



UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
PSC BOX 20004  
CAMP LEJEUNE, NORTH CAROLINA 28542-0004

BO 6260.5B  
BISS/SAFE

**AUG 19 2004**

BASE ORDER 6260.5B

From: Commanding General  
To: Distribution List

Subj: RESPIRATORY PROTECTION PROGRAM

Ref: (a) 29 CFR 1910.134  
(b) OPNAVINST 5100.23F  
(c) NAVENVIRHLTHCEN Technical Manual, Industrial Hygiene  
Field Operations Manual, latest rev  
(d) DoDINST 6055 (NOTAL)  
(e) MCO P5100.8G  
(f) ANSI Z88.2-1992

Encl: (1) Worksite Standing Operating Procedures  
(2) Respiratory Protection Program Manager Appointment  
Letter  
(3) Respirator Selection Criteria  
(4) Respirator Maintenance  
(5) Respirator Inspection Procedures  
(6) Respirator Training, Fit Testing and Medical  
Clearance Record  
(7) Training  
(8) Fit Testing  
(9) Annual Respiratory Protection Program Audit  
(10) Weekly Respirator Inspections  
(11) Respiratory Protection Program Site Evaluation  
(12) Respirator Qualification Cards  
(13) Appendix D, 29 CFR 1910.134  
(14) Respirator Cartridge Change Out Schedules  
(15) Warning Signs of Respirator Failure  
(16) Cartridge and Filter Color Coding Chart  
(17) Industrial Hygiene Voluntary Respirator Use Protocol  
and Card

1. Situation. To establish a respiratory protection program at Marine Corps Base (MCB), Camp Lejeune, as required by references (a) and (b).

2. Cancellation. BO 6260.5A.

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3. Mission. Marine Corps Base, Camp Lejeune's mission is to provide a safe and healthful work environment, in compliance with all Navy, Marine Corps, and federal standards. To protect employees from inhalation hazards produced during worksite operations, engineering controls will be used whenever possible to control air contaminants at their source of generation.

4. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent

(a) This command has made a commitment to establish and maintain a respiratory protection program to protect employees where respirators are used:

1 As an interim measure until proper engineering controls can be installed.

2 Where engineering controls are not feasible.

3 Where emergency respirators are required.

4 Where respiratory protection must be worn in addition to engineering controls.

(2) Concept of Operation

(a) The respiratory protection program will include written Standing Operating Procedures (SOP's) for hazard assessment; respirator selection and assignment; cartridge change out schedules; fit testing; medical surveillance; equipment cleaning, storage, inspection and maintenance, and program evaluation.

(b) Standing Operating Procedures will be developed for the specific respiratory protection requirements of each shop. Shop SOP's will be posted in the work areas and will include as a minimum: a summary of the command respiratory protection program Standing Operating Procedures (see Appendix A of enclosure (1)); shop-specific details concerning respirator selection, maintenance and inspection procedures (Appendices B through E of enclosure (1)); breathing-air quality, if applicable (Appendices F and G of enclosure (1), and emergency/rescue guidance and respirator cartridge change out schedules as

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appropriate (Appendix J of enclosure (1) and enclosure (14)).

b. Subordinate Element Mission

(1) Unit Commanders. Unit commanders are responsible for establishing a respiratory protection program and for appointing a qualified unit respiratory protection program manager (RPPM). (Enclosure (2) is a sample appointment letter.)

(2) Commanding Officer, Naval Hospital. The Commanding Officer, Naval Hospital is required by reference (b) to provide the following services:

(a) Medically evaluate personnel identified to wear respiratory protection. The unit medical department or the Occupational Health Clinic either provides this.

(b) Issue "Respiratory Protection Program Qualification and Certification Cards", enclosure (12), for individuals who pass the respirator user's medical evaluation. The overseeing unit RPPM performing the fit testing and training will complete the certification data on the opposite side of the card and issue to the individual who successfully completes all program requirements.

(c) In support of the RPPM, Industrial Hygiene (IH) will:

1 Provide an evaluation of respiratory hazards.

2 Determine the selection and use of approved/certified respiratory protective equipment.

3 Provide unit commanders with an annual written evaluation of the effectiveness of the respirator program.

4 Assist unit commanders with RPPM support during the interim of hazard identification and the assignment and training of a command/unit RPPM.

(3) Assistant Chief of Staff, Installations and Environment (I&E)

(a) When feasible, eliminate or reduce airborne

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environmental contaminants in the workplace by installing the proper engineering controls.

(b) With the Industrial Hygiene Branch and the Base Safety Office, coordinate the review of engineering design plans and workplace deficiencies submitted for the Navy Occupational Safety and Health (NAVOSH) Deficiency Abatement Program as provided for in reference (e).

(4) Assistant Chief of Staff, Business and Logistics Support Department (AC/S, BLSD). Restrict the sale of respirators to qualified/certified personnel.

(5) Unit Respiratory Protection Program Manager. The unit RPPM must complete and pass one of the following training courses as specified in paragraph 1512 of reference (b): the OSHA Training Institute Course 222 or 222A, National Institute for Occupational Safety and Health (NIOSH) Course 593, the Navy RPPM Course, Respirator Protection Management (A-493-0072).

(a) Administration of this program is the responsibility of the unit RPPM. These responsibilities are described in enclosures (1) through (17).

(b) The specific duties of the unit program manager include, but are not limited to:

1 Selecting and purchasing appropriate, approved respiratory protection based on industrial hygiene survey reports, references (a), (b), and (c), and available literature.

2 Developing respirator cartridge change out schedules.

3 Training personnel in the proper use, limitations and maintenance of respirators.

4 Conducting respirator fit testing when initially issued and annual refresher training.

5 Developing procedures for regular cleaning and inspection.

6 Designating appropriate storage locations and procedures.

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7 Developing procedures for inventory control.

8 Establishing a medical surveillance program based on industrial hygiene surveys and medical recommendations by the Occupational Health Clinic.

9 Annually evaluating (auditing) and modifying the written respirator program and SOP's.

(6) Shop Supervisors. Shop supervisors must have a thorough understanding of every aspect of the command SOP, reference (a), (b), and Chapter 15 of reference(e). They will ensure that:

(a) Respirators are properly worn and maintained by Shop personnel.

(b) Where applicable, a copy of the unit SOP is kept in each Shop office.

(7) Employees. Employees are responsible for the following:

(a) Obtaining the respiratory protection equipment selected by the unit RPPM based upon guidance from Base Safety Division and Industrial Hygiene Branch. Such equipment will be used in accordance with the instructions and training received.

(b) Inspecting the respiratory protection equipment before and after each use as described in enclosure (5) and returning the equipment to the respirator storage area when its use is no longer required or at the end of the day.

(c) Performing positive and negative user seal checks on tight fitting respirators before every use per page 1-I-3 of Appendix I of enclosure (1).

(d) Reporting any respirator malfunction to the immediate supervisor as described in enclosure (15). If the respirator needs repaired or replaced, it is to be returned to the unit RPPM.

(e) Maintaining and storing individual's respirators according to procedures established in this instruction, and guarding against damage to or loss of respiratory protection equipment.

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(f) Carrying the Respiratory Protection Program Qualification and Certification Card while working in a hazardous environment requiring respiratory protection. A copy of the Card will also be readily available in the employee's work center.

(8) Base Safety Division's Respiratory Protection Program Manager. The Base Safety RPPM is responsible for:

(a) Administering the Respiratory Protection Program through annual inspection and routine surveillance and documenting finalized compliance reports.

(b) Coordinating with Industrial Hygiene and Occupational Health Clinic the maintenance of a current listing of qualified personnel and respirators.

(9) Civilian Human Resources Office, East. Coordinate with the Commanding Officer, Naval Hospital (Occupational Health Clinic) to ensure that pre-placement medical evaluations of Civil Service personnel wearing respiratory protective equipment are performed as required in references (a), (b), (c), (d) and (e).

(10) Public Works Officer/Officer-in-Charge of Construction. Ensure contractor personnel are outfitted with and utilize, where necessary, NIOSH- and Mine Safety and Health Administration (MSHA)-approved respiratory protection and comply with references (a) and (f).

5. Administration and Logistics. Respiratory Protection Program Elements.

a. Respirator Selection

(1) Respirator selection is based on the hazards to which employees are exposed, as determined by an industrial hygiene survey. Respirators are selected by the unit RPPM using the guidelines in enclosures (3) and (16).

(2) Activities will only use respirators that are currently approved by NIOSH or MSHA.

b. Cleaning, Disinfecting, Issuing, and Inventory Control. Procedures for cleaning, disinfecting, issuing and inventorying respirators are in enclosure (4).

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c. Inspection, Repair and Storage

(1) Inspection. The unit RPPM or supervisor will ensure respirator inspections are performed in accordance with Unit SOP(s) and enclosure (5).

(2) Repair. The unit RPPM will ensure that employees are trained to identify the need for respirator repairs. No attempts will be made to replace components or make adjustments beyond the recommendations of the manufacturer. All alarms, regulators, repairs reduction and admission valves must be returned to the manufacturer or to a factory certified, trained technician for adjustment or repair.

(3) Storage. Employees will store their respirators in an individual clean plastic bag in their locker or other designated storage space. Loose storage in improper undesignated areas is prohibited. Respirators will be laid flat in a natural position and protected from sunlight, chemicals or excessive temperatures. Emergency respirators will be stored in the unit location specified in the unit SOP. (See Appendix D of enclosure (1)).

(4) Emergency Respirators and Self Contained Breathing Apparatus (SCBA). Emergency respirators and SCBA's will be cleaned and inspected after each use according to the manufacturer's instructions (see Appendix E of enclosure(1)). Emergency respirators and SCBA's will be inspected monthly; a written record (Appendix D of enclosure (1)) will be maintained with the respirator.

d. Breathing Air Quality. Units that have sources of compressed breathing air for atmosphere supplying respirators shall be tested quarterly to ensure that air quality meets the minimum Grade D requirements of the Compressed Gas Association Commodity Specification for Air, Pamphlet G-7.1-1997.

(1) For a complete listing of breathing air test kits and for an example of an air quality testing SOP go to [http://www-nehc.med.navy.mil/ih/Respirator/Resp\\_index.htm](http://www-nehc.med.navy.mil/ih/Respirator/Resp_index.htm). Results of these tests will be recorded in Appendix F of enclosure (1) for each unit/shop using breathing air compressors.

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(2) The unit RPPM is responsible for recording the breathing air test results and ensuring that the air compressor Carbon Monoxide (CO) alarm systems, high temperature alarms, sorbent beds and filters are maintained and inspected before each use; that CO monitor and alarm systems are calibrated per manufacturer's recommendations, and that the inspection results are recorded on Appendix G of enclosure (1). Current copies of Appendices F and G of enclosure (1) will be kept at the applicable unit/shop offices.

e. Medical Evaluation. The Occupational Health Clinic or unit medical department will make all decisions regarding the medical evaluation and determination of an employee's/member's physiological and psychological ability to wear a respirator.

(1) Each employee/member needs to be medically qualified by the Occupational Health Clinic or unit medical department before the initial fit testing.

(2) Unit/Shop supervisors will complete the top portion of the Medical Clearance Form (Appendix H of enclosure (1)); unit/shop personnel will bring the Form with them to their respirator physical at the Occupational Health Clinic or unit medical department. Upon completion of the respirator physical, attending medical treatment personnel will complete the Form, which will be hand carried by the unit/shop personnel to the unit/shop supervisor, who will give a copy to the unit RPPM.

(3) The unit RPPM will record the medical clearance information on the employee's record (enclosure (6)).

f. Training. Respirator training requirements are specified in enclosure (7). Shop SOP's for training are in Appendix I of enclosure (1).

g. Fit Testing. Fit testing procedures will be performed as stated in enclosure (8). Fit test operator training and evaluation will be conducted per enclosures (8-3) and (8-4).

h. Workplace Surveillance and Program Evaluation

(1) Workplace Surveillance. Personal air samples must be collected to determine eight-hour time weighted average (TWA) exposures and short-term exposures. Industrial hygienists perform air sampling, the results of which will be made known to employees within five days after receipt by this command.

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(a) Unit/Shop supervisors will immediately contact the overseeing industrial hygienist when there are any operational changes. The industrial hygienist will reevaluate the process and collect additional air samples if necessary.

(b) Unit/Shop supervisors will immediately notify the overseeing industrial hygienist when ventilation systems are installed or changes to the systems are implemented. The industrial hygienist will evaluate the systems and reevaluate the requirements for respiratory protection.

(2) Program Evaluation. The unit RPPM will:

(a) Conduct an annual audit of the respirator program. Enclosure (9) is provided as guidance.

(b) Conduct random, not less than monthly, inspections (enclosure (10)) of work areas where respirators are worn to ensure that the correct respirators are being used, that they are being worn properly, and that they are in good working condition. The unit RPPM will maintain a record of inspection dates and findings using enclosure (11) and ensure that copies are provided to the appropriate unit/shop supervisors.

(c) Per paragraph 1513.b(2)(a) of reference (b), the Occupational Health Clinic in agreement with Industrial Hygiene will provide a written evaluation on the effectiveness of the BO respirator program to the program manager based on occupational medicine and industrial hygiene reviews.

(d) The unit RPPM will act immediately to correct all faults found in the program and/or procedures.

i. Record Keeping. The unit RPPM will document respirator fit testing and include the type of respirator (make, model, style and size), method of test and test results, strip chart recording or other recording of test results for quantitative fit test, test date and the name of the instructor/fit tester, medical clearance, and training per 15-3 of reference (b) (enclosure (6)). Completed Medical Clearance Forms (Appendix H of enclosure (1)) and printouts from quantitative fit testing must be attached to enclosure (6). Employees will be issued a Respiratory Protection Program Qualification and Certification Card (enclosure (12)) indicating which model and size respirator(s) they are qualified to wear. This Card must be presented at the time the respirator is issued. Employees will

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immediately report lost or stolen Cards to the unit RPPM so that a replacement can be issued.

j. Facial Hair, Contact Lenses, and Voluntary Use of Respirators

(1) Facial Hair. Per paragraph 5.a.(1)(b) of reference (c), no respiratory protection equipment, except positive pressure supplied-air hoods, or loose fitting powered air purifying respirators where appropriate, will be worn by personnel when conditions such as beards, sideburns, etc., may prevent a good face seal.

(2) Contact Lenses and Spectacle Kits. As stated in paragraph 1511.i. of reference (b), contact lenses may be worn with respiratory protection in contaminated atmospheres. If wearing corrective eyeglasses, lenses will meet the ANSI Standard Z87.1 requirements. Spectacle kits will be provided for personnel needing vision correction who are required to wear full-face respirators.

(3) Voluntary Use of Respirators. Per paragraph 1503.g. and page 20 of the Glossary in reference (b), the unit RPPM may issue NIOSH-approved N-95 filtering face piece respirators for voluntary use. Voluntary respirator use is defined as personnel choosing to wear respirators when they are not required to control exposures or when respirators are not required by this command and Naval Hospital Industrial Hygiene voluntary respirator use protocol (enclosure (17)). Voluntary use respirators can be issued without fit testing and medical examination. Issuance of these respirators must be under the control of the unit RPPM. Voluntary respirator users will be trained annually on the limitations stated on the respirator approval label and the information contained in Appendix D of 29CFR 1910.134 (enclosure (13)). The unit RPPM must ensure these respirators are not dirty or contaminated and that they do not interfere with working safely. All other respirator usage requires enrollment in the complete respirator program. National Institute for Occupational Safety and Health-approved respirators must be selected appropriately for the perceived inhalation hazard.

k. Respirator Cartridge Change Out Schedules. Reference (a) no longer allows reliance on odor thresholds and other warning properties as the sole basis for determining if an air-purifying respirator will afford adequate protection against

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exposure to gas and vapor contaminants. Reference (a) requires that change out schedules for chemical cartridges are based on objective information or data that will ensure that cartridges are changed before the end of their service life. The preamble to reference (a) states that the basis for cartridge change out schedules should ideally be based on tests of breakthrough studies that are conducted under worst-case conditions of contaminant concentration, humidity, temperature, and breathing rate. Standing Operating Procedures for establishing, verifying, and implementing respirator cartridge change out schedules are in enclosure (14). Chemical cartridge air-purifying respirators may be used (up to their maximum use concentration) for protection against substances without good warning properties as long as a cartridge change out schedule is developed and implemented.

6. Command and Signal

- a. Signal. This Order is effective the date signed.
- b. Command

(1) This Order includes, but is not limited to, a written Respiratory Protection Program for individual Marine Corps Base, Camp Lejeune work centers and shops and is offered as a guide to tenant commands for writing independent command exposure control plans.

(2) This Order is applicable to the Marine Corps Reserve.

(3) This Order has been coordinated with and concurred in by the Commanding Generals, II Marine Expeditionary Force, 2D Marine Division, and 2D Force Service Support Group, and Commanding Officers, Marine Corps Air Station, New River, Naval Hospital, and Naval Dental Clinics.

  
W. A. MEIER  
Chief of Staff

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WORKSITE STANDING OPERATING PROCEDURES

- Appendix A - Respirator Standing Operating Procedure
- Appendix B - Respirator Selection Criteria
- Appendix C - Respirator Maintenance
- Appendix D - Emergency Use Respirators - Inspection Record
- Appendix E - Emergency Use Respirators - Manufacturer's Inspection Instructions
- Appendix F - Compressor Breathing Air Quality Report and Results of Quarterly Air Quality Testing of Breathing Air Compressors
- Appendix G - Inspection of Breathing Air Compressors - Carbon Monoxide Monitor, Carbon Monoxide and High Temperature Alarms, Filters, Desiccant and Sorbent Beds
- Appendix H - Request for Medical Clearance for Respiratory Use Questionnaire
- Appendix I - Respirator Training and User Seal Checks
- Appendix J - Cartridge Change Out Schedule Worksheet

ENCLOSURE (1)

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## RESPIRATOR STANDING OPERATING PROCEDURE (SOP)

SHOP \_\_\_\_\_  
(Number/Name)

1. \_\_\_\_\_ [Type of respirator] respirators were chosen as protection against \_\_\_\_\_ [contaminant/hazard] during the \_\_\_\_\_ [type of operation] operation. Appendix B of enclosure (1) contains the rationale for selecting the respirators used in this operation.
2. The unit respiratory protection program manager (RPPM) will conduct inspections of this Shop to ensure that the correct respirators are being used; that they are being worn properly, and that they are in good working condition. The RPPM's written record of inspection dates and findings will be maintained with the Shop SOP.
3. Before wearing respirators, all Shop \_\_\_\_\_ [number/name] personnel must be medically qualified, fit tested, and trained. Shop \_\_\_\_\_ [number/name] personnel are responsible for notifying the unit RPPM of any changes listed below or other circumstances that might interfere with the facial seal of the respirator.
  - a. Weight change of 20 pounds.
  - b. Facial scarring in area of face seal.
  - c. Any dental changes.
  - d. Any reconstructive surgery or cosmetic surgery.

Employees are responsible for properly wearing and maintaining their respirator. Appendix C of enclosure (1) contains respirator maintenance procedures.

4. If airline respirators are used, refer to the Shop's records (Appendix F, 1-F-1, and G) to ensure that grade D breathing air quality and compressor integrity have been maintained.

5. The unit RPPM is \_\_\_\_\_ [RPPM's name], who is located in Bldg \_\_\_\_\_ [number] and can be reached at \_\_\_\_\_ [telephone number and E-Mail address].

Appendix A to  
ENCLOSURE (1)

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## RESPIRATOR SELECTION CRITERIA

SHOP \_\_\_\_\_  
[number/name]

1. Air sampling has revealed \_\_\_\_\_ [contaminant/hazard] concentrations of \_\_\_\_\_ [number] times the \_\_\_\_\_ [number] (mg/m<sup>3</sup> or ppm) OSHA permissible exposure limit during operation \_\_\_\_\_ [type of operation].

2. \_\_\_\_\_ [Name of contaminant/hazard] causes \_\_\_\_\_ [biological effect]. The physical and chemical properties of \_\_\_\_\_ [contaminant/hazard] include incompatibilities with \_\_\_\_\_ [name of incompatible chemicals].

3. This particular hazard will be corrected by implementing appropriate engineering controls, which will include an exhaust ventilation system. Until the system can be installed, respiratory protective equipment will be used as an interim measure.

-- Or: Engineering controls are not feasible and respiratory protection is required during this operation.

-- Or: Despite engineering controls, respiratory protection is still required during this operation.)

4. For less than Immediately Dangerous to Life and Health (IDLH) or non-oxygen deficient atmospheres, the minimum protection factor needed will be calculated by dividing the time-weighted average (TWA) exposure concentration (TWA concentration of contaminant/hazard) by the permissible exposure limit (PEL) for the contaminant \_\_\_\_\_ [value of the PEL]. For contaminants with a ceiling limit, divide the contaminant concentration by the ceiling limit. The required protection factor is \_\_\_\_\_ [value of protection factor].

5. Respirators approved by either NIOSH or NIOSH/MSHA must be used. \_\_\_\_\_ [Class of respirators] respirators were selected based on their assigned protection factor of \_\_\_\_\_ [number] as set forth in Table 9.1 of reference (c). This will provide protection up to \_\_\_\_\_ [number] times the PEL. \_\_\_\_\_ [Name of manufacturer] and/or \_\_\_\_\_

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\_\_\_\_\_ [name of manufacturer] respirators were selected based on successful employee fit testing. The respirators available to employees for operation \_\_\_\_\_ [type of operation] are as follows:

Name of Manufacturer	Type of Respirator	TC Number	Model Number	Check One		
				Small	Medium	Large
<i>EXAMPLE:</i> North	N95	84A-1099	7706N95		X	

# Personal Protective Equipment Respirator Selection Guide

All respirators must be approved by the National Institute for Occupational Safety and Health (NIOSH) or an equivalent.

		Types of Respirators											
		Air Purifying						Air Supplying					
		Disposable		Reusable Half-face and Full-face		Powered Air Purifying Respirator (PAPR)		Airline (5)		Self-contained Breathing Apparatus (SCBA)			
													
Activities/Contaminants	Hazards	Efficiency (%)			Chemical cartridges	Particulate cartridges efficiency (%)			Chemical cartridges	Particulate cartridges efficiency (%)			
		95	99	100		95	99	100					100
Particulates	Grinding, sanding, woodworking, general dust, ...	✓ (1)	✓ (1)			✓ (1)	✓ (1)						
	Lead, cadmium, arsenic, ...			✓ (1)				✓ (1)					
	Asbestos removal (7)	Class 1			✓ (1)				✓ (1)				
		Class 2							✓ (1)				
		Class 3								✓ (1)	✓		
Welding, cutting, brazing	Welding fumes	✓	✓	✓		✓	✓	✓					
Microbiols removal (4)	Mold and bacteria	✓	✓	✓		✓ (3)	✓ (3)	✓ (3)		✓ (3)			
Gases and Vapours	Solvent, organic vapour, paint, thinners, Formaldehyde, ... (8)				✓ (2)				✓ (2)		✓		
	Ammonia, acid gases, ...				✓ (9)						✓	✓	
	Autobody paint										✓		
	Confined space rescue or areas where the contaminants have not been measured	Unknown concentration of contaminants or immediately dangerous to life and health atmosphere									✓ (6)	✓	

- 1) Respirators are available in the N, R or P classes. N means no oil mist resistance, R means some oil resistance and P means oil mist resistant.
- 2) Chemical cartridges may be fitted with dust pre-filters when particulates are present.
- 3) Acid gas cartridges may be used in addition to particulate cartridges, if a bleach is used as a disinfectant.
- 4) The required protection depends on the extent of the contamination and the nature of the abatement project.
- 5) Airline systems air quality has to be tested every 6 months to ensure it meets CSA Standard CAN3-Z180.1.
- 6) Requires an emergency escape cylinder.
- 7) As described by the Code of Practice "A Code of Practice for Working with Materials Containing Asbestos in New Brunswick".
- 8) The required cartridges will differ depending on the airborne contaminants.
- 9) A full-face respirator is required at high concentrations.

This chart is to be used as a guide and represents the most common applications where respirators are used.

The respirators that are selected may vary depending on the work conditions.

Respirators should only be used where engineering controls are not possible or have failed to adequately reduce worker exposure to contaminants.

The airborne contaminants must be identified and measured before selecting the best respirator.

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## RESPIRATOR MAINTENANCE

SHOP \_\_\_\_\_  
[number/name]1. General

a. The supervisor or unit RPPM inspects respirators in Building \_\_\_\_\_ [number] while disassembling the respirators for cleaning.

b. Employees are also responsible for inspecting their respirators and notifying the respirator issuer (unit RPPM) of any defects.

c. Employees must perform positive and negative user seal checks on tight fitting respirators before each use. Those respirators in which user seal checks cannot be performed must not be worn. (See Appendix 1-I-4 of enclosure (1).)

d. Respirators will be returned to the supervisor or unit RPPM in Building \_\_\_\_\_ [number] for cleaning and disinfecting according to the schedule indicated by the following code number \_\_\_\_\_ [number].

e. When:                    1 - Daily                    3 - Monthly  
                                  2 - Weekly                    4 - Other

2. Inspection. Respirators used in this Shop will be inspected per enclosure (5).

3. Storage

a. Employees will store their respirator in a clean plastic bag in their locker. Storage in toolboxes is prohibited. The respirator will be laid flat in a natural position and will be protected from sunlight, chemicals or excessive temperatures. Emergency respirators will be stored in the Shop location specified in Appendix D of enclosure (1).

b. Employees must present a valid Respirator Qualification and Certification Card (enclosure 12) when requesting a respirator.

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EMERGENCY USE RESPIRATORS AND/OR  
SELF-CONTAINED BREATHING APPARATUS (SCBA)  
INSPECTION RECORD

SHOP \_\_\_\_\_  
[number/name]

Name of Manufacturer: \_\_\_\_\_

Type of Respirator: \_\_\_\_\_

TC Number: \_\_\_\_\_ Model Number: \_\_\_\_\_

Where emergency respirator will be stored: \_\_\_\_\_

Date	Inspection Findings	Repairs/Comments	Signature

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EMERGENCY USE RESPIRATORS AND/OR  
SELF-CONTAINED BREATHING APPARATUS (SCBA)

MANUFACTURER'S INSPECTION INSTRUCTIONS

SHOP \_\_\_\_\_  
[number/name]

Name of Manufacturer: \_\_\_\_\_

Type of Respirator: \_\_\_\_\_

TC Number: \_\_\_\_\_ Model Number: \_\_\_\_\_

(Attach manufacturer's inspection instructions here.)

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## COMPRESSOR

## BREATHING AIR QUALITY REPORT

Date: \_\_\_\_\_

Compressor Model: \_\_\_\_\_ Serial No.: \_\_\_\_\_

<u>COMPONENT ANALYZED</u>	<u>SPECIFICATION</u>	<u>RESULTS</u>
Oxygen	19.5% - 23.5%	%
Carbon Dioxide	1,000 ppm max	ppm
Carbon Monoxide	10 ppm max	ppm
Oil	5 mg/m3	mg/m3
Water Vapor	18 mg/m3 (24 ppm v/v)	mg/m3 or ppm

*Or moisture content corresponding to the dew point at 1 atm that is at least 10°F lower than the temperature in which the respirator will be worn (see note 3 Table 1 and Table 3 of CGA G-7.1-1997).*

Odor Not Objectionable

This is to certify that the above referenced sample DOES \_\_\_\_\_ DOES NOT \_\_\_\_\_ meet the Grade D air purity standards for compressed breathing air per CGA G-7.1-1997.

Sample Taken By: \_\_\_\_\_

Next Sample Due On: \_\_\_\_\_

Appendix F to  
ENCLOSURE (1)

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RESULTS OF QUARTERLY AIR QUALITY TESTING OF  
BREATHING AIR COMPRESSORS

SHOP \_\_\_\_\_  
[number/name]

Date	Passed/Failed Grade D Air	Air Line Pressure Measured at Respirator	Signature

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INSPECTION OF BREATHING AIR COMPRESSORS

CARBON MONOXIDE MONITOR,  
CARBON MONOXIDE AND HIGH TEMPERATURE ALARMS,  
FILTERS, DESICCANT AND SORBENT BEDS

SHOP \_\_\_\_\_  
[number/name]

Date	CO/ High Temp Alarm Operational? Calibration?	CO Monitor Reading	Condition of Air Purifiers	Signature

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REQUEST FOR MEDICAL CLEARANCE FOR RESPIRATOR USE QUESTIONNAIRE

SHOP \_\_\_\_\_  
[number/name]

Note: Combine this page with enclosure (6) to provide a complete respirator history record.

Employee:	SSN:	Position:
Supervisor:	Phone:	Code:
Department:		

CHECK BLOCK FOR THE TYPE OF RESPIRATOR/S TO BE USED:	
<input type="checkbox"/> Air Supplied (tight fitting)	<input type="checkbox"/> Air Purified (powered) (tight fitting)
<input type="checkbox"/> Air Supplied (hooded)	<input type="checkbox"/> Air Purified (hooded)
<input type="checkbox"/> Open Circuit SCBA	<input type="checkbox"/> Air Purified (nonpowered) Filtering face piece or elastomeric N, R, P 95, 99, 100 Type of Chemical Cartridge
<input type="checkbox"/> Closed Circuit SCBA	<input type="checkbox"/> Combination Airline/SCBA

WORK EFFORT:	<input type="checkbox"/> Light	<input type="checkbox"/> Moderate	<input type="checkbox"/> Heavy	<input type="checkbox"/> Strenuous
--------------	--------------------------------	-----------------------------------	--------------------------------	------------------------------------

EXTENT OF USAGE	<input type="checkbox"/> On a daily basis
	<input type="checkbox"/> Occasionally, but more than once a week
	<input type="checkbox"/> Rarely, or for emergency situations only

LENGTH OF AVERAGE WORK DAY IN RESPIRATOR: \_\_\_\_\_

SPECIAL WORK CONDITIONS: (i.e., high places, temperature/humidity extremes, hazardous materials, other protective clothing worn, climbing, space restraints, etc.)

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MEDICAL WRITTEN EVALUATION

No restrictions on the respirators checked above
Respirator use with some restrictions
No respirator use allowed
Alternate respirator recommended

COMMENTS/RESTRICTIONS:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

ROUTINE FOLLOW-UP MEDICAL EVALUATION REQUIRED		
(Under 35) 5 Years	(35-45) 2 Years	(Over 45) 1 Year
or		
Due to medical findings, return on (date):		
<i>(Employee has been given a copy of this recommendation.)</i>		

\_\_\_\_\_  
Clinician's Signature

\_\_\_\_\_  
Date

Section 133, 1071-87, 3012, 5031, and 8012, Title 10  
USC & Exec. Order 9397 (Privacy Act of 1974) Apply

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## RESPIRATOR TRAINING

SHOP \_\_\_\_\_  
[number/name]

1. Respirators are required to be worn because the \_\_\_\_\_  
[contaminant] concentration in the work area is above the  
occupational exposure limit (OEL).

2. The contaminant, \_\_\_\_\_, causes \_\_\_\_\_  
\_\_\_\_\_ [biological effects].

3. Respirators are only an interim measure until proper  
ventilation can be installed to capture the contaminant at the  
source of generation (or engineering controls are not feasible  
and respiratory protection is required during this operation, or  
despite engineering controls, respiratory protection is still  
required during this operation.)

4. The contaminant concentration, \_\_\_\_\_,  
is \_\_\_\_\_ [number] to \_\_\_\_\_ [number] times the EL, and the  
respirators were chosen because they provide a protection factor  
that is \_\_\_\_\_ [number] times the OEL.

5. Limitations of different respirators:

a. Air-purifying respirators do not provide protection  
against oxygen deficiency and cannot be worn when there is less  
than 19.5 percent oxygen in the air.

b. Air-purifying respirators cannot be used in IDLH  
atmospheres.

c. Particulate filters remove particles in the air.

(1) "N" series filter respirators cannot be worn in oil  
aerosol atmospheres.

(2) "R" series filter respirators can be worn eight (8)  
hours in oil aerosol atmospheres.

(3) "P" series filter respirators can be worn in aerosol  
atmospheres up to a time set by the respirator manufacturer.

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d. Chemical cartridges remove gases and vapors but will not remove particles. Chemical cartridges have a maximum use concentration that is calculated by multiplying the OEL by the assigned protection of the respirator.

e. Airline respirator hoses are limited to a maximum hose length of 300 feet, but not all airline respirators have been approved for 300 feet of hose (follow manufacture's recommendations). Airline respirators are not approved for IDLH atmospheres. Loss of the breathing air source eliminates any protection to the respirator wearer.

f. Self-contained Breathing Apparatuses are limited by the service time of the air cylinder and the weight of the unit.

6. Explain how to don the respirator, how to maintain and inspect the respirator, and how to perform positive and negative pressure user seal checks according to Appendix 1-I-4 of enclosure (1).

7. Filters should be changed when increased breathing difficulty is first experienced; chemical cartridges must be changed according to the cartridge change out schedule.

a. Explain chemical cartridge change out schedule and breakthrough (smelling the vapor/gas of concern inside the respirator).

b. Give any odor characteristics that may help employees identify when breakthrough occurs, e.g., isoamyl acetate smells like bananas; hydrogen sulfide smells like rotten eggs.

c. Change your cartridge \_\_\_\_\_ [time interval]. Chemical cartridges must be changed if breakthrough is experienced before scheduled change out time.

8. Inform employees what to do in emergency situations.

9. Explain shop-specific respirator program concerning:

a. Communications.

b. Vision.

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- c. Use in excessive heat and cold.
  - d. Immediately Dangerous to Life and Health (IDLH) and oxygen deficient atmospheres.
  - e. Confined spaces.
10. Explain command policies concerning:
- a. Medical evaluation.
  - b. Facial hair.
  - c. Contact lenses.
  - d. Issuance of voluntary use respirators (N 95's).
11. Emergency rescue teams and all personnel required to enter IDLH atmospheres will receive training in the use of the emergency respirators by the manufacturer's technical representatives. A certified trainer will teach those individuals emergency IDLH atmosphere entry procedures and provide emergency practice scenarios.
12. Breathing air from closed-circuit escape only respirators can be very hot and dry. The temperature allowed by the National Institute for Occupational Safety and Health for a 10-minute escape device is 135 degrees F. Breathing this air will be uncomfortable, but is a small trade-off for escaping from an IDLH atmosphere.

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## USER SEAL CHECKS

The user will check the seal of the respirator by using positive and negative pressure. The user checks the seals every time a respirator is donned. Pressure checks are NOT substitutes for quantitative or qualitative fit tests. It is essential to adequately train respirator users to perform these checks. User seal checks should be done according to the manufacturer's recommendations or by using the following procedures:

### 1. Negative Pressure User Seal Check

a. The inlet opening of the respirator's canister(s), cartridge(s), and filter(s) is closed off by covering it with the palm of the hand(s), by squeezing a breathing tube, or blocking its inlet so that it will not allow the passage of air.

b. Wearers are instructed to inhale gently and hold their breath for at least 10 seconds.

c. If the face piece collapses slightly and no inward leakage of air is detected, the respirator has been properly donned and the face piece is not leaking.

### 2. Positive Pressure User Seal Check

a. When the exhalation valve or breathing tube, or both, is closed off, the wearer is instructed to exhale gently.

b. If a slight positive pressure can be built up inside the face piece (e.g., face piece bulges slightly outward) without detecting any outward leakage of air between the sealing surface of the face piece and the wearer's face, the respirator has been properly donned.

c. For some respirators, the test method required is for the respirator wearer to first remove the exhalation valve cover from the respirator and then replace it after completion of the test. These tasks are often difficult to carry out without disturbing the fit of the respirator. The Occupational Safety and Health Administration states in the preamble to reference (a) that there are respirators on which user seal checks cannot be performed. These respirators cannot be used to control exposure.

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## CARTRIDGE CHANGE OUT SCHEDULE WORKSHEET

Operation	
Location	
Respirator Model	
Cartridge	

CHEMICAL	EXPOSURE LIMIT	CONCENTRATION	BOILING POINT*

\*Chemicals with boiling points less than 65° C (145° F) may be desorbed from sorbent during periods of non-use.

OPERATION PARAMETERS	
Frequency Per Week:	Duration of Respirator Wear:
Estimated Work Rate: ( ) Light ( ) Moderate ( ) Heavy	
ENVIRONMENTAL DATA	
Highest Temperature:	Highest Humidity:

Mixture Component	UTL 95%, 95% Concentration (ppm)	Mole Fraction(1)	Cartridge Service Life Calculator Estimated Breakthrough Time For Single Component (Hours)	Breakthrough Time of Components Based on Mixture (Hours)
		0.0		0
		0.0		0
		0.0		0
		0.0		0
		0.0		0
		0.0		0
		0.0		0
		0.0		0
Total ppm	0			

(1) Mole Fraction = ppm contaminant/total ppm of the mixture components

Change Out Schedule Including Safety Factor of 10 Percent:			
Every _____ Hours	After Each Shift	Weekly	Other (specify)

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RESPIRATORY PROTECTION PROGRAM MANAGER APPOINTMENT LETTER

From: Unit Commander, \_\_\_\_\_ [Name of Command]

To: \_\_\_\_\_ [Name of Appointee]

Subj: RESPIRATORY PROTECTION PROGRAM MANAGER APPOINTMENT

Ref: (a) OPNAVINST 5100.23F, Chapter 15

(b) 29 CFR 1910.134

(c) BO 6260.5B

1. As required by reference (a), you are designated as the Unit Respiratory Protection Program Manager (RPPM) for this command.

2. You will be familiar with all of the requirements of reference (a) through (c) and ensure their implementation. Duties include, but are not limited to, respirator selection; cartridge change out schedules; respirator purchase; personnel training and fit testing; and maintenance/revision of command instructions and standing operating procedures for respiratory protection.

3. This appointment remains effective until your detachment or reassignment.

UNIT COMMANDER

From: Appointee

To: Unit Commander

I acknowledge receipt of my appointment as the unit Respiratory Protection Program Manager (RPPM) for \_\_\_\_\_ [unit]. Furthermore, I have read and fully understand the references and my assigned duties.

Signature

Date

ENCLOSURE (2)

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## RESPIRATOR SELECTION CRITERIA

The Assigned Protection factors in Table 9-1 of reference (c) will be used for selecting respirators for protection against hazardous substances and oxygen deficient atmospheres and for providing the necessary criteria to support this selection. Respirators will be NIOSH approved. Respirator selection for the specific types of hazards adheres to the following criteria.

1. Fire brigades must use NIOSH approved full-face pressure demand, self-contained breathing apparatus (SCBA) that meets NFPA 1981 requirements rated for at least 30 minutes.

NOTE: For ships, address use of the oxygen breathing apparatus (OBA) for firefighting, damage control, and firefighting training. Specify that the OBA is military unique and is NOT NIOSH/MSHA approved, nor is it allowed for any other applications except shore-based firefighting training.

2. Respirators used for entry into and escape from oxygen deficient or immediately dangerous to life and health (IDLH) atmosphere must use full face pressure demand SCBA's or combination full face pressure demand airline respirators with auxiliary SCBA.

3. For less than IDLH or non-oxygen deficient atmospheres, the minimum protection factor needed will be calculated by dividing the time-weighted average (TWA) exposure concentration by the permissible exposure limit (PEL) for the contaminant. For contaminants with a ceiling limit, divide the contaminant concentration by the ceiling limit.

a. Select the appropriate class of particulate, gas/vapor, or combination particulate and gas/vapor respirator in Table 1 of reference (c). Make sure that the assigned protection factor is greater than the calculated minimum protection factor.

b. Airline respirators or cartridges with end-of-service-life indicators must be used for gas/vapor contaminants. The end-of-service-life indicators must be visible to the respirator wearer. Alternatively, chemical cartridge change out

ENCLOSURE (3)

BO 6260.5B

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schedule must be established according to enclosure (15). (Air-purifying respirators can be selected for gases or vapors having no warning properties provided a cartridge change out schedule is established and implemented.)

4. Special considerations must be made for escape only respirators, such as the distance to the nearest area with breathable air. (Respirators are selected on the basis of the hazards to which the employees are exposed, as determined by the industrial hygiene surveys. Documentation for the shop specific respirator selection is provided in Appendix B of enclosure (1).

ENCLOSURE (3)

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ASSIGNED PROTECTION FACTORS<sup>1</sup>

ASSIGNED PROTECTION FACTOR (APF)	CLASS OF RESPIRATOR	SOURCES OF APF <sup>2</sup>
5	Filtering face pieces <sup>3</sup>	NIOSH
	Quarter mask respirator	NIOSH
10	Elastomeric <sup>4</sup> half mask respirator with particulate filters and/or chemical cartridges, or combination particulate/chemical cartridge filters	ANSI/ NIOSH
	Supplied-air half mask respirators operated in the demand mode	ANSI/ NIOSH
25	Powered air-purifying respirators equipped with hood or helmet	NIOSH
	Supplied-air respirators equipped with a hood or helmet operated in a continuous flow mode	NIOSH
	Powered air-purifying respirators with a loose fitting face piece <sup>5</sup>	ANSI
50	Air-purifying full face respirator equipped with particulate filters, chemical cartridges or combination particulate/chemical cartridges	NIOSH
	Powered air-purifying full face or half mask respirator with HEPA or P-100 filters, chemical cartridges, or combination HEPA or P-100/chemical cartridges	NIOSH
	Gas mask equipped with chemical canister or combination particulate/chemical canister	NIOSH
	Powered air-purifying gas mask with chemical canister or combination HEPA or P-100/chemical canister	NIOSH
	Supplied-air half mask respirator run in continuous flow mode	NIOSH
	Half mask pressure demand supplied-air respirator	
	Supplied-air full face respirators operated in demand or continuous flow mode	
	Full face demand SCBA	NIOSH
2,000	Full face pressure demand supplied-air respirator	NIOSH
>2,000 or IDLH Atmosphere	Full face pressure demand SCBA or combination full face pressure demand supplied-air respirator with auxiliary SCBA	NIOSH
Firefighting	Full face pressure demand SCBA <sup>6</sup>	NIOSH

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<sup>1</sup> For protection against contaminants that are regulated by individual standards (e.g., formaldehyde, benzene, vinyl chloride, asbestos, lead), refer to the respiratory protection in the specific standard to obtain the correct APF.

<sup>2</sup> NIOSH reference is NIOSH Respirator Decision Logic. ANSI reference is ANSI Z88.2-1992.

<sup>3</sup> Filtering face piece respirators are air-purifying respirators with face pieces consisting of filter media. Tight fitting respirators on which user seal checks cannot be performed may not be worn.

<sup>4</sup> Elastomeric face pieces are made of rubber-like synthetic polymer, such as silicone rubber.

<sup>5</sup> Loose-fitting respirators form a partial seal with the face and do not cover the neck and the shoulders.

<sup>6</sup> Firefighting SCBA's must meet current NFPA requirements

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## RESPIRATOR MAINTENANCE

1. General Information

a. Cleaning, disinfecting, drying, issuing, and inventorying respirators will be conducted in building \_\_\_\_\_ [number]. The unit RPPM/supervisor is responsible to ensure that each respirator user properly disassembles, cleans, and reassembles all respirators.

b. All respirators are to be cleaned and disinfected according the following coded schedule:

1 = Daily	3 = Monthly
2 = Weekly	4 = Other

c. Cleaning codes are specified in each Shop SOP (Appendix C of enclosure (1)).

2. Emergency Respirators. Emergency respirators will be cleaned and inspected after each use. Emergency respirators will be inspected monthly, and a written record (Appendix D of enclosure (1)) will be maintained with the respirator. The manufacturer's instructions for cleaning, disinfecting, and inspecting emergency respirators (Appendix E of enclosure (1)) will be followed. Emergency use respirators will also be inspected before and after each use to ensure proper functioning. Examining the emergency respirator performance before and after each use is not intended to be as extensive and thorough a process as the monthly inspection. It should include a basic examination before using to assure the wearer that the respirator they are about to don in an emergency situation will work properly (e.g., that the cylinders on the SCBA are charged, that air is available and flowing).

3. Disassembling Half Mask and Full Face Respirators

- a. Remove filter and filter housing; discard filters.
- b. Remove both inhalation valves.

ENCLOSURE (4)

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- c. Remove exhalation valve and exhalation valve guard.
- d. Remove elastic straps and set aside for separate cleaning.

4. Cleaning

- a. Use a warm soap and water solution, not to exceed 110 degrees F.
- b. Immerse all parts, excluding straps, in the solution.
- c. Remove all dirt and grime.
- d. Rinse in warm water, not to exceed 110 degrees F, to remove all soap residue.

5. Disinfecting

- a. Use a 72 ppm hypochlorine ion (OCI) solution by mixing 2ml of 5.25% bleach per liter of water, or by mixing two (2) teaspoons of 5.25% bleach per gallon of water.
- b. Immerse all parts, excluding straps, in the solution for two minutes.
- c. Wipe straps using a cloth dampened in the disinfectant solution.
- d. Rinse all parts, excluding straps, in warm water, not to exceed 110 degrees F, to remove disinfecting solution.

6. Drying

- a. Place parts in the drying unit at a temperature not to exceed 110 degrees F (or let respirators air dry for several hours).
- b. Place respirators in such a way that there is no distortion of the rubber and other elastomeric parts.

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c. Reassemble the respirator when parts are completely dry (or ensure respirators are dry by wiping with a clean, dry, lint-free towel or cloth.)

7. Issuing and Inventory Control. The RPPM/supervisor is designated to issue respirators and is responsible for inventory control. The RPPM/supervisor must be trained and thoroughly knowledgeable in the following areas:

a. Respirator selection for each shop listed in Appendix B of enclosure (1).

b. Respirator cleaning, disinfecting, and storing.

c. Respirator inspection (enclosure (5)).

d. Respirator inventory.

e. Shop personnel will present their respirator qualification card (enclosure (12)) to the issuing person when requesting a respirator.

8. RPPM/Supervisors will ensure that:

a. The correct brand and type of air purifying cartridge is issued with the respirator (i.e., North cartridges are issued with North respirators).

b. Cartridges are free of dents and cracks.

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RESPIRATOR INSPECTION PROCEDURES1. HALF MASK

\_\_\_\_\_ [Name of manufacturer/Type]  
 respirator, TC 84A-\_\_\_\_\_ [number], model \_\_\_\_\_ [number]  
 Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_

\_\_\_\_\_ [Name of manufacturer/Type]  
 respirator, TC 84A-\_\_\_\_\_ [number], model \_\_\_\_\_ [number]  
 Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_

- a. Visually inspect face piece for cracks, deformities, tears, dirt, and any modification.
- b. Inspect straps. They must be elastic, pliable, and not frayed. Straps must have points of attachment for the face piece. No modifications are allowed.
- c. Inspect inhalation and exhalation valves for tears, cracks, distortion, and foreign materials (i.e., hair, lint, and dirt). Make sure valves lay flat on valve assembly. Ensure that exhalation valve cover is in place and not cracked or broken.
- d. Inspect cartridges, cartridge holders, O-rings, threads, etc.

2. FULL MASK

\_\_\_\_\_ [Name of manufacturer/Type]  
 respirator, TC 84A-\_\_\_\_\_ [number], model \_\_\_\_\_ [number]  
 Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_

\_\_\_\_\_ [Name of manufacturer/Type]  
 respirator, TC 84A-\_\_\_\_\_ [number], model \_\_\_\_\_ [number]  
 Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_

- a. Ensure that the lens are not scratched, cracked, or broken.
- b. Ensure that the lens are completely sealed.

ENCLOSURE (5)

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c. Ensure that the area where the lens holder comes in contact with rubber is not cut or torn.

d. If the respirator has a speaking diaphragm, ensure that it is in place and not punctured. Also ensure the gasket is in place.

e. Straps must be elastic, pliable and not frayed. Straps must have points of attachment for the face piece. No modifications are allowed.

f. Make sure all the clips are present and that the straps are attached securely to the mask.

g. Ensure that the inhalation valves are present and in good working order.

3. GAS MASKS, AIRLINE RESPIRATORS AND SCBA's

\_\_\_\_\_  
respirator, TC 84A-\_\_\_\_ [number], model \_\_\_\_\_ [number]  
Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_  
[Name of manufacturer/Type]

\_\_\_\_\_  
respirator, TC 84A-\_\_\_\_ [number], model \_\_\_\_\_ [number]  
Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_  
[Name of manufacturer/Type]

a. General

(1) Ensure that the lens are not scratched, cracked, or broken.

(2) Ensure that the lens are completely sealed.

(3) Ensure that the area where the lens holder comes in contact with rubber is not cut or torn.

(4) If the respirator has a speaking diaphragm, ensure that it is in place and not punctured. Also ensure that the gasket is in place.

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(5) Straps must be elastic, pliable and not frayed and must have points of attachment for the face piece. No modifications are allowed.

(6) All clips must be present, and the straps must be attached securely to the mask.

(7) Ensure that the gasket is in place.

4. AIRLINE RESPIRATORS

a. Ensure that the correct airline hose is used with the supplied-air respirator.

b. Ensure that airline connections are correct.

c. Check hose integrity for cuts, deterioration, tears, etc.

5. SCBA's. Follow the manufacturer's recommended inspection procedures (Appendix E of enclosure (1)).

6. CORRUGATED BREATHING TUBE. Stretch out the corrugated tube and inspect for cuts and abrasions. Ensure no pinholes are in the corrugations.

7. GAS MASKS

\_\_\_\_\_ [Name of manufacturer/Type]  
respirator, TC 84A-\_\_\_\_\_ [number], model \_\_\_\_\_ [number]  
Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_

\_\_\_\_\_ [Name of manufacturer/Type]  
respirator, TC 84A-\_\_\_\_\_ [number], model \_\_\_\_\_ [number]  
Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_

a. Make sure that all required clamps are present.

b. Ensure that the gaskets are present in both ends of the breathing tube.

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- c. Check for cuts, gouges, and scratches on the threads.
- d. Make sure that the canister is approved and that the shelf life has not expired.
- e. Ensure that the back- and front-mounted canisters have a harness assembly.

8. HOODS

\_\_\_\_\_ [Name of manufacturer/Type]  
respirator, TC 84A-\_\_\_\_\_ [number], model \_\_\_\_\_ [number]  
Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_

\_\_\_\_\_ [Name of manufacturer/Type]  
respirator, TC 84A-\_\_\_\_\_ [number], model \_\_\_\_\_ [number]  
Small \_\_\_\_\_ Medium \_\_\_\_\_ Large \_\_\_\_\_

- a. Examine the hood and its shroud for rips, tears, and seam integrity.
- b. For abrasive blasting hoods, examine the integrity of the protective headgear and the suspension inside the headgear.
- c. Examine the protective face shield for cracks, breaks, or impaired vision.
- d. Abrasive-blasting hoods must have a cape or a shroud that is not ripped or torn.
  - (1) Ensure that the buckets or snaps on the cape or shroud are present and in good working condition.
  - (2) Ensure that the collar is present under the shroud. It must fit tightly around the neck by either a drawstring or an elastic collar.
  - (3) The collar must in good working condition with no tears or rips.
  - (4) Inspect belts and hoses for tears or deterioration.
  - (5) Check airline connection and valves.

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## RESPIRATOR TRAINING, FIT TESTING, AND MEDICAL CLEARANCE RECORD

Employee: \_\_\_\_\_ SSN: \_\_\_\_\_ SHOP: \_\_\_\_\_

## 1. MEDICAL CLEARANCE

Date	Clearance for Respirator Type	Restrictions

## 2. FIT TESTNG

Date	Respirator Make, Model, Size	Fit Test Method	Fit Test Operator	Pass/Fail/ Fit Factor

## 3. TRAINING

Date	Type of Training	Instructor

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## TRAINING

Respirator training is required to ensure that everyone required to wear a respirator is properly informed of hazards and the possible consequences resulting from not wearing their respirator; the reason for wearing a particular type of respirator; the capabilities and limitations of the respirator; the method of donning the respirator and checking its operation methods of respirator maintenance, and recognizing and dealing with emergency situations.

1. Responsibility

a. The RPPM, designated by the Commanding Officer, will establish an SOP for all aspects of the training and the fit testing process.

b. The RPPM will ensure that all training and fit testing are done according to this Order and its SOP. The RPPM is responsible for maintaining and repairing all fit testing equipment.

2. Training

a. Prior to fit testing, the RPPM will ensure that employees receive at least one hour of training developed specifically for using and maintaining the respirators selected for their unit/shop operation(s). In addition, annual refresher training is required.

b. Respirator wearers must receive the training specified in the unit/shop specific respirator training (Appendix I of enclosure (1)), which includes:

(1) Why respirators are required, including specific workplace hazards and respirator selection for their unit/shop.

(2) Status of engineering controls.

(3) Respirator capabilities and limitations.

ENCLOSURE (7)

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(4) How to don the respirator and perform positive and negative user seal checks and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.

(5) Respirator cleaning, disinfection, and storage procedures.

(6) Inspecting respirators.

(7) Issuing respirators.

(8) Breathing air quality, inspection and maintenance (if atmosphere-supplied respirators are used in the unit/shop).

(9) When to change filters/cartridges (air-purifying respirators are used in the unit/shop).

(10) Locations of the unit/shop respirator SOP in the workplace.

(11) What to do in case of an emergency.

(12) Unit/Shop specific respirator problems, including communications, vision, use in excessive heat or cold, IDLH and oxygen deficient atmospheres, and confined spaces.

(13) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

(14) Wearing contact lenses in contaminated atmospheres with respirators is permitted.

(15) Use of emergency respirators for emergency rescue teams and for all personnel required entering IDLH or oxygen deficient atmospheres. The gas free engineer will provide training on emergency IDLH atmosphere entry procedures and provide practice emergency scenarios.

c. Supervisors must be trained and thoroughly knowledgeable in the following areas:

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(1) Workplace hazards and respirator selection for their unit/shop.

(2) Training received by their employees.

(3) Respirator cleaning, disaffecting, and storing.

(4) Respirator inspections.

(5) Respirator issue.

(6) Breathing air quality, inspection and maintenance.

d. Personnel assigned to issue, inspect, and inventory respirators must be trained and thoroughly knowledgeable in the following:

(1) Respirator selection for each unit/shop.

(2) Respirator cleaning, disinfecting, and storing.

(3) Respirator inspections.

(4) Respirator inventory procedures.

e. Inform employees that Chapter 15 of OPNAVINST 5100.23F and MCO 5100.8G are the regulations for respirator use and their general requirements. Also inform them that copies of each, along with the Command Respirator SOP, are located in each unit/shop office.

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## FIT TESTING

Fit Test Operator's Name	Date
Type of Qualitative Test	Type of Quantitative Test

DEMONSTRATION OF KNOWLEDGE AND PERFORMANCE	ACCEPTABLE	NON- ACCEPTABLE	N/A
<b><i>Demonstrates general knowledge of respirators:</i></b>			
Identifies face piece components and their function	[ ]	[ ]	[ ]
Demonstrates face piece inspection, cleaning, and maintenance	[ ]	[ ]	[ ]
Identifies difficult brands and models of respirator face pieces	[ ]	[ ]	[ ]
Explains respirator capabilities and limitations as related to respirator fit testing	[ ]	[ ]	[ ]
Demonstrates proper donning and doffing procedures including user seal checks	[ ]	[ ]	[ ]
<b><i>Demonstrates knowledge of fit testing:</i></b>			
Explains purpose of respirator fit testing	[ ]	[ ]	[ ]
Explains fit testing procedures	[ ]	[ ]	[ ]
Explains fit test method limitations	[ ]	[ ]	[ ]
Identifies erroneous fit test results	[ ]	[ ]	[ ]

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QUANTITATIVE FIT TESTING PROTOCOL

1. Full-face, air-purifying respirators can be worn in contaminated atmospheres up to 50 times the occupational exposure limit (OEL). If full-face respirators are used as protection against contaminant concentrations exceeding 10 times the OEL's, quantitative fit testing must then be performed. Either the controlled negative pressure Dynatec Fit Tester 3000 or the Portacount® condensation nuclei counter or the TDA-99M forward light scattering photometer will be used for fit testing. The fit tests will be performed as recommended by the manufacturer's instruction manual and per the quantitative fit test protocols in Appendix A of reference (a). Half-mask respirators may be quantitatively fit tested at the discretion of the RPPM.

2. HEPA (N, R, or P 100) filters will be used for quantitative fit testing with the Portacount® and the TDA-99M. Filter cartridges are replaced with leak-tight test adapters when fit testing with the Fit Tester 3000 to seal the normal air pathways into the respirator.

a. The passing criteria for full-face respirators is a fit factor of 500.

b. The passing criteria for half-mask respirators is a fit factor of 100.

3. Fit Testing Frequency

a. Employees wearing respirators will be fit tested initially and annually. The RPPM will ensure employee fit testing is recorded on enclosure (6). Employees will not be fit tested unless they have been medically evaluated and qualified.

b. Fit testing will also be performed when the employee has experienced:

(1) Weight change of 20 pounds or more.

(2) Facial scarring in area of face seal.

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(3) Any dental changes.

(4) Any reconstructive surgery or cosmetic surgery.

c. It is the employee's responsibility to notify his/her supervisor and the RPPM of the above changes or other conditions that might interfere with the facial seal of the respirator.

d. Personnel with facial hair that could interfere with face seal or valve function will not be fit tested because the length and condition of facial hair changes daily and would necessitate daily fit testing.

ENCLOSURE (8)

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QUALIFICATIONS FOR FIT TEST OPERATORS

The RPPM is responsible for ensuring fit test operators are properly trained and possess the necessary skills for performing fit testing, per ANSI Z88.10. The RPPM can either train fit test operators in-house or send them to commercially available training courses. The RPPM will use the Fit Test Operator Evaluation Form (page 6 of this enclosure), modified from Annex A of ANSI Z88.10, to evaluate and verify fit test operators' qualifications. A fit test operator must demonstrate mastery of the fit test procedures in Appendix A of reference (a) along with being proficient in the appropriate sections of the Command Respiratory Protection Instruction concerning respirator fit testing, inspection, cleaning, and storage. Fit test operators will receive training and demonstrate proficiency in the following areas:

1. Respiratory protective devices used in activity workplaces:
  - a. Respirator components and their function.
  - b. Respirator inspection, cleaning and maintenance.
  - c. Brands and models of respirators worn.
  - d. Respirator capabilities and limitations.
  - e. Proper donning/doffing procedures along with positive and negative pressure user seal checks.
2. Fit test methods:
  - a. Purpose of fit testing (be able to explain the fit test purpose and procedures to personnel being fit tested).
  - b. Fit testing procedures.
  - c. Limitations of the test methods (e.g., sensitivity tests and subjective responses of qualitative methods).

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- d. Fit test results.
- e. Proper respirator cleaning and sanitizing.
- f. Proper cartridges/filters for each fit test method used.
- g. Probes or fit test adapters used in quantitative fit testing.
- h. Qualitative fit test materials.
- i. Quantitative fit test equipment, including assembly and operational checks.
- j. Understand when not to perform fit testing based on facial characteristics, features, jewelry, and other problems such as facial hair that would interfere with the face piece-sealing surface.
- k. Evaluating and recording fit test results.

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## FIT TEST OPERATOR EVALUATION FORM

DEMONSTRATION OF KNOWLEDGE AND PERFORMANCE	ACCEPTABLE	NON- ACCEPTABLE	N/A
<b><i>Demonstrates ability to set up fit test equipment:</i></b>			
Selects proper cartridges or filters for the method	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prepares/performs operational check of qualitative fit test materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Installs probes or fit test adapters (quantitative)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prepares quantitative fit test equipment, including assembly and operational checks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b><i>Demonstrates performance of fit test:</i></b>			
Recognizes when to refuse to perform fit testing due to facial characteristics or other problems interfering with face piece fit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explains purpose of fit test and procedures to test subjects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observes respirator donning without physically assisting the subject	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensures user seal checks are performed per Appendix I-3 of enclosure (1) or manufacturer's recommendations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observes test subject to ensure fit test is performed correctly during entire procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducts fit test method according to Appendix A 29 CFR 1910.134	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluates and records results of fit test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrates a working knowledge of the material safety data sheets associated with challenge agents used in fit testing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performs face piece cleaning and sanitizing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b><i>Overall demonstration of knowledge and performance</i></b>	ACCEPTABLE <input type="checkbox"/>	NON-ACCEPTABLE <input type="checkbox"/>	
Signature of Respiratory Protection Program Manager			

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ANNUAL RESPIRATORY PROTECTION PROGRAM AUDIT

- |  | <u>Yes</u> | <u>No</u> |
|--|------------|-----------|
| 1. Where feasible, are engineering controls used to control workplace contamination?<br>(OPNAVINST 5100.23F, paragraph 1501 and 29 CFR 1910.134(a) (1))  | ___        | ___       |
| 2. Has the command appointed a Respiratory Protection Program Manager (RPPM) in writing?<br>(OPNAVINST 5100.23F, paragraphs 1503.a and 1513.a)   | ___        | ___       |
| 3. Is the respiratory protection program manager in one of the following Office of Personnel Management position series: GS-0018, Safety and Occupational Health Manager; GS-803, Safety Engineer; GS-019, Safety Technician; GS-0804, Fire Protection Engineer; GS-0081, Fire Protection Specialist/Marwill; GS-1306, Health Physicist; or GS-690, Industrial Hygienist?<br>(OPNAVINST 5100.23F, Glossary, page G-15, RPPM) | ___        | ___       |
| 4. Has the Respiratory Protection Program Manger received training according to OPNAVINST 5100.23, paragraph 1512?   | ___        | ___       |
| 5. Are standing operating procedures (SOP's) written for each Shop and every aspect of the respirator program, including: respirator selection, cleaning, disinfecting, storage, issue, inspection, emergency respirator use, workplace surveillance, program evaluation, medical evaluation, training, fit testing?<br>(OPNAVINST 5100.23F, paragraph 1513.a. (2))  | ___        | ___       |
| 6. Have unit SOP's been written and posted in the general area?<br>(OPNAVINST 5100.23F, paragraph 1513.a. (2))   | ___        | ___       |
| 7. Are SOP's up to date with current workplace operations and industrial hygiene survey findings?<br>(OPNAVINST 5100.23F, paragraph 1513.a. (2))   | ___        | ___       |

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Yes      No

8. Does the local industrial hygienist perform an annual audit of the respirator program?  
\_\_\_\_\_

*(OPNAVINST 5100.23F, paragraph 1513.b.(2)(a))*

9. Does the RPPM perform routine evaluations of the respirator program, including field observations of personnel wearing respirators, respirator storage and maintenance?  
\_\_\_\_\_

*(OPNAVINST 5100.23F, paragraph 1513.b.(2)(b))*

10. Are respirators selected according to the specific hazard for which protection is required, along with the protection factor and capabilities of the respirator?  
\_\_\_\_\_

*(OPNAVINST 5100.23F, paragraph 1507)*

11. Are only NIOSH or NIOSH/MSHA-approved respirators being used?  
\_\_\_\_\_

*(OPNAVINST 5100.23F, paragraph 1507.a)*

12. Are respirators cleaned and disinfected according to instructions in the SOP?  
\_\_\_\_\_

*(OPNAVINST 5100.23F, paragraph 1510)*

13. Are respirators inspected for worn, torn, or deteriorated parts?  
\_\_\_\_\_

*(OPNAVINST 5100.23F, paragraph 1510)*

14. Are respirators stored in convenient, clean and sanitary locations?  
\_\_\_\_\_

*(OPNAVINST 5100.23F, paragraph 1513.a(1)(c))*

15. Are emergency respirators inspected monthly?  
\_\_\_\_\_

*(29 CFR 1910.134(h)(3)(b) and (c))*

16. Is a written record kept of the monthly emergency respirator inspections?  
\_\_\_\_\_

*(29 CFR 1910.134(h)(3)(c)(iv)(A) and (B))*

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17. Has the person issuing respirators received proper training to ensure that the correct respirator is issued for each operation in accordance with written SOP's?  
(ANSI Z88.2-1992, clause 8.1.2)

\_\_\_\_\_

18. Have shop supervisors received proper training concerning the hazards to which employees are exposed; respirator selection; proper donning procedures, and proper respirator cleaning, maintenance and storage?  
(OPNAVINST 5100.23F, paragraph 1511, and ANSI Z88.2-1992, clause 8.1.1)

\_\_\_\_\_

19. Do respirator wearers receive annual training to include: the nature and degree of respiratory hazards; respirator selection based on the hazard; respirator capabilities and limitations; contact lenses, and respirator cleaning, maintenance and storage?  
(OPNAVINST 5100.23F, paragraph 1511)

\_\_\_\_\_

20. Have respirator wearers been medically qualified?  
(OPNAVINST 5100.23F, paragraphs 1513.a(4) and 1513.b(1))

\_\_\_\_\_

21. Are respirator wearers fit tested annually?  
(OPNAVINST 5100.23F, paragraphs 1509.a and 1513.a.(6))

\_\_\_\_\_

22. Are employees with beards prohibited from wearing all respirators except positive pressure supplied-air hoods or loose fitting powered air purifying respirator?  
(NEHC Technical Manual, Industrial Hygiene Field Operations Manual, latest revision, paragraph 5.a. (1)(b))

\_\_\_\_\_

23. Are industrial hygiene surveys performed to evaluate employee exposure, including air sample result documentation in employee medical records?  
(OPNAVINST 5100.23F, paragraph 0802)

\_\_\_\_\_

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WEEKLY RESPIRATOR INSPECTIONS

	<u>Yes</u>	<u>No</u>
1. Are engineering controls being used where feasible to control workplace contamination? (OPNAVINST 5100.23F, paragraph 1501.b and 29 CFR 1910.134(a)(1))	_____	_____
2. Have work site standing operating procedures (SOP's) been written and posted in the general area? (OPNAVINST 5100.23F, paragraph 1513.a(2))	_____	_____
3. Are SOP's written for each shop and every aspect of the respirator program, i.e., respirator selection, cleaning, disinfecting, storage, issue, inspection, emergency respirator use, workplace surveillance, program evaluation, medical evaluation, training and fit testing? (OPNAVINST 5100.23F, paragraph 1513.a(2))	_____	_____
4. Are respirators selected according to the specific hazard for which protection is required, along with the protection factor and capabilities of the respirator? (OPNAVINST 5100.23F, paragraph 1507 and Table 9-1 of NEHC Technical Manual, Industrial Hygiene Field Operations Manual, latest revision)	_____	_____
5. Are only NIOSH or NIOSH/MSHA-approved respirators being used? (OPNAVINST 5100.23F, paragraph 1507.a)	_____	_____
6. Are respirators cleaned and disinfected according to instructions in the SOP? (OPNAVINST 5100.23F, paragraph 1510 and 29 CFR 1910.134(h)(1) and Appendix B-2)	_____	_____
7. Are respirators inspected for worn, torn, or deteriorated parts? (29 CFR 1910.134(h)(3))	_____	_____
8. Are respirators stored in convenient, clean, and sanitary locations? (29 CFR 1910.134(h)(3)(A))	_____	_____

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- |  | <u>Yes</u> | <u>No</u> |
|--|------------|-----------|
| 9. Are emergency respirators inspected monthly?<br>(29 CFR 1910.134(h) (3) (B) and (C))  | _____      | _____     |
| 10. Is a written record kept of the monthly<br>emergency respirator inspections?<br>(29 CFR 1910.134(h) (3) (C) (iv) (A) and (B))  | _____      | _____     |
| 11. Are employees with beards prohibited from<br>wearing all respirators except positive pressure<br>supplied-air hoods or loose fitting powered air<br>purifying respirators?<br>(NEHC Technical Manual, Industrial Hygiene Field<br>Operations Manual, latest revision,<br>paragraph 5.a. (1) (b)) | _____      | _____     |
| 12. Is air from breathing air compressors checked<br>quarterly to ensure that it meets Grade D air<br>requirements?<br>(OPNAVINST 5100.23F, paragraph 1506)  | _____      | _____     |
| 13. Have personnel on emergency rescue teams and<br>all personnel wearing emergency respirators<br>received proper training for entering and escaping<br>from IDLH atmospheres?<br>(OPNAVINST 5100.23F, paragraph 1511 and<br>ANSI Z88.2-1992, clause 8.1.4)   | _____      | _____     |
| 14. Have respirator wearers been medically<br>qualified?<br>(OPNAVINST 5100.23F, paragraphs 1513.a(4) and<br>1513.b(1))  | _____      | _____     |
| 15. Are respirator wearers fit tested annually?<br>(OPNAVINST 5100.23F, paragraphs 1509.a and 1513.a(6))   | _____      | _____     |



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## RESPIRATOR QUALIFICATION CARDS

Front of Card

RESPIRATORY PROTECTION PROGRAM QUALIFICATION AND CERTIFICATION		
EMPLOYEE'S NAME ( <i>Last, First, MI</i> )		
This person has been trained, fitted, and certified for use of the following respirators:		
TYPE	DATE	SAFETY OFFICER

Back of Card

This person was evaluated and found medically qualified for  
work requiring respiratory protection.

MEDICAL EXAM DATE	MEDICAL OFFICER

**LIMITATIONS:**

This Card is to be carried by employee working in a hazardous  
environment requiring respiratory protection.

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APPENDIX D 29 CFR 1910.134

A respirator is 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, it can become a hazard to the worker. Workers may sometimes wear respirators to avoid exposures to hazards, even if the amount of hazardous substances does not exceed the limits set by OSHA standards. If an employer provides respirators for the employee's voluntary use, or if you own a personal respirator, one needs to take the following precautions to ensure that the respirator itself does not present a hazard:

1. Read and heed all the manufacturer's instructions on use, maintenance, cleaning and care in addition to the warnings regarding the respirator's limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. The National Institute for Occupational Safety and Health (NIOSH) of the U.S. Department of Health and Human Services certifies respirators. A certification label or statement should appear on the respirator or the respirator package. It tells what the respirator is designed for and how much it will protect the wearer.
3. Do not wear a respirator into atmospheres containing contaminants for which the respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect against gases, vapors, or very small solid particles of fumes or smoke.
4. Employees should keep track of their respirators so that they do not mistakenly use someone else's.

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

ENCLOSURE (13)

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RESPIRATOR CARTRIDGE CHANGE OUT SCHEDULES

1. A copy of Appendix J of enclosure (1) will be filled out by the command/unit RPPM for every operation requiring a respirator cartridge change out schedule to ensure cartridges are changed before breakthrough occurs.

2. Establishing cartridge change out schedules for gas and vapor contaminants will require concerted efforts between RPPM's and the Naval Hospital, Marine Corps Base, Camp Lejeune Industrial Hygienists. The unit RPPM will provide a copy of Appendix J of enclosure (1) to local Naval Hospital Industrial Hygienists to help collect information needed to calculate cartridge change out schedules. The command/unit RPPM will make arrangements with the local Naval Hospital Industrial Hygiene Office to:

a. Provide respiratory hazard exposure data in both mg/m<sup>3</sup> and parts per million.

b. Calculate threshold limit values for mixtures when appropriate.

c. Provide environmental data concerning workplace temperature, humidity, and worker breathing rate.

d. Provide the boiling points of the chemicals of concern. (Chemicals with boiling points less than 65° C (149° F) may be desorbed from cartridge sorbent material during periods of non-use or be replaced by chemicals with higher boiling points.)

e. Verify cartridge change out schedules by collecting air samples behind the cartridges using air-sampling methods supported by the Consolidated Industrial Hygiene Laboratories.

3. When command employees wear air-purifying respirators for protection against multiple contaminants, follow the guidelines below for establishing change out schedules:

a. Calculate the mole fraction of each mixture component in the workplace environment.

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b. Mole fraction is calculated by dividing concentrations of each mixture component in parts per million (ppm) by total ppm of the mixture.

c. Look up the cartridge service life calculator estimated breakthrough time for each mixture component on the respirator manufacturer's service life software.

d. Multiply mole fraction of each mixture component by its estimated breakthrough time to calculate breakthrough time based on each component's proportion in the mixture.

e. Base the change out schedule on the shortest mixture component breakthrough time. Incorporate a safety factor, by establishing a change out schedule that is at least 10% less than the shortest mixture component breakthrough time.

4. To verify the estimated change out schedules in the field, make arrangements with the Naval Hospital, Marine Corps Base, Camp Lejeune Industrial Hygienists to collect air samples behind the respirator cartridges using a Portacount® mask-sampling adapter. These samples must be collected in the same environment where respirator use is required. The air sampling methods supported by the Consolidated Industrial Hygiene Laboratories are sensitive enough to detect concentrations at 25% of the occupational exposure limits (OEL's) of the mixture components. Air samples will be collected on sorbent tubes behind the cartridges at the highest flow rate allowed by Industrial Hygiene Sampling Guide for Consolidated Industrial Hygiene Laboratories (latest revision). This permits relatively quick collection of the lowest sample volume allowed by the Sampling Guide for laboratory analysis results that can be reported in concentrations down to the limit of detection. Most air samples can be collected behind cartridges in five to ten minutes. Workers will be instructed to take a break for five to ten minutes while wearing the respirator in the worksite during air sample collection so that the breathing rate will not interfere with the sample collection. The worker's normal breathing will not adversely influence the detection of breakthrough. By the time of air sample collection, all of the varying air contaminant concentrations, varying temperature and humidity, and varying breathing rates throughout the day have already had their influence on the respirator cartridge

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breakthrough. In other words, workers breathing normally right before cartridge change out time would not significantly influence breakthrough. Breakthrough would have either already occurred or not occurred.

5. Naval Hospital Industrial Hygienists will install the Portacount® mask-sampling adapter between the respirator face piece and the cartridge. They will detach the "Sample Tube" along with the "Suction Cup" and "Clip" and attach tubing to the outside fitting of the Portacount® mask-sampling adapter. They will close off the end of this tubing with a heavy wire paper clip to prevent contaminated air from entering. The worker will then re-don the respirator.

6. Upon returning to the workplace, the clip is removed and the sampling device is attached to the end of this tubing. In this arrangement, the air sample will be collected in the chamber between the inhalation valve of the Portacount® mask sampling adapter and the inhalation valve of the face piece. If there are no chemical contaminants detected in the samples, then significant breakthrough (<25% OEL's) has not occurred and the change out schedule is confirmed. Change cartridges according to the estimated (now verified) change out schedule.

7. For single contaminants, use the respirator manufacturer's chemical cartridge service life calculators to determine the breakthrough time for the single component. Set a convenient change out schedule at least 10% less than the estimated breakthrough time. Arrange for Naval Hospital Industrial Hygienists to collect an air sample behind the cartridge using a Portacount® mask-sampling adapter to verify the change out schedule.

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WARNING SIGNS OF RESPIRATOR FAILURE

1. Particulate Air-Purifying. When breathing difficulty is encountered with a filter respirator (due to partial clogging with increased resistance), the filter(s) must be replaced. Disposable filter respirators must be discarded.
2. Gas or Vapor Air-Purifying. If, when using a gas or vapor respirator (chemical cartridge or canister), any of the warning properties (e.g., odor, taste, eye irritation, or respiratory irritation) occur, promptly leave the area and check the following: proper face seal, damaged or missing respirator parts, saturated or inappropriate cartridge or canister. If any of the warning properties appear again, the concentration of the contaminants may have exceeded the cartridge or canister design specification. When this occurs, an airline respirator or Self-contained Breathing Apparatus (SCBA) is required.
3. Service Life of Air-Purifying Respirator Canisters and Cartridges. The canisters or cartridges of air-purifying respirators are intended to be used until filter resistance precludes further use, or the chemical sorbent is expended as signified by a specific warning property, (e.g., odor, taste, etc.). New canisters, cartridges or filters will always be provided when a respirator is reissued. When in doubt about the previous use of the respirator, obtain a replacement canister or cartridge.
4. Supplied Air Respirator. When using an airline respirator, leave the area immediately when the compressor failure alarm is activated or if an air pressure drop is sensed. When using a SCBA, leave the area as soon as the air pressure alarm is activated.

ENCLOSURE (15)

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CARTRIDGE AND FILTER COLOR CODING CHART

Color	Type of Protection
Black	Organic Vapor Cartridge
White	Acid Gas Cartridge
Yellow	Organic Vapor and Acid Gas Cartridge
Green	Ammonia and Methylamine Cartridge
Olive Green	Organic Vapor and Formaldehyde Cartridge
Purple (Magenta)	Dust, Fumes, Mists, Asbestos, Radio Nuclides and Highly Toxic Particulates (HEPA) Filter
Black/Purple	Organic Vapor and Hepa Combination
White/Purple	Acid Gas and Hepa Combination
Yellow/Purple	Organic Vapor/Acid Gas and Hepa Combination
Green/Purple	Ammonia/Methylamine and Hepa Combination
Olive Green/Purple	Organic Vapor/Formaldehyde and Hepa Combination
Pre-Filters	Dusts, Fumes and Mists or Pesticides or Paints

Always read the NIOSH cartridge and/or filter labels prior to use to make certain that you are using the correct one for your application and for use with the respirator you have been trained and fitted for. Respirators labeled "for protection against particulates only" will not be used for gases or vapors. Respirators labeled "for protection against gases and vapors only" will not be used for particulates.

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INDUSTRIAL HYGIENE VOLUNTARY RESPIRATOR USE PROTOCOL AND CARD

1. Employer **may or may not** provide voluntary use respirator to employee, but supervisor must make sure employee who is using the respirator does not use it in any way that would cause adverse health problems.

2. Employer must have documentation of respirator wearer receiving Appendix D of 29 CFR 1910.134 on file.

3. Respirator-use medical questionnaire is needed by **all** personnel (military or civilian) in order to wear a respirator and must be on file.

EXCEPTION: Units are not required to include in a written respiratory protection program those employees whose only use of respirators involves the voluntary use of N95 filtering face pieces.

4. Health Care Providers who may sign off on a respirator questionnaire are: Physician, Physician Assistant, Registered Nurse, Nurse Practitioner, Licensed Practical Nurse and Independent Duty Corpsman.

5. The employer needs a full respirator program if a volunteer is using a half mask with cartridges and above respirators. This program would include physicals, fit test, training, and written SOP. (Generic SOP with medical questionnaire is on file in the Industrial Hygienist and Base Safety files).

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VOLUNTARY USE FILTERING FACE PIECE  
RESPIRATOR CARD

Front of Card

VOLUNTARY USE FILTERING FACE PIECE RESPIRATOR

This person was evaluated and found medically qualified to use a filtering face piece respirator (FFP).

Medical Exam Date	Medical Provider

*This Card must be carried by the employee while wearing FFP respirators.*

Back of Card

VOLUNTARY FILTERING FACE PIECE  
RESPIRATOR PROGRAM

Employee Name:	
Date:	
Supervisor/ Safety Officer:	

*This person has received a copy of Appendix D, of 29 CFR 1910.134, which describes the limitations of use.*