

CHAPTER 18

HEARING CONSERVATION

- Ref:
- (a) DoD Instruction 6055.01, DoD Safety and Occupational Health Program, 14 Oct 2014
 - (b) DoD Instruction 6055.05, Occupational and Environmental Health (OEH), 11 Nov 2008
 - (c) OPNAVINST 5100.19F, Navy Occupational Safety and Health Program for Forces Afloat, 5 May 2019
 - (d) NMCPHC Technical Manual OM 6260, Medical Surveillance Procedures Manual and Medical Matrix, Aug 2015
 - (e) DoD Instruction 6055.12, Hearing Conservation Program, 14 Aug 2019
 - (f) Navy and Marine Corps Public Health Center Technical Manual, NMCPHC-TM 6260.51.99-2, Navy Medical Department Hearing Conservation Program Procedures
 - (g) American National Standards Institute, ANSI Standard S1.25, “American National Standard Specification for Personal Noise Dosimeters,”
 - (h) NIOSH Pub. No. 79-117, Industrial Noise Control Manual Jan 1978 was NIOSH Pub. No. 79-117, Industrial Noise Control Manual
 - (i) NAVFAC P-970, Environmental Protection Planning in the Noise Environment ,June 1978
 - (j) MIL-STD-1472F, Department of Defense Design Criteria Standard Human Engineering, Aug 1999
 - (k) Unified Facilities Criteria (UFC) 3-600-01 of 26, Fire Protection Engineering for Facilities, Aug 2016
 - (l) American National Standards Institute, ANSI Standard S1.4 through S1.4a, “American National Standard Specification for Sound Level Meters,”
 - (m) UFC 3-45-01, Noise and Vibration Control, 15 May 2003
 - (n) Industrial Hygiene Field Operations Manual NMCPHC-TM6290.91-2, latest version
 - (o) Title 29 CFR 1910, Occupational Safety and Health Standards
 - (p) American National Standards Institute, ANSI Standard S1.40, “American National Standard Specifications and Verification Procedures for Sound Calibrators”

B1801. Discussion. Noise injury is a continuing concern within the Department of Navy, both ashore and afloat. The goal of the Hearing Conservation Program (HCP) is twofold; reduce hazardous noise sources through acquisition and engineering controls and ensure auditory fitness for duty in the military members and civilian workforce in accordance with references (a) through (m). Hearing acuity is critical to individual medical readiness and mission success. Noise reduces productivity, efficiency, readiness, and hearing acuity. All levels of leadership will proactively pursue HCP to optimize operational readiness and hearing preservation during federal service. Hearing loss is the most prevalent service-connected disability with costs exceeding one billion dollars annual. These costs only weakly reflect diminished operational effectiveness and the human costs of hearing loss, and impaired quality of life.

Note: For environmental and community noise, see Chapters 20, Noise Prevention Ashore and 21 Environmental Compliance Afloat (Section 22-14) of reference (b).

B1802. Hearing Conservation Program

a. The HCP will be implemented when personnel are occupationally exposed for at least 1 day per year to:

(1) Continuous or intermittent noise as an 8-hour time-weighted average (TWA) of 85 decibels on the A-weighted scale (dBA) or greater.

(2) Impulse or impact noise of 140 dB peak (dBp) sound pressure level or greater.

(3) Other determined to be at risk.

(4) Ultrasonic exposures, which occur under special circumstances that require specific measurement and hazard assessment calculations, in accordance with reference (e).

b. The HCP includes these elements:

(1) Noise Hazard Assessment

(2) Noise Abatement and Engineering Controls

(3) Hearing Protection Devices (HPDs)

(4) Training and Education

(5) Medical Qualifications Standards and Audiometric Testing

(6) Hearing Injury Reporting & Investigation

(7) Program Performance Evaluation

(8) Recordkeeping

B1803. Noise Hazard Assessment

a. An initial baseline and a Periodic Industrial Hygiene Survey (PIHS) must be conducted to determine if personnel exposures to occupational noise and potential noise hazard areas equal or exceed the occupational exposure limits (OELs) for noise:

(1) For an 8-hour TWA, the OEL is 85 dBA. Where exposure times exceed 8 hours, calculate allowable noise exposure in dBA using the guidance in reference (n).

(2) For impact or impulse noise, the OEL is 140 dB dBP sound pressure level.

b. To effectively assess exposures and control sound pressure levels, it is necessary to accurately measure personal exposures and sound pressure levels in accordance with reference (n). Qualified persons will conduct initial and periodic monitoring. Persons qualified to perform exposure monitoring are specified in Chapter 8 of this Manual.

c. Industrial hygienist will identify and assess exposure to ototoxic chemicals. Follow the guidance in reference (n) for assessing chemical exposures.

d. Employee Notification of Monitoring Results. The employer will notify each employee exposed at or above an 8-hour TWA of 85 dBA of the results of the monitoring in accordance with reference (o). This means that results of personal noise dosimetry monitoring that are at or above 85 dBA as an 8-hour time-weighted average must be forwarded to the command, unit, or activity Commanding Officer. Employee notification must be forwarded to the command, unit or activity Commanding Officer. Actual notification of employees remains a command, unit, or activity responsibility.

e. For acquisition and development of new systems, identify prospective sound pressure levels from historical data from existing systems; modeling of anticipated noise levels; and measurement of sound pressure levels in new or modified systems; and equipment during the test and evaluation stage in accordance with Military Standard (MIL-STD) 1474E and reference (h).

B1804. Labeling of Hazardous Noise Areas and Equipment

a. All potentially hazardous noise areas must be clearly identified by signs located at their entrances or boundaries. The designation of hazardous noise areas and equipment will be based on this criteria:

(1) Any work area or equipment where the sound pressure level is 85 dBA or above (continuous or intermittent) will be considered noise hazardous.

(2) Any work area or equipment where the sound pressure level is 140 dBP or greater (impulse or impact) will be considered noise hazardous.

b. Each tool or piece of equipment producing sound pressure levels of 85 dBA or greater, including vehicles, will be conspicuously marked to alert personnel of the potential hazard. The exception will be when an entire space is designated as a hazardous noise area and the equipment is stationary. Exteriors, but not interiors, of military combatant equipment are excluded from this requirement. Professional judgment and discretion will be exercised when labeling tools and equipment.

B1805. Noise Abatement and Engineering Controls

a. Noise Abatement programs will include implementation of noise assessment and engineering control measures through the systems engineering and systems safety process in accordance with reference (i) when:

(1) Legacy systems have measured noise exposure concerns as indicated by personnel exposures at or above 85 dBA or 140 dBP.

(2) New systems are considered likely to create noise exposures at or greater than 85 dBA or 140 dBP.

(3) Communication is anticipated to be potentially impaired by equipment noise.

b. Engineering controls will be the primary choice for eliminating personnel exposure to potentially hazardous noise, in accordance with reference (e). Noise generation, personnel exposures, and signal control will be considered in the context of life-cycle risk management and combat capability. Hazard Control and Abatement guidance is located in Chapter 12.

c. Procurement of new tools and equipment for purchase will incorporate “buy quiet” requirements in accordance with references (j) those with lowest sound emission levels which are technologically and economically feasible and compatible with performance and environmental requirements.

d. The secondary means of protecting people will be administrative, i.e. limiting times of exposure or enforcing safe stay times. Administrative controls (i.e., the adjustment of work schedules to limit exposure) are effective only under strict supervisory control and in consultation with safety, industrial hygiene or occupational audiology. Use of personal protective equipment (PPE) (e.g., ear plugs, muffs, etc.) will be temporary or a last resort solution and only after noise studies have determined engineering or administrative controls are not feasible. Appendix B18-A contains a chart to demonstrate administrative control of noise exposure with HPD maximum stay times.

B1806. Training and Education

a. Supervisors and managers of personnel in noise hazardous areas will receive training on their role in preserving the mission's hearing readiness. Elements of this education should include responsibility to support effective noise control by enforcement, design, engineering controls, as well as operational impacts of hearing impairment and miss-communications.

b. Hearing Conservation Program enrolled personnel and their supervisors must receive documented initial and annual hearing loss prevention training. Initial training will be provided

by the command, unit or activity prior to assignment to duty in a designated noise hazardous environment.

c. All personnel enrolled in the HCP will receive initial and annual training. Training will include:

- (1) The impact of hazardous noise on the hearing system;
- (2) The purpose of hearing protection;
- (3) The advantages, disadvantages, and attenuation of various hearing protectors;
- (4) Instructions on selection, fit, use, and care of personal HPDs including demonstrations of proper HPD fittings and techniques for obtaining an effective fit;
- (5) Mandatory requirement and administrative actions for failure to wear HPD;
- (6) The purpose of audiometric testing;
- (7) An explanation of the audiometric test procedures;
- (8) The personal and professional impact of hearing loss and;
- (9) HPD use during off-duty activities.

d. Annual training will be coordinated by the noise hazard command, unit, or activity. Where available, commands, units, and activities should seek training assistance from medical treatment facility (MTF) occupational audiologists, who are subject matter experts on noise-induced hearing loss and HCP.

B1807. Medical Qualification Standards and Audiometric Testing

a. Hearing Tests and Medical Evaluation. Entry of personnel into a HCP will be based on the results of the industrial hygiene exposure assessment and relevant criteria found in reference (c) and relevant criteria found in 1802 and 1803 in this chapter. Individuals that meet the criteria for exposure intensity and frequency are considered at risk and must be included in HCP and receive annual audiometric testing. The PIHS identifies tasks, processes, operations or similar exposure groups where exposures are above the OEL.

b. The cognizant MTF will conduct periodic hearing tests and diagnostic and medical qualification evaluations as well as provide HCP data to assist commands, units and activities with monitoring the effectiveness of the HCP.

c. For military or civilian personnel who experience a STS, commands, units, and activities will evaluate their personal hearing protection to confirm adequacy of the fit and the resulting amount of attenuation using one of these instructions:

(1) Use a field attenuation estimation, commonly called a fit-test system (individual fit testing is recommended as best practice when possible); or

(2) When needed, commands, units, and activities may request assistance from the local medical personnel to apply appropriate Occupational Safety and Health Administration (OSHA) or National Institute for Occupational Safety and Health derating to the reported attenuation of the hearing protector (current ANSI S12.6 does not require derating) as described in reference (n).

d. Personnel with pre-existing hearing loss that exceeds enlistment or employment standards or those with a demonstrated increased susceptibility to noise-induced hearing loss may be removed or excluded from occupations with noise exposure above the OEL. Occupational audiologists and occupational medicine physicians will determine medical qualification. These determinations and recommendations are provided to the employee's command, unit, or activity and may have an adverse impact on the member's employment. Detailed criteria and disposition processes are defined in reference (b).

e. Disposition. Hearing loss with a suspected medical cause is routed through the appropriate referral process in accordance with references (c). Proactive detection of temporary thresholds shifts facilitates early intervention before a confirmed permanent STS occurs.

(1) Significant Threshold Shifts (STS) and OSHA Recordable Hearing Loss are defined in reference (e) and (f). Personnel demonstrating unresolved STS after appropriate auditory rest will be notified, along with his or her command, unit or activity within 21 days of a confirmed permanent standard threshold shift (STS).

(2) Work-related STSs are considered OSHA recordable when an occupational audiologist, otologist, or occupational medicine physician determines the shift toward deteriorated hearing, is permanent, is consistent with an occupational origin, and the threshold average is 25 dB or more at 2000, 3000, and 4000 Hz in either ear. See reference (g) for additional details on reporting STS.

(3) The individual, his or her supervisor, and command, unit or activity will be notified by MTF when either an STS or an OSHA recordable STS occurs.

f. Termination Hearing Test. All military personnel regardless of enrollment in the HCP will receive a termination hearing test within 12 months of military separation. Within 12 months prior to separation from the command, unit or activity or transfer to a non-noise hazardous position, civilians enrolled in the HCP will receive a termination hearing test

B1808. Hearing Protection Devices (HPDs)

a. HPDs consists of insert type (e.g., ear plugs) and circumural type (e.g. ear muffs) and are considered an interim protective measure while installing engineering control measures. HPDs will constitute a permanent measure only if engineering controls are not technologically, economically, or operationally feasible.

b. Hearing protection will be worn by all personnel when they enter or work in an area where the operations generate:

(1) Continuous or intermittent sound pressure levels greater than 85 dB(A)

(2) Impulse or impact noise at 140 dBP sound pressure level or greater.

c. A combination of insert type and circumaural types of hearing protection devices (double hearing protection) will be worn where sound pressure levels are 104 dBA or greater, for continuous and interment noise, or 165 dBP or greater, for impulse and impact noise, unless an occupational audiologist, IH, or occupational medicine physician has determined that the single protection (insert or circumural types) is adequate for the anticipated duration of exposure.

d. Personnel required to wear HPDs will be provided with the appropriate type and size of HPD. A selection of sizes and types (e.g., ear plugs or ear muffs) will be available to personnel. HPDs will be provided at no cost to personnel entering designated hazardous noise areas. HPDs will be replaced as necessary whenever they become damaged, hardened, or otherwise determined to be no longer functional. When hazardous noise sources are operating, personnel will wear HPDs regardless of exposure time. Safety personnel, industrial hygienists or occupational audiologists will be consulted for guidance regarding assessment of HPD attenuation.

e. HPDs provided and worn singly or in combination will reduce exposures below an 8-hour TWA of 85 dBA and below 140 dB for peak sound pressure levels. For all situations where hearing protection is required, assess whether the HPDs are adequate using any accepted method for assessing attenuation as described in Appendix B, Section 1910.95 of Title 29, CFR or the ANSI S12.6 in accordance with reference (e). Refer to Appendix B18-A of this manual for HPD attenuation methods. Use of field attenuation estimation systems, commonly called a fit-test system are accepted and recommended as best practice, when possible. Field attenuation estimation using the fit-test system should be performed by a trained safety professional or industrial hygienist.

f. The administrative control of limiting exposure time will be implemented in cases where HPDs alone do not provide sufficient attenuation below an 8-hour TWA of 85 dB(A) for

continuous or intermittent noise, or 140 dBP sound pressure level for impulse or impact noise. Refer to Appendix B18-A Hearing Protection Devices for HCP requirements and stay times.

g. All personnel exposed to gunfire in a training situation (e.g., weapons qualification) or live fire operational training (e.g., gunfire, artillery or missile firing) will wear HPDs. Commanders will dictate the use of hearing protection in combat and combat simulations, based on mission requirements and the ability of the hearing protection to facilitate communication and situational awareness.

h. Use of custom earplugs is authorized. Only audiologists or other professionally trained medical personnel will take ear impression of the ear necessary to make the custom earplugs. Non-medical, but professionally trained staff may take ear-mold impressions under the supervision of an audiologist or qualified physician. Medical personnel trained to fit preformed and custom earplugs must examine the fit and condition of preformed and custom earplugs at least annually. As with all personal protective equipment, cost is the responsibility of the individual commands, units or activities.

i. Preformed sized earplugs will be fitted and issued only under the supervision of personnel specifically trained to fit earplugs. For recruits and officer candidates the designated time to initially fit appropriate hearing protection and provide education on the prevention of hearing loss is during basic training and prior to any exposures to hazardous noise. All commands, units and activities will ensure proper initial fitting and supervise the correct use of HPD. The Navy and Marine Corps Public Health Center (NMCPHC) Web site will provide guidance and links to sites with additional information on selecting HPDs. Consult occupational audiologist or industrial hygienist for specifics in accordance with references (c) and (e).

j. The use of portable music players with headphones or ear buds is prohibited in industrial areas and in work areas where high noise hazards have been identified. Such equipment provides limited effective protection and actually contributes to noise exposure by creating sound pressure levels in excess of ambient levels.

k. Hearing aids may not be used in conjunction with or in place of HPDs except as approved by an audiologist or otolaryngologist on a case-by-case basis. Refer to Appendix B18-A Hearing Protection Devices for HCP requirements and stay times in Appendix B18-B.

B1809. Hearing Injury Reporting and Investigation

a. Hearing loss occurring cumulatively over time from an occupational exposure is considered an occupational illness. Hearing loss that occurs from an instantaneous event (i.e., acoustic trauma from an explosion) is considered an injury. Military and civilian occupational illness and injury will be documented appropriately in designated Navy and Marine electronic tracking systems

b. Upon receipt of STS reports from the MTF, commands, units, and activities will ensure a mishap investigation in accordance with OPNAVINST 5102.1D is completed so causes of hearing loss can be established and deliberate, concrete action to prevent future hearing injuries can be taken. Commands, units and activities will collaborate with MTF Occupational Audiologists and industrial hygienists for assistance with worksite assessments, HCP training, and HPD selection/fittings.

B1810. Recordkeeping

a. Commands, units and activities will maintain records of PIHS identifying noise hazardous operations, equipment and areas, as well as roster of all personnel enrolled in the HCP, in accordance with reference (e) and this Chapter.

b. Commands, units and activities will maintain and annotate OSHA 300 logs for civilian personnel and an equivalent log for exposed military personnel whenever it is reported by the MTF that personnel have a confirmed permanent STS.

c. All hearing conservation audiometric testing data, notifications of STS and OSHA recordable hearing loss will be maintained by MTF in accordance with references (a), (c), (g), and (k).

B1811. Program Performance Evaluation

a. Commands, units and activities with noise hazards and/or personnel enrolled in a HCP will evaluate their HCP effectiveness annually through examination of program performance metrics in accordance with reference (e) and implement steps to mitigate program weaknesses and shortfalls.

b. In accordance with reference (e) the Chain of Command will report metrics annually: number of HCP enrolled personnel, compliance rate for annual audiograms, and hearing injury rate (STS rate) to cognizant echelon 2 commands, units and activities (both raw numbers and rates) by 31 Dec for the previous fiscal year.

c. Acquisition program evaluations are required to consider the effectiveness of programs in managing risk in accordance with references (d), (h) and (i). Feasibility will be evaluated and tracked using the methodology of reference (f) and residual risks communicated to appropriate management levels.

B1812. Responsibilities

a. Headquarters' Commands in addition to complying with paragraphs B1802 through B1810 will:

(1) In coordination with Chief, Bureau of Medicine and Surgery (BUMED), provide technical assistance and engineering guidance to subordinate commands, units and activities in accordance with paragraph B1805.

(2) Provide appropriate technical and engineering control guidance. Consider, design, and engineer noise control features into existing and future ships, aircraft, weapons, weapon systems, equipment, materials, supplies and facilities.

(3) Ensure commands, units and activities maintain training records in accordance with Chapter 6 of this document.

(4) Ensure chain-of-command evaluates HCP during oversight processes to verify and document commands, units and activities compliance with this Chapter. Program oversight reports, along with required aforementioned metrics data, will be available for review by Naval Inspector General (IG).

(5) As major Systems Command in the position to effectively reduce a high number of noise hazards affecting a large Navy worker population through the acquisition process, NAVAIR and NAVSEA will:

(a) Ensure incorporation of feasible noise engineering controls into hazard abatement plans.

(b) At least annually, request their aviation depots and naval shipyards to provide an analysis of their high noise measurements with recommendations for work processes and equipment in need of noise control.

b. Commanders, Commanding Officers and Officers in Charge for commands, units and activities will take these actions:

(1) Use the current PIHS to identify hazardous noise areas and equipment. The PIHS may be used by commands, units and activities as the current inventory of all potentially hazardous noise areas and operations. It will be available to supervisors and employees. This inventory will as a minimum identify noise levels, IH assigned health Risk Assessment Codes (RACs), and the types of control measures. Safety specialists or supervisors will designate hazardous noise areas and equipment in accordance with the current PIHS. In cases where measured noise exposures represent equipment or systems with widespread navy use, summarized data will be communicated to responsible technical authorities in systems commands, units and activities and/or acquisition system (platform) program managers in collaboration with organizations receiving industrial hygiene support. BUMED will collaborate with these efforts in accordance with paragraph B1811c.

(2) Local Commands, units and activities are responsible for establishing and maintaining a roster of all personnel enrolled in their hearing conservation and noise abatement

program. Supervisors and safety specialists using the current PIHS will identify individuals assigned to operations associated with hazardous noise. Each command, unit and activity will maintain a comprehensive roster of enrolled personnel in accordance with reference (e) and update it every six months or more frequently as changes occur among personnel. Commands, units and activities rosters will be monitored and used by both MTF and Navy supported commands, units and activities to ensure personnel are trained and receive annual audiometric testing.

(3) Commands, units and activities with noise hazards and/or personnel enrolled in a HCP will evaluate their HCP effectiveness annually through examination of program performance data and criteria and implement steps to mitigate program weaknesses and shortfalls.

(4) As needed, request the cognizant MTF or Navy Environmental and Preventive Medicine Unit (NEPMU) Occupational Audiologist to assist local commands, units and activities in annually monitoring program effectiveness such as providing onsite workplace assessments, trend analysis, and identification of program weaknesses and program improvement recommendations.

(5) Local commands, units and activities will review annual cognizant MTF or NEPMU trend analysis results, implement recommended program improvements, and correct identified program weaknesses.

(6) The preferred marking for equipment and/or power tools is the standard hazardous noise label. They may also be individually and permanently marked via a stencil (painted) or engraved with the words "Produces Hazardous Noise." To minimize foreign object damage, flight line tools should be stenciled as noise hazardous.

(7) Commands, units and activities will label designated hazardous noise areas and equipment that produce sound pressure levels equal to or 85 dBA or greater or 140 dBP sound pressure level.

(8) Commands, units and activities will have the option of using additional means to alert employees to noise hazardous operations. These may include posting barriers or using flashing lights to indicate hazardous noise conditions.

(9) Commands, units and activities will issue personal HPDs at no cost to all personnel working or training in hazardous noise environments and in operational settings.

(10) The use of administrative controls or rotation of employees under strict supervisory control in consultation with safety, industrial hygiene or occupational audiology is an acceptable alternative means to reducing noise exposure when engineering controls are not feasible. Provide

personal HPDs, and ensure proper usage by personnel where administrative or engineering controls are not feasible or ineffective.

(11) Commands, units and activities will request and document training provided by hearing conservation subject matter experts, such as occupational audiologists, occupational medicine, occupational nurses, industrial hygiene specialists, or safety specialists, in accordance with Chapter 6 of this Manual.

(12) Abatement of Existing Noise Hazards.

(a) The commands, units and activities will undertake the abatement of hazardous noise levels, to the extent possible or practicable in accordance with 1805. Consult subject matter experts such as acoustic engineers or industrial hygienists for guidance.

(b) Conduct engineering control feasibility studies for those areas where continuous sound pressure levels exceed 100 dBA and personnel are exposed for 4 hours or more even though protected by HPDs.

c. Chief, Bureau of Medicine and Surgery (BUMED) will:

(1) Manage the medical (i.e., industrial hygiene, occupational audiology, occupational medicine, and occupational nursing) aspects of the HCP. Support a research and development effort in the medical aspects of hearing conservation. BUMED will coordinate hearing conservation and noise mitigation efforts and report status to senior management through the Navy Executive Safety Board in accordance with references (a) and (l).

(2) Occupational audiology will develop and maintain collaborative working relationships with supported commands, units and activities in order to implement effective workplace practices and procedures to prevent noise induced hearing loss. This support includes audiometric monitoring, comprehensive diagnostic evaluations, and medical qualification assessments, annual HCP performance reports, hearing injury reports, hearing protection consultations, worksite technical assist visits, and hearing conservation outreach and training evolutions.

(3) Provide advice to other Headquarters commands as requested to assist them in meeting their hearing conservation and noise abatement responsibilities.

(4) Ensure results of medical surveillance and diagnostic hearing tests performed for hearing conservation and personal noise dosimetry documentation become a permanent part of an individual's electronic medical record.

(5) Industrial hygienist or occupational audiologist will assess the adequacy of HPDs, as requested, when HPDs are used in very high noise environments or for extended exposure periods in accordance with reference (c).

(6) Train individuals to fit preformed earplugs.

(7) Provide commands, units, and activities with hearing injury rates annually as well as notification of STS and OSHA recordable hearing loss.

(8) Industrial hygienist will identify and assess exposure to ototoxic chemicals. Follow the guidance in reference (n) for assessing chemical exposures.

(9) Work environments or equipment found to have sound pressure levels equal to or greater than 85 dBA for continuous or intermittent noise, or 140 dBP sound pressure level for impact will be analyzed to determine the potential hazard and will be resurveyed within 30 days of any significant modifications or changes in work routine which could impact or alter the noise intensity and exposure level.

(10) Noise exposure assessments will be recorded in Defense Occupational and Environmental Health Surveillance System - Industrial Hygiene (DOEHRS-IH) and conducted in accordance with reference (e) for all personnel routinely working in hazardous noise areas and performing hazardous noise operations. The exposure assessment will identify which work areas, processes, and equipment produce unacceptable levels of noise, determine the type of hearing protection necessary, i.e. single or double, and identify similarly exposed groups at risk.

(11) Paragraph B1802 outlines the criteria used to determine the degree of compliance with applicable standards.

(12) When personal dosimetry is conducted, the results of the testing and other pertinent information will be documented by industrial hygienists in DOEHRS-IH and provided to the cognizant MTF for inclusion of results into the personnel's medical record.

(13) Measurements using sound level meters and noise dosimeters will be part of the industrial hygiene workplace exposure assessment process and placed in DOEHRS-IH and -HC in accordance with Chapter 8 of this Manual. For noise areas exceeding the capability of double hearing protection, octave band analysis should be provided to assist in noise abatement efforts.

(14) Assess noise in all potentially hazardous noise work areas initially and reassess when operations change using the risk management process in accordance with reference (k).

(15) Assign RACs to all potentially hazardous noise areas and operations as identified on the PIHS in accordance with reference (m). In cases where measurements appear consistent with risks relevant to a class of systems or defense platforms, these data will also be communicated to

relevant technical authorities and/or program (acquisition) or product/equipment managers. Headquarters commands and commands, units and activities commanders, commanding officers, and officers in charge will support and help in coordination of risk communication. Acquisition program managers may be identified via system safety leads for each systems command and/or relevant Assistant Secretary of Navy for Research, Development and Acquisition (ASN RDA) databases (See <http://acquisition.navy.mil/home/programs>). Product managers and service points of contact for standard stock (NSN) products may be identified via the SD-1 publication available on the Assist database (<https://assist.dla.mil/online/start/>).

(16) Provide hearing readiness data upon request by local commands, units and activities for inclusion in electronic data systems, such as the Medical Readiness Reporting System (MRRS), Navy and Marine Corps consolidated safety data repository, Web Enable Safety System (WESS) and the Enterprise Safety Applications and Management System (ESAMS).

(17) Provide diagnostic occupational audiology evaluations, disposition assessments, hearing loss prevention recommendations, and consultative medical advice for HCP referred personnel.

(18) Provide appropriate professional and technical hearing conservation guidance and assistance to the Naval Education and Training Command (NETC).

(19) Provide:

(a) Guidelines for Personnel conducting sound level measurements.

(b) Certification of personnel performing hearing conservation audiometry.

(c) Certification of audiometric test chambers.

(d) HCP medical surveillance audiometer calibration.

(20) Maintain DOEHRS Hearing Conservation (DOEHRS-HC) database to measure program effectiveness in accordance with reference (e) and use to monitor prevalence of hearing loss and provide input to noise control engineering decisions.

(21) DOEHRS Industrial Hygiene Program Offices will use DOEHRS-IH for documentation of noise exposure assessments to include sound level measurements, identification and quantification of noise hazard sources.

(22) Report HCP metrics annually to the Naval Safety Center by 1 Dec for the previous fiscal year.

(23) As requested, evaluates the effectiveness of commands, units and activities HCP based on STS rates, audiograms completion rates, and permanent STS rates in accordance with reference (e).

(24) Ensures Navy and Marine Corps Public Health Center maintains and promulgates References (c), (n), and (p).

APPENDIX B18-A

HEARING PROTECTIVE DEVICES (HPDs)

The information in this appendix provides information on the OSHA accepted methods for assessing attenuation, using the Noise Reduction Rating (NRR) of a given hearing protector. (Appendix B, Section 1910.95 of Title 29, CFR.) The NRR is based on the attenuation of continuous noise, but is more difficult to apply to impact or impulse sound pressure levels above 140 dBP sound pressure level. The cognizant industrial hygiene activity can assist in determining sufficient noise attenuation of HPDs for impact and impulse noise.

a. Assessing 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 listed:

Single hearing protection (e.g., ear muffs or ear plugs):

(1) When using a dosimeter that is capable of C-weighted measurements:

(a) Obtain the C-weighted dose for the entire work shift, and convert to a TWA (see dosimeter instruction manual for conversion table).

(b) Subtract the NRR from the C-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

(2) When using a dosimeter that is not capable of C-weighted measurements, the listed method may be used:

(a) Convert the A-weighted dose to TWA (see dosimeter instruction manual).

(b) Subtract 7 dB from the NRR value.

(c) Subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

(3) When using a sound level meter set to the A-weighting:

(a) Obtain the employee's A-weighted TWA.

(b) Subtract 7 dB from the NRR,

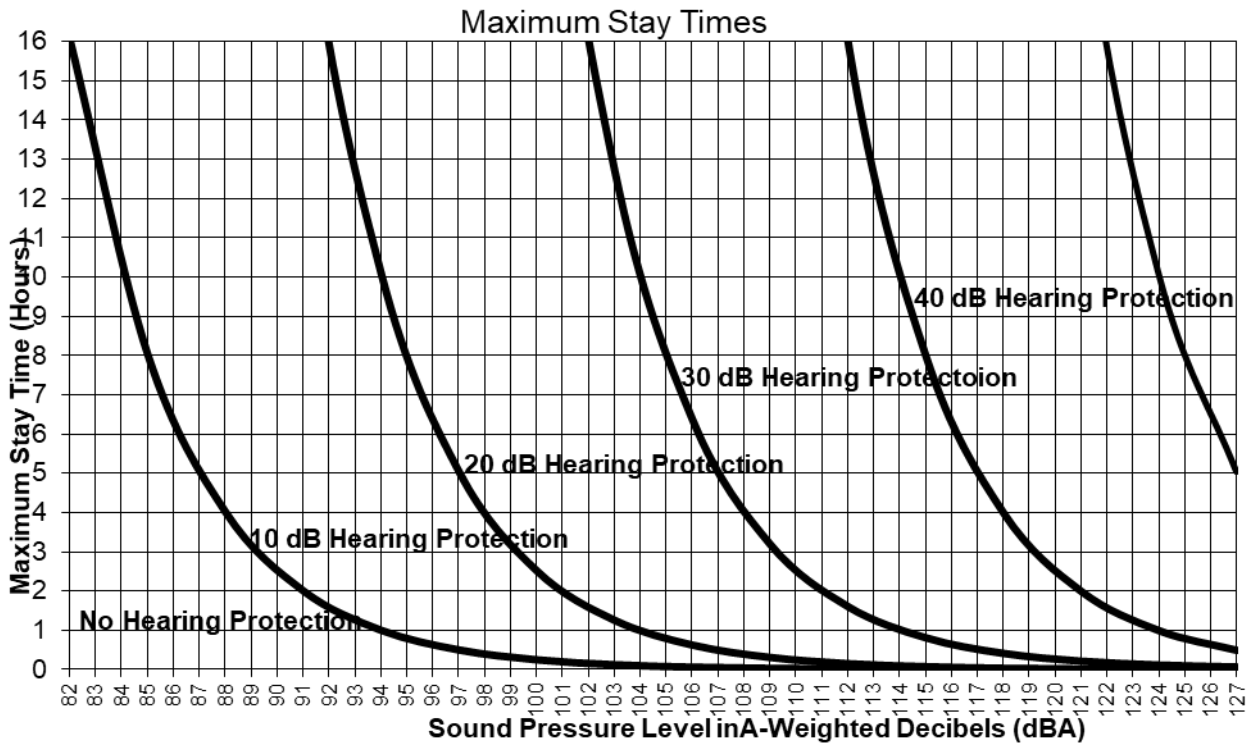
(c) Subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

- (4) When using a sound level meter set on the C-weighting network:
- (a) Obtain a representative sample of the C-weighted sound levels in the employee's environment.
 - (b) Subtract the NRR from the C-weighted average sound level to obtain the estimated A-weighted TWA under the ear protector.

For double hearing protection (e.g., ear plugs and ear muffs) add 5 dB to the calculated attenuation (above) to account for the use of the second hearing protector then subtract.

APPENDIX B18-B

HEARING PROTECTION DECIBES AND STAY TIMES
Administrative Control of Noise Exposure with Hearing Protective
Devices



8-hour Noise Exposure Calculation:

$$T = \frac{8}{2^{\left(\frac{L-85}{3}\right)}}$$

$$T = 8 \times 2^{\frac{85-L}{3}}$$

Where: T = time in hours (decimal)

L = effective sound level in dBA, i.e. environmental SPL - NRR*

*Sound levels may be measured in either dB (A) or dB (C). However, as noted above, if dB (A) is used, the NRR must be reduced by 7 dB.

See ANSI S12.68 Estimating Noise Levels at the Ear for noise sources with a frequency pattern that makes application of a single average NRR underestimate noise exposures. Aircraft noise commonly falls into this category