



DEPARTMENT OF THE NAVY  
BUREAU OF MEDICINE AND SURGERY  
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FALLS CHURCH, VA 22042

Canc: Dec 2013  
IN REPLY REFER TO  
BUMEDNOTE 6260  
BUMED-M44  
13 Dec 2012

BUMED NOTICE 6260

From: Chief, Bureau of Medicine and Surgery

Subj: INTERIM NAVY MEDICINE HEARING CONSERVATION PROGRAM  
GUIDANCE

Ref: (a) DoD Instruction 6055.12 of December 3, 2010  
(b) MCO 6260.1E  
(c) OPNAVINST 5100.19E  
(d) NEHC-TM6290.91-2 Rev. B Chapter 5 of Apr 2011  
(e) 29 CFR 1910.95  
(f) CMC WASHINGTON DC 061313Z JAN 12 (MARADMIN 010/12)  
(g) NMCPHC-TM 6260.51.99-2 of Sep 2008  
(h) SECNAV Manual 5210.1 of Jan 2012

Encl: (1) Navy Medicine Interim Hearing Conservation Program Guidance

1. Purpose. The following guidance is provided to assist industrial hygiene program offices (IHPOs) per references (a) through (g) as appropriate. Enclosure (1) is the interim hearing conservation program (HCP) Guidance.
2. Scope. The guidance is effective within 30 days of the date of this notice. This note applies to IHPOs.
3. Background. The Department of Defense HCP has been updated per reference (a). The Interim HCP Guidance clarifies select topics. It is not the intent of this guidance to readdress all HCP elements.
4. Action. Navy Medicine Region industrial hygienists must comply with enclosure (1).
5. Points of Contact. My points of contact for this are CAPT Jonathan Nelson, MSC, USN, Director, Safety and Occupational Health (BUMED-M44), who can be reached at (703) 681-9318 or jonathan.nelson@med.navy.mil, or CAPT Kathryn Johnson, MC, USN, Clinical Operations, Occupational Medicine (BUMED-M3) at (703) 681-9185 or kathryn.johnson2@med.navy.mil.
6. Records Management. Records created as a result of this instruction, regardless of media and format, shall be managed per reference (h).

BUMEDNOTE 6260

13 Dec 2012

7. Reports. The reports required in enclosure (1), paragraph 9 are authorized in references (a) through (d) and (g).



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## **NAVY MEDICINE INTERIM HEARING CONSERVATION PROGRAM GUIDANCE**

1. Background. The Department of Defense (DoD) hearing conservation program (HCP) has been updated per reference (a). The following guidance is provided to assist industrial hygiene program offices (IHPOs) per references (a) through (g) as appropriate. It is not the intent of this guidance to readdress all HCP elements. Select topics requiring clarification will be discussed.
2. Interim Occupational Exposure Limit (OEL)/Criterion Level. Per references (a), (d), and (g), the interim Bureau of Medicine and Surgery (BUMED) OEL/criterion level will be 85 decibel (dB) (A) (continuous equivalent A-weighted sound pressure level in decibels) as an 8-hour time-weighted average (TWA), or exposure to a peak of 140 dB.
3. Noise Measurement and Analysis. Noise measurement and analysis will be conducted per reference (d). A time-intensity exchange rate of 3 dB will now be used per references (a) and (d). As noted in reference (d), C-weighted sound pressure level (SPL) measurements are preferred to determine hearing protective device (HPD) performance. As such, consideration should be given to purchasing noise dosimeters that capture C-weighted TWAs as well as A-weighted TWAs when replacing current noise dosimeters. Future research may include in-ear noise dosimetry.
4. Employee Notification of Monitoring Results. Per reference (e), the employer shall notify each employee exposed at or above an 8-hour TWA of 85 dB(A) of the results of the monitoring. This means that results of personal noise dosimetry monitoring that are at or above 85 dB(A) as an 8-hour time-weighted average must be forwarded to the activity commanding officer. Actual notification of employees remains an activity responsibility.
5. Identifying Personnel at Risk/Audiometric Testing. Per references (a) through (g), all personnel routinely exposed to noise in excess of the OEL, and others determined to be at risk shall be recommended for inclusion in the HCP. Reference (g) describes “routinely” as “when the TWA exceeds 85 dB(A) on average more than 2 days in any month”. For purposes of this guidance the definition of “routinely” will be extended to include, not only individuals exceeding the 8 hour TWA OEL, but also those exceeding the 140 dB(P) OEL. Individuals that meet the criteria for exposure intensity and frequency are considered at risk and must be included in audiometric testing. Reference (f) requires all active duty and reserve Marine Corps personnel to be included in annual audiometric testing independent of any exposure assessment results.
6. Personal HPDs. As outlined in paragraph 7e of enclosure (3) to reference (a), recommended HPDs must be capable of attenuating worker noise exposure below an 8-hour TWA of 85 dB(A) and 140 dB peak (dB(P) per reference (d)). Per references (a) and (e), HPD attenuation shall be evaluated for the specific noise environments in which the protector will be used. The BUMED industrial hygienist (IH) shall determine the degree of attenuation for HPDs by using the evaluation method discussed below: The actual effectiveness of any individual hearing protector cannot be determined under workplace conditions; however, both reference (a) and (e) require that personal hearing protection be worn to attenuate the occupational noise exposure of

employees to within the limits of the OEL. Hearing protectors are evaluated under rigorous laboratory conditions specified by the American National Standards Institute in ANSI Z24.22-1957 (R1971) and ANSI S3.19-1974. However, the Occupational Safety and Health Administration's experience and the published scientific literature indicate that laboratory-obtained real ear attenuation for hearing protectors can seldom be achieved in the workplace. Reference (c) and Appendix B of reference (e) provide information on how to determine the adequacy of hearing protector attenuation using the noise reduction rating (NRR) of a given hearing protector.

a. Field Attenuation of HPDs. To estimate the attenuation afforded to a noise-exposed employee in an actual work environment by muffs, plugs, or a combination of both, proceed as follows:

(1) For muffs or plugs:

(a) Obtain the NRR which is on the packaging of the HPD;

(b) Subtract 7 dB from the NRR to correct for using A-weighted measurements. For C-weighted measurements and peak measurements, no correction is needed;

(c) To adjust for workplace conditions, apply a safety factor of 50 percent. This is because the field use of HPDs does not afford the same degree of protection achieved in the laboratory using well-trained subjects under ideal test conditions.

(2) For dual protection (i.e., muffs and plugs):

(a) Obtain the NRR for the higher rated hearing protector, subtract 7 dB if using A-weighted measurements, no correction for C-weighted measurement or peak measurements, and apply a safety factor of 50 percent;

(b) Then add 5 dB to the field-adjusted NRR to account for the use of the second hearing protector.

(3) Calculation examples are provided on the last page of this document.

(4) Personnel shall not be exposed to noise levels greater than 100 dB(A) (i.e., the effective field derated upper limit of dual HPDs) without wearing dual hearing protection (i.e., muffs and plugs) and implementing administrative controls to bring the effective exposure to less than an 8-hour TWA of 85 dB(A) or 140 dB(P).

**SUMMARY OF HPD USE REQUIREMENTS\***

<b>SPL</b>	<b>HPD Requirement</b>	<b>Rationale*</b>
<p>≥ 85 – 96 dBA or ≥ 140 dB(P) - &lt; 165 dB(P)</p>	<p>Single (plugs or muffs) with derated NRR that will bring the effective exposure to less than an 8-hour TWA of 85 dB(A) or 140 dB(P)</p>	<p>Ex. A more effective HPD might be considered to have a NRR of 29. The effective “dB(A)” derated NRR is approximately 11 (i.e., <math>29 - 7 \times 0.5</math>). The approximate upper SPL attenuation limit of the derated single HPD is 96 dB(A) (i.e., <math>85 + 11</math>)</p>
<p>&gt; 96 -100 dBA or ≥ 165dB(P)</p>	<p>Double (plugs and muffs) with derated NRR that will bring the effective exposure to less than an 8-hour TWA of 85 dB(A) or 140 dB(P)</p>	<p>Ex. One HPD has a NRR of 29 and the other has a NRR of 27. The effective “dBA” derated NRR for the higher rated HPD is approx 11 (i.e., <math>29 - 7 \times 0.5</math>). The second HPD adds approximately 5 dB of additional attenuation. The approximate upper SPL attenuation limit of the derated double HPDs is 101 dBA (i.e., <math>85 + 11 + 5</math>). (Upper limit was rounded to 100 dB(A))</p>
<p>&gt; 100 dBA</p>	<p>Double (plugs and muffs) with a derated NRR combined with administrative controls to bring the effective exposure to less than an 8-hour TWA of 85 dB(A) or 140 dB(P)</p>	<p>Same basic rationale as for “Double” HPDs</p>

\* The “96” and “100” dBA criterion for single and double HPD use, respectively are general “rules of thumb”. Therefore, BUMED IHs shall recommend the appropriate type of HPD based upon the actual derated attenuation properties of the HPD for the given assessed environment and other factors such as comfort, length of use, cost, cleaning and maintenance, etc.

7. Noise Hazard Signs and Labels. The designation of hazardous noise areas and equipment will be conducted per reference (d). Per reference (d), the designation of hazardous noise areas and equipment is based on the following criteria:

a. Any work area or equipment where the sound pressure level is 85 dB(A) or above (continuous or intermittent) shall be considered noise hazardous;

b. Any work area or equipment where the sound pressure level is 140 dB(P) or greater (impulse or impact) shall be considered noise hazardous;

c. Areas or equipment where the sound pressure levels are 85 dB(A) or greater, but less than 96 dB(A), shall be labeled and shall require the use of single hearing protection (approved ear plugs or circumaural muffs) that attenuates worker noise exposure below an 8-hour TWA of 85 dB(A). Areas or equipment where the sound pressure levels are 96 dB(A) (i.e., the effective field derated upper limit of most plugs or muffs) or greater shall be labeled and shall require the use of double hearing protection (approved ear plugs and circumaural muffs) that attenuates worker noise exposure below an 8-hour TWA of 85 dB(A);

d. Per reference (d) areas or equipment where the sound pressure levels are 140 dB(P) or greater, but less than 165 dB(P), shall be labeled and shall require the use of single hearing protection that attenuates worker noise exposure below 140 dB(P). Areas or equipment where the sound pressure levels are 165 dB(P) or greater shall be labeled and shall require the use of double hearing protection that attenuates worker noise exposure below 140 dB(P);

e. Per reference (d), exteriors, but not interiors, of military combatant equipment are excluded from this requirement. Professional judgment and discretion shall be exercised when labeling tools and equipment.

8. Recordkeeping. Documentation and retention of noise measurement records shall be done per paragraph 3b of reference (d). Additionally, the DoD OEL criteria shall be selected/used when entering applicable noise monitoring results into the Defense Occupational and Environmental Health Readiness System-Industrial Hygiene.

9. References in reports. For simplicity and consistency, cite both reference (a) (or (c) for afloat) as the primary references when reporting noise monitoring results in reports and SF-600s, or when discussing other HCP topics. References (b), and (d) through (g) can also be added as needed.

10. Examples of HPD Field Attenuation Calculations

a. Given an 8-hour TWA of 95 dB(A) and HPD with an NRR of 29.

(1) Correct the NRR to account for A weighting:  $29 - 7 = 22$ ;

- (2) Derate the corrected NRR by multiplying by 0.5:  $22 * 0.5 = 11$ ;
  - (3) Eleven estimates the attenuation provided by the HPD;
  - (4) Exposure of 95 dB(A) – 11 = 84 dB(A);
  - (5) The HPD is considered effective because it attenuates the sound level to below 85 dB(A).
- b. Given an 8-hour TWA of 104 dB(A) and double hearing protection worn. One type of HPD has an NRR of 29 the other an NRR of 33.
- (1) Correct the higher NRR to account for A weighting:  $33 - 7 = 26$ ;
  - (2) Derate the higher NRR by multiplying by 0.5:  $26 * 0.5 = 13$ ;
  - (3) Thirteen estimates the attenuation provided by the higher NRR HPD;
  - (4) Account for the second HPD by adding 5 to the estimate of attenuation afforded by the HPD with the higher NRR.  $NRR = 13 + 5 = 18$ ;
  - (5) Eighteen estimates attenuation provided by the double hearing protection;
  - (6) Exposure of 104 dBA – 18 = 86 dBA.
  - (7) The double HPD is not considered effective because it does not attenuate the sound level to below 85 dBA. A different combination of HPD with higher NRR or administrative controls is needed.
- c. Given a dB(P) measurement of 154 dB(P) and double hearing protection worn. One type of HPD has an NRR of 29 the other an NRR of 33.
- (1) Derate the higher NRR by multiplying by 0.5:  $33 * 0.5 = 16.5$ ;
  - (2) Sixteen point five estimates the attenuation provided by the higher NRR HPD;
  - (3) Account for the second HPD by adding 5 to the estimate of attenuation afforded by the higher NRR HPD;
  - (4)  $NRR = 16.5 + 5 = 21.5$ ;
  - (5) Twenty-one point five estimates attenuation provided by the double hearing protection;

(6) Exposure of  $154 \text{ dB(P)} - 21.5 = 132.5 \text{ dB(P)}$  ;

(7) The double HPD is considered effective because it does attenuate the sound level to below  $140 \text{ dB(P)}$ .