RESPIRATOR SOP GUIDANCE

I. INTRODUCTION TO STANDARD OPERATING PROCEDURES (SOPS)

A. Standard operating procedures are a set of step-by-step directions, written in such detail that the described operation can be performed repeatedly with a consistent, desirable end result. An SOP should be provided for any respirator related operation that is important enough to be performed correctly every time.

B. The Occupational Safety and Health Administration (OSHA) states in the preamble to the Respirator Standard, 29 CFR 1910.134 that written respirator SOPs are not common in general industry. OSHA stated that only 25.5% of industry was estimated to have written standard operating procedures, and only 7.9% had procedures that addressed all of the program elements required by the original OSHA Respirator Standard (selection, use, cleaning, maintenance, respirator inspection and storage, training and medical evaluation). Similarly, the Navy Occupational Safety and Health (NAVOSH) Oversight Inspection Unit has found many problems with Navy respirator program SOPs.

C. SOPs should be written, coordinated, and administered by the respiratory protection program manager (RPPM).

II. STANDARDS REQUIRING RESPIRATOR SOPS

A. **29 CFR 1910.134** - In paragraph (c) of reference (1), the term "written standard operating procedures (SOP)" used in the original OSHA Respirator Standard has been replaced with the words "worksite-specific procedures." OSHA found that the requirement for written standard operating procedures led to rote paraphrasing of their respirator standard. In the Preamble to 29 CFR 1910.134, OSHA stated that "*Changing the terminology from "SOPs'" to "worksite-specific procedures" gives employers the incentive to develop procedures that are unique and specific to the employer's workplace, to describe the particular respirator selection process used in that workplace, and to explain how employees are to use respirators in that setting.*" OSHA has also revised their program elements in paragraphs (c)(1)(i) through (c)(1)(ix) of the final standard to provide additional details about each requirement. The program elements remain performance based to enable employers to adapt them to their workplaces as applicable. The program elements include:

1. Procedures for selecting respirators for use in the workplace
2. Medical evaluations of employees required to use respirators
3. Fit testing procedures for tight-fitting respirators
4. Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations
5. Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators
6. Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators
7. Training employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations

8. Training employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance

9. Procedures for regularly evaluating the effectiveness of the program

III. ANSI Z88.2

A. Clause 4.5.2 of reference (2) states that "*Written standard operating procedures covering the complete respirator program shall be established and implemented (clause 6).*" Clause 6 requires that SOPs include plans necessary to ensure the safe use of respirators and states that SOPs should cover the following elements:

1. Training respirator wearers
2. Fit testing
3. Issuance
4. Cleaning, storage, and maintenance
5. Inspection
6. Monitoring use
7. Monitoring hazards
8. Selection
9. Company policies
10. Operating procedures for emergency and rescue use

IV. OPNAVINST 5100.23 SERIES

A. Paragraph 1503.a. of reference (3) requires the commanding officer or officer in charge to establish a respirator program and appoint an RPPM to implement the program. Similar to OSHA, Navy policy requires each activity using respiratory protection to have written standard operating procedures specific for each worksite. Paragraph 1513.a.(2) of reference (3) requires as a minimum, written command standard operating procedures governing the selection, care, issue and use of respirators, including cartridge change out schedules as appropriate, along with specific worksite SOPs posted in the work area. When necessary, Navy SOPs shall include emergency and rescue guidance. In other words, a written SOP must be established for each element of the respirator program specified in requirements of Chapter 15 of OPNAVINST 5100.23 Series.

V. OPNAVINST 5100.19 SERIES

A. Paragraph B0603.c of reference (4) requires "*Written standard operating procedures (SOPs) governing the selection, care, issue, and use of respirators, including worksite SOPs.*"

VI. PROGRAM ELEMENTS REQUIRING SOPS

A. There should be an SOP for each element of the respirator program.

1. Respirator Selection. SOPs should include information on how respirators are selected. The SOP should include the criteria and logic used in selection, such as the protection factor of the respirator; maximum use concentration; occupational

exposure limit; hazard ratio; chemical, physical, and toxicological properties of the inhalation hazards along with the concentration and time weighted average exposure; and frequency and duration of the operation. References (1), (2), and Chapter 9 of reference (5) are useful references in writing respirator selection SOPs. When specifying what respirator was selected, include the class of respirator, the manufacturer, model number, and NIOSH or NIOSH/MSHA approval numbers in the SOP. This information is available in manufacturers' literature and on the NIOSH Certified Equipment List.

2. Training. Address training requirements for respirator wearers, supervisors, and respirator issuers. Paragraph (k) of reference (1) provides requirements for training respirator wearers. Training guidelines for respirator wearers, issuers, supervisors, and emergency personnel are found in clause 8 of reference (2). Navy training requirements are in paragraphs 1511 and B0612. of references (3) and (4), respectively. Training SOPs should include the name of who will conduct the training (e.g., RPPM). List what topics will be included in the training. Include the command's policy statement on wearing contact lenses with respirators. State the frequency of training and how to demonstrate respirator wearers' understanding and knowledge of the training.

3. Fit Testing. Specify how employees are fit tested, what fit testing protocol is used, who performs the fit testing, and how frequently the workers will be fit tested. Discuss the qualification requirements for fit test operators and how their performance will be evaluated. If quantitative fit testing is performed, include criteria for passing and failing. Include the command's policy statement about prohibiting use of tight-fitting respirators on individuals with facial hair that interferes with the respirator seal or valve function. Include the policy on other conditions that could prevent a good facepiece-to-face seal (e.g., scars, false teeth, loss of teeth, weight gain or loss sufficient to affect the fit of the respirator seal).

4. Maintenance Program. Include respirator procedures for cleaning, disinfecting, drying, inspecting, repair, replacement parts, and storage procedures. State who will perform the cleaning, where it is done and how frequently cleaning and inspection are required. Include details on how to disassemble the respirator and what is inspected during disassembly. State what cleaner/sanitizer solution is used; how to prepare it, and how long respirators are immersed. Specify the water temperatures, how respirators are dried, how worn or deteriorated parts are replaced, and how and where respirators are stored.

5. Breathing Air Quality. State that 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 reference (6). Indicate who is responsible for testing the breathing air and the test methods used. Provide details of how test results are recorded. Include specific instructions for air compressor inspection and maintenance and compressed air cylinder inspection and hydrostatic testing.

6. Administrative Procedures. Assign responsibilities for purchasing new respirators, inventory control, stocking spare parts, and keeping manufacturers' instructions for use and care of respirators.

7. Work Place Surveillance. Paragraph 1513.b.(2)(d) of reference (3) states that BUMED will provide an evaluation of respiratory hazards. State in the SOP that if workplace operations change, the shop supervisor will notify the local industrial hygienist to reevaluate employee exposure.

8. Emergency Respirators. Provide details of inspection procedures. Discuss how required monthly and after use inspections will be documented. State that written records require inspection dates and findings. State who will inspect the respirators and where the records are kept. If emergency respirators are necessary, emergency plans must be written and should be rehearsed.

9. Respirator Issue. State who issues respirators and where are they issued.

10. Program Evaluation. Include how often SOPs are to be reviewed and revised. Paragraph 1513.b.(2)(a) of reference (3) requires that BUMED, during the periodic survey, provide the program manager with a written evaluation on the effectiveness of the respirator program based on occupational medicine reviews. Also, paragraph 1513.a.(8) requires RPPMs to perform an annual audit of the respirator program. SOPs should list what the audit will consist of to ensure that respirators are correctly selected, properly used, in good condition, and being worn correctly. Include supervisors' responsibility to ensure correct respirator use and maintenance and state that all problems identified during the RPPM audits and the periodic BUMED program evaluations will be corrected as soon as possible.

11. Respirator Cartridge Change Out Schedules. The change out schedule, along with the supporting data, must be incorporated in the written respirator program. Include the following information:

a. Frequency and duration of the operation and the Upper Tolerance Limits ($UTL_{95\%, 95\%}$) or worst case exposure concentrations for the contaminants in the operation

b. Temperature, relative humidity, and worker breathing rate

c. Estimated breakthrough time for individual mixture components from cartridge service life calculator

d. Calculations, such as using the mole fraction method to determine breakthrough time of the mixture components relative to their proportion in the mixture

e. Estimated change out schedule for the mixture

f. Results of air sampling behind the cartridges to verify estimated change out schedules

12. Medical Evaluation. Address who conducts medical surveillance, where it is done, the age dependent frequency, and who schedules appointments. Include both

initial examinations, which determine if the user is medically qualified to use the respirator, and periodic examinations, which reevaluate those qualifications.

VII. GENERIC RESPIRATORY PROTECTION PROGRAM - POLICY AND SOPS

A. The "Generic Respirator SOP," which can be found under the NAVMCPUBHLTHCEN "Industrial Hygiene" homepage, provides a model for command respirator policies and standard operating procedures. This model is as comprehensive as possible, covering every respirator program element. The intent is for RPPMs to review this document and tailor sections that are applicable to the needs of their program. The first part of this document is a model for establishing the command's Respiratory Protection Program. Subsequent enclosures cover individual facets of the program.

VIII. REFERENCES

1. Occupational Safety and Health Administration (OSHA): 29 CFR Parts 1910 and 1926 Respiratory Protection: Final Rule. Federal Register 63(5):1278–1279. Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register, January 8, 1998. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12716

2. American National Standards Institute (ANSI): American National Standard for Respiratory Protection (ANSI Z88.2). New York: ANSI, 1992.

3. OPNAVINST 5100.23 Series. http://doni.daps.dla.mil/Directives/05000%20General%20Management%20Security%20and%20Safety%20Services/05-100%20Safety%20and%20Occupational%20Health%20Services/5100.23G.pdf

4. OPNAVINST 5100.19 Series. http://doni.daps.dla.mil/allinstructions.aspx?RootFolder=/Directives/05000%20General%20Management%20Security%20and%20Safety%20Services/05-100%20Safety%20and%20Occupational%20Health%20Services&View={1FF912B1-1BC6-444A-8943-B769C77880F2}

5. NAVMCPUBHLTHCEN Technical Manual, Industrial Hygiene Field Operations Manual, latest revision

6. Compressed Gas Association (CGA). CGA G-7.1-2004, Commodity Specification for Air.. CGA, Arlington, VA. 2004.