance reasons.

Appendix D to Sec. 1910.134 (Mandatory) 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, 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 and care, and warnings regarding the respirators 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.

[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]

Volunteer Respirator User: _____

Date: _____

EH&S Representative: _____

Date: _____

DRI Respiratory Protection Program

Appendix E - Qualitative Fit Test Certification Form

Name: _____ DRI ID #: _____ Date: ____ / ____ / ____

Ht: _____ inches Wt: _____ lbs. Eyeglasses? Yes No

Other characteristics: dentures, cosmetic surgery, etc. (explain):

Date of Medical Exam: ____ / ____ / ____ Results on file? Yes No Resp. Type: _____

Mfg.: _____ Model: _____ Size: _____ NIOSH App. #: _____

Test Procedure	Reaction
1. Breathe normally.	_____
2. Breathe deeply and regularly.	_____
3. Turn head completely from side to side. Inhale on each side. Do not bump respirator on shoulders.	_____
4. Nod head all the way up and down. Inhale while Head is turned up. Do not bump respirator on chest.	_____
5. Speak loudly and slowly and repeat after me as I read the "Rainbow Passage" from OSHA: "When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above. And its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow." _____	_____
6. Jogging in place.	_____
7. Breathe normally.	_____

Test Type: _____ Qualitative _____ Quantitative Test Agent Used: _____

How comfortable is the respirator? _____ Very Comfortable _____ Tolerable _____ Uncomfortable

Sensitivity check: Reaction Yes No

Comments:

Employee Signature: _____ Division: _____

Date of Test: _____

Test Administered by: _____

DRI Respiratory Protection Program

Appendix F - Appendix B-2 to § 1910.134: Respirator Cleaning Procedures (Mandatory)

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in Appendix B- 2. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix B-2, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

I. 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. 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. Components should be hand-dried with a clean lint-free cloth or air-dried.

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

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

[63 FR 1152, Jan. 8, 1998]