



DEPARTMENT OF THE NAVY
NAVAL MEDICAL RESEARCH CENTER DETACHMENT

LIMA, PERU
UNIT NUMBER 3800
APO AA 34041 - 3800

IN REPLY REFER TO

NMRCDINST 5100.10
07 Feb 2003

NMRDINST 5100.10

From: Officer-in-Charge, U.S. Naval Medical Research Center
Detachment , Lima Peru

Subj: RESPIRATORY PROTECTION PROGRAM

Ref: (a) 29 CFR 1910.134, Occupational Safety and Health
Administration Respiratory Protection Standard.
(b) OPNAVINST 5100.23E CH-1, Navy Occupational Safety and
Health Program Manual.
(c) NAVENVIRHLTHCEN Technical Manual, Industrial Hygiene
Field Operations Manual, latest revision.
(d) NMRI NST 5100.7 Series.
(e) NMRIINST 6230.0 Series.

Encl: (1) Worksite Standard 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.

1. Purpose. To establish a respiratory protection program at
the U.S. Naval Medical Research Center Detachment (NMRCD) Lima,
Peru as required by references (a) and (b).

2. Basic Policy. It is this command's policy to provide a safe
and healthful work environment in compliance with all Navy 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.

3. Scope

a. This command has made a commitment to establish and
maintain a respiratory protection program for the protection of
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; and (4) where respiratory protection must be worn in addition to engineering controls.

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

c. Standard operating procedures shall be developed for the specific respiratory protection requirements of each shop. Shop SOPs will be posted in the work areas and will include as a minimum: a summary of the command respiratory protection program standard operating procedures (see enclosure (1), Attachment A); shop-specific details concerning respirator selection, maintenance and inspection procedures (enclosure (1), Attachments B through E); breathing-air quality, if applicable (enclosure (1) Attachments F, F-1, and G); and emergency/rescue guidance and respirator cartridge change out schedules as appropriate (enclosure (14) and enclosure (1), Attachment J).

4. Responsibilities

a. Officer-in Charge. The Commanding Officer is responsible for establishing a respiratory protection program and appointing a qualified respiratory protection program manager. (Enclosure (2) is a sample appointment letter).

b. Respiratory Protection Program Manager (RPPM). The RPPM must complete a training course as specified in paragraph 1512 of reference (b).

(1) The responsibility for administration of this program rests with the respiratory protection program manager.

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

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

(b) Develop respirator cartridge change out schedules.

(c) Training personnel in the proper use, limitations and maintenance of respirators.

- (d) Conducting respirator fit testing.
- (e) Developing procedures for regular cleaning and inspection.
- (f) Designating appropriate storage locations and procedures.
- (g) Developing procedures for inventory control.
- (h) Establishing a medical surveillance program based on Bureau of Medicine (BUMED) industrial hygiene surveys and medical recommendations.
- (i) Annual evaluation (audit) and modification of the written respirator program and standard operating procedures.

These responsibilities are further described in the enclosures.

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

- (1) Respirators are properly worn and maintained by shop personnel.
- (2) A copy of the command SOP is kept in each shop office.

d. Tool Room Attendants. Tool room attendants have responsibility for issuing, inspecting, maintaining, and inventorying respirators. Additional information is provided throughout this instruction and in enclosures (1), (4) and (5).

e. Employees. Employees are responsible for inspecting their respirators and notifying the RPPM of any defects. Each employee must perform positive and negative user seal checks on tight fitting respirators before each use per enclosure (1), Attachment I-3. Employees shall also maintain and store their respirators according to procedures established in this instruction.

f. Bureau of Medicine (BUMED) (or Commanding Officer, Medical Treatment Facility). BUMED is required by reference (b) to provide the following services:

(1) Perform an annual industrial hygiene survey to identify the workplace hazards and recommend respiratory protection.

(2) Provide the RPPM with an annual written evaluation of the effectiveness of the respirator program.

(3) Medically evaluate personnel identified to wear respiratory protection.

5. Respiratory Protection Program Elements

a. Respirator Selection

(1) Respirator selection is based on the hazards to which the employees are exposed, as determined by annual industrial hygiene surveys. Respirators are selected by the RPPM using the guidelines in enclosure (3).

(2) Only respirators jointly approved by the National Institute for Occupational Safety and Health (NIOSH) or NIOSH and Mine Safety and Health Administration (MSHA) will be worn.

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

c. Inspection, Repair and Storage

(1) Inspection. Respirator inspection will be conducted by the tool room attendants as they disassemble respirators for cleaning. Detailed procedures for inspecting half mask, full facepiece, gas mask, airline, SCBA, and hooded respirators are provided in enclosure (5). These procedures will be included in individual worksite SOPs, as appropriate.

Employees shall inspect their respirators prior to donning them. They are also responsible for ensuring that cartridges are inserted correctly into the respirator (e.g., not cross-threaded). Defective or dirty respirators shall not be used.

(2) Repair. The RPPM shall ensure that tool room attendants are trained to perform respirator repairs. Tool room attendants will make no attempt to replace components or make adjustments beyond the recommendations of the manufacturer. Reducing or admission valves, alarms, and regulators must be returned to the manufacturer or to a factory certified, trained technician for adjustment or repair.

(3) Storage. Each employee will store their respirator in a clean plastic bag in their locker. Storage in tool boxes is prohibited. Respirators 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 the shop's SOP. (See enclosure (1), Attachment D).

(4) Emergency Respirators. Emergency respirators will be cleaned and inspected after each use according to the manufacturer's instructions (See enclosure (1), Attachment E). Emergency respirators will be inspected monthly and a written record (enclosure (1), Attachment D) will be maintained with the respirator.

d. Breathing Air Quality. Sources of compressed breathing air for atmosphere supplying respirators will 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) (Command Safety Officer) is responsible for testing the breathing air with Dräger Aerotest Kit, for testing breathing air for carbon monoxide, carbon dioxide, oil, and water along with the Biosystems four-gas Analyzer for testing oxygen levels. Results of these tests will be recorded in enclosure (1), Attachments F and F-1, for each shop using breathing air compressors.

(2) (Command Safety Representative) is responsible for recording the breathing air test results and ensuring that the air compressors' (CO) alarm systems, high temperature alarms, sorbent beds and filters are maintained and inspected before each use; CO monitor and alarm systems are calibrated per manufacturer's recommendations; and that the inspection results are recorded on enclosure (1), Attachment G. (CSR) can be reached by telephone at: (Telephone #). Current copies of enclosure (1), Attachments F-1 and G will be kept at the applicable shop offices.

e. Medical Evaluation. The Command Medical Officer/Occupational Health and Biosafety Officer will make all decisions regarding the medical evaluation and determination of the employees' physiological and psychological ability to wear a respirator.

(1) Each individual must be medically qualified by Command Medical Officer/Occupational Health and Biosafety Officer before initial fit testing.

(2) Shop supervisors will complete the top portion of the medical clearance form (enclosure (1), Attachment H), and shop personnel will hand carry the form with them to their respirator physical. Upon completion of the respirator physical, attending medical personnel will complete the medical clearance form, and shop personnel will hand carry the form back to the shop supervisor, who gives a copy to the RPPM.

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

f. Training. Respirator training requirements are specified in enclosure (7). Shop SOPs for training are in enclosure (1), Attachment I.

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

h. Workplace Surveillance and Program Evaluation

(1) Workplace Surveillance. Personal air samples must be collected to determine 8 hour time weighted average (TWA) exposures and short term exposures. Air sampling is performed by EPMU2 industrial hygienists. Air sampling results will be made known to the employees within five days after they are received by this command.

(a) Shop supervisors will immediately contact the cognizant BUMED industrial hygienist when there are any changes in operations. The industrial hygienist will reevaluate the process and collect additional air samples if necessary.

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

(2) Program Evaluation. The RPPM will:

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

(b) Conduct random, weekly 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 RPPM will maintain a record of inspection dates and findings using enclosure (11) and ensure that copies are provided to the appropriate shop supervisors.

(c) Per paragraph 1513.b.(2)(a) of reference (b), EPMU2 will provide a written evaluation on the effectiveness of the respirator program to the program manager based on occupational medicine and industrial hygiene reviews. In agreement with the supporting industrial hygienist (EPMU2), this evaluation will be provided along with the annual industrial hygiene survey.

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

i. Record Keeping. The program manager will document the medical clearance, training, and fit testing, to include the type of respirator, brand name and model, method of fit test, test results, test date, and person performing the fit test (enclosure (6)). Completed Medical Clearance Forms (enclosure (1), Attachment H) and printouts from quantitative fit testing must be attached to enclosure (6). Employees will be issued a card (enclosure (12)) indicating which model and size respirator(s) they are qualified to wear. This card must be presented at the time of respirator issue. Employees will immediately report lost or stolen cards to the RPPM so that a replacement can be issued.

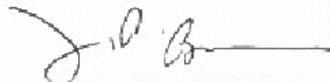
j. Facial Hair, Contact Lenses and Voluntary Use of Respirators.

(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 eye glasses, lenses shall 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 command RPPM may issue NIOSH approved filtering facepiece 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. Voluntary use respirators can be issued without fit testing and medical examination. Issue of these respirators must be under the control of the 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 29 CFR 1910.134 (Enclosure (13)). The 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. NIOSH 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 that an air-purifying respirator will afford adequate protection against exposure to gas and vapor contaminants. Reference requires change out schedules for chemical cartridges be 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. Standard operating procedures for establishing, verifying, and implementing respirator cartridge change out schedules are in enclosure (14) (**enclosure (14) is Sound Bite 1**). 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.


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WORKSITE STANDARD OPERATING PROCEDURES

Attachment A - Respirator Standard Operating Procedure

Attachment B - Respirator Selection Criteria

Attachment C - Respirator Maintenance

Attachment D - Emergency Use Respirators - Inspection Record

Attachment E - Emergency Use Respirators - Manufacturer's
Inspection Instructions

Attachment F - Results of Quarterly Air Quality Testing of
Breathing Air Compressors

Attachment G - Inspection of Breathing Air Compressors -
Carbon Monoxide Monitor, Carbon
Monoxide And High Temperature Alarms,
Filters, Desiccant & Sorbent Beds

Attachment H - Medical Clearance for Respiratory Protection

Attachment I - Respirator Training

Attachment J - Respirator Cartridge Change Out Schedule Worksheet

Enclosure (1)

RESPIRATOR STANDARD OPERATING PROCEDURE

SHOP number/name

Type of respirators respirators were chosen as protection against contaminant during the type of operation operation. Rationale for selecting the respirators used in this operation is in Attachment B.

The 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 Respiratory Protection Program Manager's written record of inspection dates and findings shall be maintained with the shop SOP.

Before wearing respirators, all shop number/name personnel must be medically qualified, fit tested, and trained. It is the responsibility of shop number/name personnel to notify the respiratory protection program manager of any of the changes listed below or other circumstances that might interfere with the facial seal of the respirator.

1. weight change of 20 lbs.
2. facial scarring in area of face seal.
3. any dental changes
4. any reconstructive surgery or cosmetic surgery.

Each employee is responsible for properly wearing and maintaining their respirator. Respirator maintenance procedures are in Attachment C.

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

The RPPM is RPPM's name. He (she) is located in building number and can be reached at telephone number.

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RESPIRATOR SELECTION CRITERIA
SHOP number/name

Air sampling has revealed contaminant
concentrations of number times the number (mg/m³ or ppm) OSHA
permissible exposure limit during the type of operation
operation.

Name of contaminant causes biological effect
. The physical and chemical properties of contaminant include
incompatibilities with names of incompatible chemicals

This particular hazard will be corrected by implementing
appropriate engineering controls, which will include an exhaust
ventilation system. As an interim measure until the system can
be installed, respiratory protective equipment will be used. (**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.)

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, which is
TWA concentration of contaminant 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.

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

Name of manufacturer Type of respirator respirator, TC-
number model number (Small) (Medium) (Large)

Name of manufacturer Type of respirator respirator, TC-
number model number (Small) (Medium) (Large)

Example:

North N95 respirator, TC-84A -1099 model
7706N95 (Medium)

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EMERGENCY USE RESPIRATORS

INSPECTION RECORD, SHOP number/name

Name of manufacturer Type of respirator respirator, TC -
number, model number.

The emergency respirator will be stored location of emergency
respirator.

Date	Inspection Findings	Repairs/ Comments	Signature

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**EMERGENCY USE RESPIRATORS
MANUFACTURER'S INSPECTION INSTRUCTIONS**

SHOP number/name

Name of manufacturer Type of respirator respirator, TC -
number, model number

(Attach manufacturer's inspection instructions here or staple to this page).

Attachment E

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**COMPRESSOR
BREATHING AIR QUALITY REPORT**

Compressor Model: _____

Date: _____

Serial No: _____

<u>COMPONENT ANALYZED</u>	<u>SPECIFICATION</u>	<u>RESULTS</u>
Oxygen	19.5 - 23.05 %	%
Carbon Dioxide	1000 PPM Max	ppm
Carbon Monoxide	10 ppm Max	ppm
Oil	5 mg/m ³	mg/m ³
Water Vapor mg/m ³	18 mg/m ³ (24 ppm v/v)	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 to Table 1 and Table 3 of CGA G-7.1-1997) or (NEEDS WEB ADDRESS for file "Dew Point Calculator.mdb")	
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 _____

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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 & SORBENT BEDS**

SHOP number/name

Date	CO/High Temp. Alarm Operational? Calibration?	CO Monitor Reading	Condition of Air Purifiers	Air Purifiers Changed (date)	Signature

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Attachment G-2

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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: _____

CIRCLE THE TYPE OF RESPIRATOR(S) TO BE USED:

AIR-SUPPLIED (tight fitting) AIR-
PURIFYING (POWERED) (tight fitting)
AIR-SUPPLIED (hooded) AIR-
PURIFYING (POWERED) (hooded)
OPEN-CIRCUIT SCBA AIR-PURIFYING
(NON-POWERED)
Filtering facepiece or elastomeric
CLOSED-CIRCUIT SCBA N, R, P
95, 99, 100

Type of chemical cartridge: _____
COMBINATION AIRLINE/SCBA

WORK EFFORT: (CIRCLE ONE)
Light Moderate Heavy Strenuous

EXTENT OF Usage: (CIRCLE ONE)
1. On a daily basis
2. Occasionally - but more than once a week
3. 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, etc.)

MEDICAL WRITTEN EVALUATION

1. No restrictions on the respirators circled above
2. Respirator use with some restrictions
3. No respirator use allowed
4. Alternate respirator recommended

Comments/Restrictions:

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(over 45) (under 35) (35-45)
Routine Follow-up medical evaluation required:
5 yrs 2 yrs 1 yr

Or due to medical findings return: Date: _____

Employee has been given a copy of this recommendation.

Clinician's Signature: _____
Date: _____

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

Attachment H

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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. contaminant causes biological effect.
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. contaminant concentration is number to number times the OEL 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% oxygen in the air.
 - b. Air-purifying respirators cannot be used in 1DLH atmospheres.
 - c. Particulate filters remove particles in the air.
 - (1) N series filter respirators cannot be worn in oil aerosol atmospheres, R series filter respirators can be worn eight hours in oil aerosol atmospheres, and P series filter respirators can be worn in oil aerosol atmospheres up to a time limit set by the respirator manufacturer.
 - (2) Particulate filters cannot remove gas and vapor contaminants.

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d. Chemical cartridges remove gases and vapors but will not remove particulates.

(1) 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.

(1) Airline respirators are not approved for IDLH atmospheres. Loss of the breathing air source eliminates any protection to the respirator wearer.

Attachment I

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f. SCBAs are limited by service time of the air cylinder and weight

6. Explain how to don the respirator, how to maintain and inspect the resp
Attachment I-3.

7. Filters should be changed when increased breathing difficulty is first experienced and 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 break-through is experienced before scheduled change out time.

8. Inform employees what to do in emergency situations.

9. Explain shop-specific respirator problems concerning:

- a. Communications
- b. Vision
- c. Use in excessive heat or cold
- d. IDLH and oxygen deficient atmospheres
- e. Confined spaces.

10. Explain command policies concerning:

- a. Medical evaluation
- b. Facial hair
- c. Contact lenses
- d. Issue of voluntary use respirators.

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. The gas free engineer will teach these 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 NIOSH for 10 minute escape devices is 135° F. Breathing this air will be uncomfortable but is a small trade off for escaping from an IDLH atmosphere.

USER SEAL CHECKS

The user shall check the seal of the respirator by using positive and negative pressure user seal checks 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:

Negative pressure user seal check.

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

The wearer is instructed to inhale gently and hold their breath for at least 10 seconds.

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

User Seal Check

Negative Pressure

Positive pressure user seal check.

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

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

For some respirators, this test method requires that the respirator wearer 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. OSHA states in the preamble



to reference (a) that there are respirators that user seal checks can not be performed on and that these respirators can not be used to control exposure.

Positive Pressure User Seal Check

Attachment I-3
NMRCDINST 5100.10

CARTRIDGE CHANGE OUT SCHEDULE WORKSHEET
(CARTRIDGE CHANGE OUT is Sound Bite 1)

Operation: _____
Location: _____
Respirator Model: _____
Cartridge: _____

Chemical	Exposure Limit	Concentration	Boiling Point*

*Chemicals with boiling points less than 65° C (149° 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: _____

**CALCULATE BREAKTHROUGH TIME OF COMPONENTS
BASED ON THEIR PROPORTION OF THE MIXTURE**

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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
Total ppm	0			

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

Change out schedule including safety factor of ten percent:

Every _____ hours After each shift Weekly
 Other (specify):

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Attachment J-2

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**RESPIRATORY PROTECTION PROGRAM MANAGER
APPOINTMENT LETTER**

From: Commanding Officer, (Name of Command)
To: Name of Appointee

Subj: RESPIRATORY PROTECTION PROGRAM MANAGER APPOINTMENT

Ref: (a) OPNAVINST 5100.23E CH-1, Chapter 15
(b) 29 CFR 1910.134
(c) Command Respiratory Protection Program
Instruction number

1. As required by reference (a), you are designated as the Respiratory Protection Program Manager (RPPM) for this command.
2. You will be familiar with all of the requirements of references (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; respirator program oversight and evaluation; and maintenance/revision of command instructions and standard operating procedures for respiratory protection.
3. This appointment remains effective until your detachment or reassignment.

Enclosure (2)

RESPIRATOR SELECTION CRITERIA

The Assigned Protection Factors in Table 9-1 of reference (c) shall 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 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 fire fighting, damage control, and fire fighter 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) atmospheres must use full face pressure demand SCBAs 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 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, a chemical cartridge change schedule out 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.

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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 BUMED industrial hygiene surveys. Documentation for shop specific respirator selection is provided in enclosure (1), Attachment B.

Enclosure (3)

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RESPIRATOR MAINTENANCE

General Information

Cleaning, disinfecting, drying, issuing and inventory of respirators will be conducted in building number. The tool attendant is responsible for disassembling, cleaning, disinfecting, and reassembling all respirators.

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

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

Cleaning codes are specified in each shop SOP (enclosure (1), Attachment C).

Emergency Respirators

Emergency respirators will be cleaned and inspected after each use. Emergency respirators will be inspected monthly and a written record (enclosure (1), Attachment D) will be maintained with the respirator. The manufacturer's instructions for cleaning, disinfecting and inspecting emergency respirators (enclosure (1), Attachment E) will be followed. Also inspect emergency use respirators for proper function before and after each use. Examining emergency respirator performance before and after each use is not intended to be as extensive and thorough a process as the monthly inspection, but includes a basic examination conducted prior to each use to assure the wearer that the respirator which 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).

Disassembling Half Mask and Full Face Respirators

1. Remove filter and filter housing; discard filters.
2. Remove both inhalation valves.

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3. Remove exhalation valve and exhalation valve guard.
4. Remove elastic straps and set aside for separate cleaning.

Cleaning

1. Use warm soap and water solution, not to exceed 110•F.
2. Immerse all parts, excluding straps, in the solution.
3. Remove all dirt and grime.
4. Rinse in warm water, not to exceed 110•F, to remove all soap residue.

Enclosure (4)

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Disinfecting

1. Use a 72 ppm hypochlorite ion (OCl^-) (**72 ppm hypochlorite ion is sound bite 2**) solution by mixing 2ml 5.25% bleach per liter of water, or by mixing 2 teaspoons 5.25% bleach per gallon of water.
2. Immerse all parts, excluding straps, in the solution for 2 minutes.
3. Wipe straps, using a cloth dampened in the disinfectant solution.
4. Rinse all parts, excluding straps, in warm water (not to exceed 110•F) to remove disinfecting solution.

Drying

1. Place parts in the drying unit at a temperature not exceeding 110•F. (**OR** Let respirators air dry for several hours.)
2. Place respirators such that there is no distortion of the rubber and other elastomeric parts.
3. Reassemble the respirator when parts are completely dry. (or Ensure respirators are dry by wiping with a clean, dry lint-free towel or cloth.)

Issuing and Inventory Control

The tool room attendant is designated to issue respirators and is responsible for inventory control. The tool room attendant must be trained and thoroughly knowledgeable in the following areas:

1. Respirator selection for each shop listed in enclosure (1), Attachment B
2. Respirator cleaning, disinfection, and storage
3. Respirator inspection (enclosure (5))
4. Respirator inventory

Shop personnel will present their respirator qualification card (enclosure (12)) to the tool room attendant when requesting respirators.

Tool room attendants will ensure that:

1. The correct brand and type of air purifying cartridge is issued with the respirator (i.e., North cartridges are issued with North respirators).
2. Cartridges are free of dents and cracks.

Enclosure (4-2)
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RESPIRATOR INSPECTION PROCEDURES

HALF MASK

Name of manufacturer Type of respirator respirator, TC 84A-
number model number (Small) (Medium) (Large)

Name of manufacturer Type of respirator respirator, TC 84A-
number model number (Small) (Medium) (Large)

1. Visually inspect facepiece for cracks, deformities, tears, dirt, and any modifications.
2. Inspect straps. They must be elastic, pliable and unfrayed. Straps must have points of attachment for the facepiece. No modifications are allowed.
3. Inspect inhalation and exhalation valves for tears, cracks, distortion, and foreign materials (e.g., hair, lint, or dirt). Make sure valves lay flat on valve assembly. Assure that exhalation valve cover is in place and not cracked or broken.
4. Inspect cartridges, cartridge holders, O-rings, threads, etc.

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Enclosure (5)

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RESPIRATOR INSPECTION PROCEDURES

FULL FACE

Name of manufacturer Type of respirator respirator, TC
84A-number model number (Small) (Medium) (Large)

Name of manufacturer Type of respirator respirator, TC
84A-number model number (Small) (Medium) (Large)

1. Ensure that the lens is not scratched, cracked, or broken.
2. Ensure that the lens is completely sealed.
3. Ensure 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. Ensure the gasket is in place.
5. Straps must be elastic, pliable and unfrayed. Straps must have points of attachment for the facepiece. No modifications are allowed.

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

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

Enclosure (5-2)

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RESPIRATOR INSPECTION PROCEDURES

GAS MASKS, AIRLINE RESPIRATORS AND SCBAs

Name of manufacturer Type of respirator respirator, TC
84A-number model number (Small) (Medium) (Large)

Name of manufacturer Type of respirator respirator, TC
84A-number model number (Small) (Medium) (Large)

GENERAL

1. Ensure that the lens is not scratched, cracked, or broken.
2. Ensure that the lens is completely sealed.
3. Ensure the area where the lens holder comes in contact with rubber is not cut or torn.

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4. If the respirator has a speaking diaphragm, ensure that it is in place and not punctured. Ensure the gasket is in place.
5. Straps must be elastic, pliable and unfrayed. Straps must have points of attachment for the facepiece. No modifications are allowed.
6. Make sure all the clips are present and the straps are attached securely to the mask.
7. Ensure that the inhalation valves are present and in good working order.

AIRLINE RESPIRATORS

1. Ensure that the correct airline hose is used with supplied-air respirators.
2. Ensure airline connections are correct.
3. Check hose integrity for cuts, deterioration, tears, etc.

Enclosure (5-3)

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SCBAs

1. Follow manufacturer's recommended inspection procedures, enclosure (1), Attachment E.

CORRUGATED BREATHING TUBE

1. Stretch out the corrugated breathing tube. Inspect for cuts and abrasions. Ensure there are no pin holes in the corrugations.

GAS MASKS

Name of manufacturer Type of respirator respirator, TC
84A-number model number (Small) (Medium) (Large)

Name of manufacturer Type of respirator respirator, TC
84A-number model number (Small) (Medium) (Large)

1. Make sure that all required clamps are present.
2. Ensure gaskets are present in both ends of the breathing tube.
3. Check for cuts, gouges, and scratches on the threads.
4. Make sure that the canister is approved and that the shelf life has not expired.
5. Ensure that the back- and front-mounted canisters have a harness assembly.

Enclosure (5-4)

RESPIRATOR INSPECTION PROCEDURES

HOODS

Name of manufacturer Type of respirator respirator, TC 84A-number model number (Small)
(Medium) (Large)

Name of manufacturer Type of respirator respirator, TC 84A-number model number
(Small) (Medium) (Large)

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

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Enclosure (5-5)

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RESPIRATOR TRAINING, FIT TESTING, AND MEDICAL CLEARANCE RECORD

Employee: _____ SSN: _____ Shop: _____

Medical Clearance

Date	Clearance for Respirator Type	Restrictions

Fit Testing

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

Training

Date	Type of Training	Instructor

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Enclosure (6-2)

TRAINING

Respirator training is required to ensure that everyone required to wear a respirator is properly informed of respiratory 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.

Responsibility

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

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

Training

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

Respirator wearers must receive the training specified in the shop specific respirator training (enclosure (1), Attachment I), which includes:

1. Why respirators are required, including specific workplace hazards and respirator selection for their shop.
2. Status of engineering controls.
3. Respirator capabilities and limitations.
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. Respirator inspection.

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7. Respirator issue.
8. Breathing air quality, inspection and maintenance (if atmosphere-supplying respirators are used in the shop).
9. When to change filters (if air-purifying respirators are used in the shop).

Enclosure (7)

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10. Location of the shop respirator SOP in the workplace.
11. What to do in emergency situations.
12. 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 to enter IDLH or oxygen deficient atmospheres. The gas free engineer will provide training on emergency IDLH atmosphere entry procedures and provide practice emergency scenarios.

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

1. Workplace hazards and respirator selection for their shop.
2. Training received by their employees.
3. Respirator cleaning, disinfection, and storage.
4. Respirator inspection.
5. Respirator issue.
6. Breathing air quality, inspection and maintenance.

The tool attendant, assigned to issue, inspect, and inventory respirators, must be trained and thoroughly knowledgeable in the following:

1. Respirator selection for each shop.
2. Respirator cleaning, disinfection, and storage.
3. Respirator inspection.
4. Respirator inventory procedures.

Inform employees that Chapter 15 of OPNAVINST 5100.23E CH-1 is the Navy regulation for respirator use, and inform them of general requirements. Also inform employees that a copy of Chapter 15 and of the Command Respirator SOP are located in each shop office.

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Enclosure (7-2)

FIT TESTING

Employee Selection of Respirators

Each individual must be medically qualified and have enclosure (1), Attachment H completed before initial fit testing.

Employees will be instructed how to don respirators and perform positive and negative pressure user seal checks prior to respirator selection. Employees will wear the respirator at least five minutes prior to fit testing to assess comfort.

When safety glasses or goggles must be worn with half mask respirators the respirator will be fit tested while wearing the eye-ware. All other required personal protective equipment will be worn with the respirator during fit testing procedures.

The following respirators will be provided for employees to select the best fitting and most comfortable respirator:

Name of manufacturer Type of respirator respirator, TC-number
model number (Small) (Medium) (Large)

Name of manufacturer Type of respirator respirator, TC-number
model number (Small) (Medium) (Large)

Name of manufacturer Type of respirator respirator, TC-number
model number (Small) (Medium) (Large)

Name of manufacturer Type of respirator respirator, TC-number
model number (Small) (Medium) (Large)

Qualitative Fit Testing Protocol

Qualitative fit testing will be performed according to Appendix A of 29 CFR 9110.134.

If an employee cannot pass the threshold test for isoamyl acetate, then the irritant smoke fit testing protocol will be used.

Organic vapor cartridges will be used for the isoamyl acetate fit testing procedure.

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HEPA filter cartridges (N, R, or P 100) will be used for the irritant smoke fit testing procedure.

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Quantitative Fit Testing Protocol

Full face air-purifying respirators are allowed to 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 OELs, then quantitative fit testing must 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.

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.

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

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

Fit Testing Frequency

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

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
3. any dental changes
4. Any reconstructive surgery or cosmetic surgery

It is the employee's responsibility to notify their supervisor and the RPPM of any of the above changes or other circumstances that might interfere with the facial seal of the respirator.

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 (8-2)
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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 (Enclosure (8-4)), modified from Annex A of ANSI Z88.10, to evaluate and verify fit test operators' qualifications. Fit test operators 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:

Respiratory protective devices used in activity workplaces:

- * respirator components and their function
- * respirator inspection, cleaning and maintenance
- * brands and models of respirators worn
- * respirator capabilities and limitations
- * proper donning/doffing procedures along with positive and negative pressure user seal checks

Fit test methods:

- * purpose of fit testing (be able to explain the fit test purpose and procedures to personnel being fit tested)
- * fit testing procedures
- * limitations of the test methods (e.g., sensitivity tests and subjective responses of qualitative methods)
- * fit test results
- * proper respirator cleaning and sanitizing
- * proper cartridges/filters for each fit test method used
- * probes or fit test adapters used in quantitative fit testing
- * qualitative fit test materials

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- * quantitative fit test equipment, including assembly and operational checks
- * understand when not to perform fit testing based on facial characteristics, features, jewelry, or other problems, such as facial hair, that would interfere with the facepiece sealing surface
- * evaluating and recording fit test results

Enclosure (8-3)

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FIT TEST OPERATOR EVALUATION FORM

Fit Test Operator Name _____

Date _____

- Type of Qualitative Test
- Type of Quantitative Test

Demonstration of Knowledge and Performance	Acceptable	Non-Acceptable	N/A
<i>Demonstrates general knowledge of respirators:</i>			
identifies facepiece components and their function	•	•	•
demonstrates facepiece inspection, cleaning, and maintenance	•	•	•
identifies different brands and models of respirator facepieces	•	•	•
explains respirator capabilities and limitations as related to respirator fit testing	•	•	•

demonstrates proper donning and doffing procedures including user seal checks			
<i>Demonstrates knowledge of fit test method:</i>			
explains purpose of respirator fit testing	•	•	•
explains fit test procedures	•	•	•
explains limitations of the fit test method	•	•	•
identifies erroneous fit test results			

Enclosure (8-4)

Demonstration of Knowledge and Performance	Acceptable	Non-Acceptable	N/A
<i>Demonstrates ability to set up fit test equipment:</i>			
selects proper cartridges or filters for the method	•	•	•
prepares/performs operational check of qualitative fit test materials	•	•	•
installs probes or fit test adapters (quantitative)	•	•	•

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Enclosure (8-5)

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Enclosure (8-6)

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RPPM's ANNUAL RESPIRATORY PROTECTION PROGRAM AUDIT

Are engineering controls used where feasible to control workplace contamination? (OPNAVINST 5100.23E CH-1, paragraph 1501 and 29 CFR 1910.134(a)(1))

Has the command appointed a respiratory protection program manager in writing? (OPNAVINST 5100.23E CH-1, paragraphs 1503.a. and 1513.a.)

Is the respiratory protection program manager in one of the following Office of Personnel Management position series: GS-018, Safety and Occupational Health Manager; GS-803, Safety Engineer; GS-019, Safety Technician; GS-0804, Fire Protection Engineer; GS-0081, Fire Protection Specialist/Marshall; GS-1306, Health Physicist; or GS-690, Industrial Hygienist? (OPNAVINST 5100.23E CH-1, Glossary, page G-15, RPPM)

Has the respiratory protection program manager received training according to OPNAVINST 5100.23E CH-1, paragraph 1512?

Are standard operating procedures (SOPs) 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? (OPNAVINST 5100.23E CH-1, paragraph 1513.a.(2))

Have work site SOPs been written and posted in the general area? (OPNAVINST 5100.23E CH-1, paragraph 1513.a.(2))

Are SOPs up-to-date with current workplace operations and industrial hygiene survey findings?

Does the local industrial hygienist perform an annual audit of the respirator program? (OPNAVINST 5100.23E CH-1, paragraph 1513.b.(2)(a))

Does the respirator program manager perform routine evaluations of the respirator program, including field

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observations of personnel wearing respirators, respirator storage
and maintenance?

Enclosure (9)

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Are respirators selected according to the specific hazard for which protection is required, along with the protection factor and capabilities of the respirator? (OPNAVINST 5100.23E CH-1, paragraph 1507)

Are only NIOSH or NIOSH/MSHA approved respirators being used? (OPNAVINST 5100.23E CH-1, paragraph 1507.a.)

Are respirators cleaned and disinfected according to instructions in the SOP? (OPNAVINST 5100.23E CH-1, paragraph 1510)

Are respirators inspected for worn, torn, or deteriorated parts? (OPNAVINST 5100.23E CH-1, paragraph 1510)

Are respirators stored in convenient, clean, and sanitary locations? (OPNAVINST 5100.23E CH-1, paragraph 1513.a.(1)(c))

Are emergency respirators inspected monthly? (29 CFR 1910.134(h)(3)(B) and (C))

Is a written record kept of the monthly emergency respirator inspections? (29 CFR 1910.134(h)(3)(C)(iv)(A) and (B))

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

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 5100.23E, paragraph 1511. and ANSI Z88.2-1992, clause 8.1.1))

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Enclosure (9-2)
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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 5100.23E CH-1, paragraph 1511)

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

Are respirator wearers fit tested annually? (OPNAVINST 5100.23E CH-1, paragraphs 1509.a. and 1513.a.(6))

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))

Are industrial hygiene surveys performed to evaluate employee exposure, including air sample result documentation in employee medical records? (OPNAVINST 5100.23E CH-1, paragraph 0802)

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Enclosure (9-4)

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WEEKLY RESPIRATOR INSPECTIONS

Are engineering controls being used where feasible to control workplace contamination? (OPNAVINST 5100.23E CH-1, paragraph 1501.b. and 29 CFR 1910.134(a)(1))

Have work site SOPs been written and posted in the general area? (OPNAVINST 5100.23E CH-1, paragraph 1513.a.(2))

Are standard operating procedures (SOPs) 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 and fit testing? (OPNAVINST 5100.23E CH-1, paragraph 1513.a.(2))

Are respirators selected according to the specific hazard for which protection is required, along with the protection factor and capabilities of the respirator? (OPNAVINST 5100.23E CH-1, paragraph 1507 and Table 9-1 of NEHC Technical Manual, Industrial Hygiene Field Operations Manual, latest revision)

Are only NIOSH or NIOSH/MSHA approved respirators being used? (OPNAVINST 5100.23E CH-1, paragraph 1507.a.)

Are respirators cleaned and disinfected according to instructions in the SOP? (OPNAVINST 5100.23E CH-1, paragraph 1510 and 29 CFR 1910.134(h)(1) and Appendix B-2)

Are respirators inspected for worn, torn, or deteriorated parts? (29 CFR 1910.134(h)(3))

Are respirators stored in convenient, clean, and sanitary locations? (OPNAVINST 5100.23E CH-1, paragraph 1513.a.(1)(c) and 29 CFR 1910.134(h)(2))

Are emergency respirators inspected monthly? (29 CFR 1910.134(h)(3)(B) and (C))

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Enclosure (10)

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Is a written record kept of the monthly emergency respirator inspections? (29 CFR 1910.134(h)(3)(C)(iv)(A)and (B))

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

Is air from breathing air compressors checked quarterly to ensure that it meets Grade D air requirements? (OPNAVINST 5100.23E CH-1, paragraph 1506)

Have personnel on emergency rescue teams and all personnel wearing emergency respirators received proper training for entering and escaping from IDLH atmospheres? (OPNAVINST 5100.23E CH-1, paragraph 1511 and ANSI Z88.2-1992, clause 8.1.4)

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

Are respirator wearers fit tested annually? (OPNAVINST 5100.23E CH-1, paragraphs 1509.a. and 1513.a.(6))

Enclosure (10-2)

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Enclosure (11-2)

SUGGESTED RESPIRATOR QUALIFICATION CARD

<u>Name of Command</u>	
RESPIRATOR QUALIFICATION	
photo	Name _____
Shop _____	ID Number _____
Expiration date _____	_____

Type of Respirator	_____	_____	_____
Brand of Respirator	_____	_____	_____
Model #	_____	_____	_____
Size			

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Enclosure (12-2)

**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, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

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

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

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

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

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Enclosure (13-2)

RESPIRATOR CARTRIDGE CHANGE SCHEDULES

A copy of Enclosure (1), Attachment J (**enclosure (1), Attachment J is Sound Bite 2**) will be filled out by the Command RPPM for every operation requiring a respirator cartridge change out schedule to ensure cartridges are changed before breakthrough occurs.

Establishing cartridge change out schedules for gas and vapor contaminants will require concerted efforts between RPPMs and BUMED industrial hygienists. The RPPM will provide a copy of Enclosure (1), Attachment J to local BUMED industrial hygienists to help with the collection of information needed to calculate cartridge change out schedules. The Command RPPM will make arrangements with the local BUMED Industrial Hygiene Office to:

- * Provide respiratory hazard exposure data in both mg/m^3 and in parts per million.
- * Calculate threshold limit values for mixtures when appropriate.
- * Provide environmental data concerning workplace temperature, humidity, and worker breathing rate.
- * 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.)
- * Verify cartridge change out schedules by collecting air samples behind the cartridges using air sampling methods supported by the Consolidated Industrial Hygiene Laboratories.

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

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

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

- * Look up the cartridge service life calculator estimated breakthrough time for each mixture component on the respirator manufacturers' service life software. (Enclosure 14)

* 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.

* Base 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.

These calculations are performed automatically using the built-in spread sheet capabilities of the table in Enclosure (1), Attachment J entitled "*Calculate Breakthrough Time Of Components Based On Their Proportion Of The Mixture.*"

To verify the estimated change out schedules in the field, make arrangements with local BUMED 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 (OELs) 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 5 to 10 minutes while wearing the respirator in the worksite during air sample collection so breathing rate will not interfere with collection of the sample. The workers' normal breathing will not adversely influence 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 respirator cartridge 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.

BUMED industrial hygienist will install the Portacount[®] mask sampling adapter between the respirator facepiece 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 (See Figure 1). 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 redon the respirator.

When back in 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 facepiece. If there are no chemical contaminants detected in change out schedule.

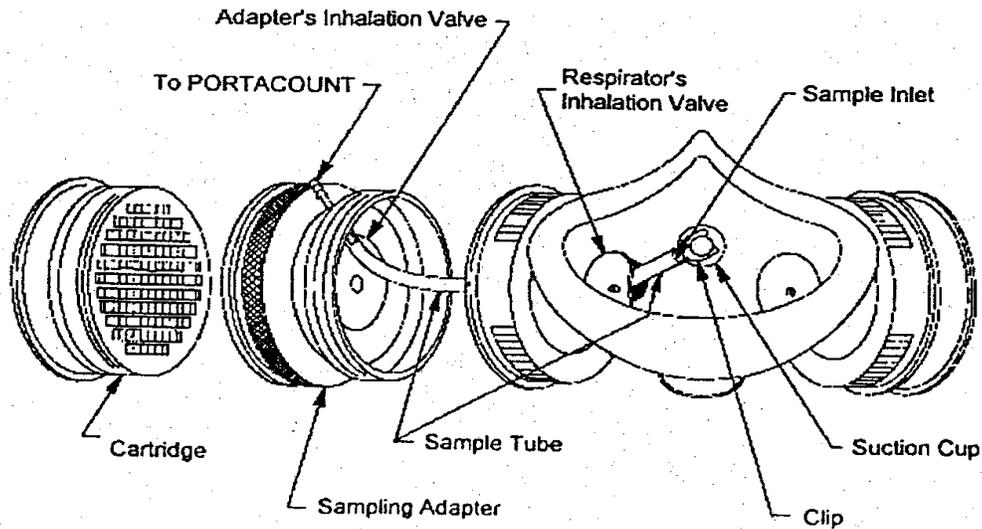


Figure 1

For single contaminants, use the respirator manufacturers' 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 BUMED Industrial Hygienists to collect an air sample behind the cartridge using a Portacount® mask sampling adapter to verify the change out schedule.