

# Navy Environmental Health Center

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## **NAVY MEDICAL DEPARTMENT HEARING CONSERVATION PROGRAM PROCEDURES**

**NAVY ENVIRONMENTAL HEALTH CENTER**



**BUREAU OF MEDICINE AND SURGERY**

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NAVY MEDICAL DEPARTMENT  
HEARING CONSERVATION PROGRAM PROCEDURES

1. References (a) through (c) establish the basic requirements and guidance for the Navy Hearing Conservation Program (HCP). This Technical Manual provides guidance for implementation of those portions of the Navy HCP for which the Medical Department is responsible. It also supplements references (b) and (c).

2. Program Elements.

a. The Navy Hearing Conservation Program consists of the following elements:

(1) Noise measurement and exposure analysis to identify noise hazardous areas or sources and the personnel exposed.

(2) Engineering control of noise levels to reduce the potential hazard to the maximum extent feasible.

(3) Periodic hearing testing of all personnel at risk to monitor the effectiveness of the program, and enable timely audiologic and medical evaluation of those personnel who demonstrate significant hearing loss or threshold shift.

(4) Recommendations for use of hearing protective devices as an interim measure pending effective engineering controls.

(5) Education regarding potentially noise hazardous areas and sources, use and care of hearing protective devices, the effects of noise on hearing, and the command's HCP.

b. In the performance of the HCP elements, the Medical Department shares responsibilities with other major claimants and their field activities. The Medical Department is responsible for the provision of periodic hearing testing and the evaluation of this testing, and provision of refresher training in conjunction with the annual monitoring audiogram. However, the command receiving this support must provide a listing of personnel who are occupationally exposed to hazardous noise. In a similar cooperative manner, the Medical Department can "fit test" hearing protective devices, provide consultation on clinical and technical issues, and provides individual education, but the supported command is responsible for upkeep of hearing protective devices and enforcement of use. Noise measurement and analysis performed for medical purposes is under the purview of the Medical Department. Supported commands may perform similar noise measurements for engineering or other non-medical purposes. Non-Medical Department personnel who perform these measurements must also be appropriately trained and use proper instruments and procedures. Training classes other than annual refresher for HCP-enrolled personnel may be coordinated with, or provided by Medical Department personnel, but frequently they are provided by the supported command. The reduction or elimination of hazardous noise

through the use of engineering controls is the preferred method of noise control, but this may not be feasible in all instances. The Medical Department is responsible for recommending potential remedial actions. If these actions are not implemented, then the other elements of the HCP must be followed.

3. Noise Measurement and Exposure Analyses. For use in the HCP, noise measurements must be taken by an industrial hygienist, audiologist, safety specialist, workplace monitor, or other personnel who have received appropriate training such as the Workplace Monitoring course or other training approved by the Navy Environmental Health Center (NAVENVIRHLTHCEN).

a. Instruments. Sound level meters and noise dosimeters are used to assess an individual's exposure to noise. Octave band analyzers are used to identify the frequencies at which the noise is generated and are mainly used to aid in selecting engineering controls and in the certification of audiometric booths.

(1) Sound level meter (SLM). All SLMs used in the Navy HCP must conform, as a minimum, to the Type 2 requirements specified in the most recent American National Standards (ANSI) standard S1.4 "Specifications for Sound Level Meters" which sets performance and accuracy tolerances. An acoustical calibrator, accurate to within plus or minus 1 dB, must be used to verify the before and after calibration of the noise measuring instrument on each day that noise measurements are taken. SLMs must be electroacoustically calibrated and certified annually for compliance with the latest ANSI Standard S1.4. Acoustical calibrators must be electroacoustically calibrated and certified annually.

(a) Types of SLMs:

(i) Type O: Laboratory standard. Used as a high precision reference in the laboratory; not intended for field use.

(ii) Type 1: Precision sound level meter. Can be used in the field and laboratory.

(iii) Type 2: General purpose sound level meter. Designed to have less stringent tolerances than a Type 1; used for field measurements.

(iv) Type 3: This is a type of survey instrument listed in the 1971 version of ANSI Standard S1.4. It is mentioned here since some of these SLMs may still be in use. Their accuracy is less than the Type 2 and they are, therefore, not acceptable for Navy noise measurements. This type SLM was dropped from the ANSI standard in 1983.

(v) Type S: This type of SLM may have some but not all of the features required of an approved Type 1 or 2 SLM. It is not acceptable for Navy noise measurements.

(b) Continuous or intermittent noise must be measured in dB(A) with the SLM set for slow response.

(i) The A-weighting scale approximates the ear's response for sound levels below about 55 dB and discriminates against (is less sensitive to) energy in the low frequency ranges just as the ear does.

(ii) The C-weighting scale approximates the ear's response for sound levels above 85 dB. It responds with little discrimination against low frequencies, detects more energy, and may result in higher readings than the A scale. C-weighted sound level measurements are used to evaluate hearing protector performance.

(c) Impulse or impact noise is measured as dB (peak) sound levels with a Type I sound level meter which has an impulse or peak hold circuit, a rise time not exceeding 35 milliseconds, and is capable of measuring peak SPLs in excess of 140 decibels.

(2) Noise dosimeter. A noise dosimeter is used for the analysis of noise exposure in cases where the noise is not predictable or where impulse or impact noise occurs together with continuous noise. Noise dosimeters must meet the most recent version of Class 2A-84/80-4 requirements of ANSI standard S1.25, "Specifications for Personal Noise Dosimeters," where:

(a) "2" means that the dosimeter has tolerances that correspond to those for a Type 2 SLM,

(b) "A" means the A-weighting network,

(c) "84" means the decibel slow criterion level,

(d) "80" means a 80 decibel threshold level, and

(e) "4" means a 4 decibel exchange rate.

Additionally, dosimeters should have an operating range of at least 80 dB(A) to 130 dB(A) and have a crest factor of at least 50 dB. Although not required, a datalogging capability which will allow collection of time history data is recommended when dosimetry results will be used to devise noise control strategies. The ability to field select different criterion levels and exchange rates is also desirable but not required.

(3) Octave band analyzer (OBA). An OBA is used to determine where sound energy lies in the frequency spectrum. This is important for recommending engineering controls for noise. The manufacturer's instructions must be followed when taking OBA readings. These readings usually require several minutes to complete. Therefore, the sound being measured must be steady state and of sufficient duration to complete the measurements. All OBAs used will conform to the most recent version of ANSI S1.11 "Specification for Octave-Band and Fractional-Octave-Band Analog and Digital Filters."

b. Noise Measurement Records. All noise measurements and pertinent information are documented on NEHC 5100/17, "Industrial Hygiene Noise Survey Form," or NEHC 5100/18 "Industrial Hygiene Noise Dosimetry Form." The time weighted average (TWA) sound level must be recorded. Noise exposure data and analysis must be provided to the individual, the command, and the activity providing medical surveillance.

c. Noise Surveys. Initial and periodic noise surveys must be conducted in accordance with the most recent version of reference (d). Personnel working in potentially hazardous noise areas will be identified by their parent activity and their names placed on a roster for inclusion in the HCP. This program will include hearing protector fitting, education, and audiometric monitoring.

d. Identification of Personnel at Risk.

(1) An 8-hour TWA exposure level will be determined for all military and civilian employees routinely working in hazardous noise areas, as required by reference (a). This may be accomplished by representative sampling of similarly exposed groups. These measurements are made at least initially and within 30 days after any significant change in operations.

(2) In the absence of dosimetric evidence and/or professional assessment to the contrary, personnel routinely exposed to sound levels greater than 84 dB(A) or 140 dB peak sound pressure level for impact or impulse noise will be considered at risk and identified on the command's roster for inclusion in the HCP. Non-enrollment of these personnel requires consultation with an industrial hygienist, operational audiologist, or occupational medicine physician, who will need to know the noise levels as determined by sound level survey, the approximate frequency and duration of the individual's exposure, and pertinent audiometric history (is there any evidence of a noise induced hearing loss?). The consultant will either make a professional judgment or arrange for further evaluation. Consultation may be informal (example, e-mail) as long as there is a written record available. Individuals should not be enrolled if there is clear evidence that they are not at risk.

(3) Additionally, risk assessment codes (RACs) will be assigned and the type of control measures used will be identified for all potentially hazardous noise areas and operations, in accordance with reference (b). A current inventory of all potentially noise hazardous areas and operations will be maintained. This is typically provided in the baseline industrial hygiene survey, which should be updated by an industrial hygienist upon significant ship alteration or other change.

e. Exceptions. Although hearing conservation measures are required when noise levels are greater than 84 dB(A), the implementation of all available measures may not be necessary in every case. For example:

(1) Visitors to a hazardous noise area should be required to wear hearing protection but not be required to have their hearing tested or be included on a roster of noise exposed personnel. There may also be unique situations where sound levels rise unpredictably above 84 dB(A) for

short durations so that the wearing of hearing protective devices may be judged impractical or unnecessary. Decisions to waive the use of hearing protective devices must not be made arbitrarily. Such professional judgments should be rendered by an audiologist, industrial hygienist, or other qualified professional using approved instrumentation and considering all relevant factors.

(2) Exceptions to the basic hazardous noise criteria specified above will be evaluated on a case-by-case basis by an industrial hygienist, audiologist, or occupational and environmental medicine physician. Questions regarding the health effects of unusual noise exposures should be directed to NAVENVIRHLTHCEN. Such exceptions may include, but are not limited to, the following:

(a) Greater than 16 hours continuous or intermittent exposure per day.

(b) Intense low frequency noise, that is, when the difference between the C-weighted and A-weighted values is greater than 15 dB.

(c) High frequency noise above 10 KHz (ultrasound).

(d) High intensity noise above 140 dB sound pressure level.

(e) Impulse/impact noise above 150 dB peak sound pressure level.

#### 4. Audiometry.

##### a. Technical Requirements.

(1) Audiometric test chambers used for reference and monitoring audiometry will be certified annually with a Type I OBA meeting the requirements of the most recent version of ANSI S1.11. Re-certification is also required when a chamber is re-located, and whenever there is a significant change in ambient noise levels which could affect hearing testing. Certification is performed by an industrial hygienist, audiologist, or others meeting guidelines established by NAVENVIRHLTHCEN. A sample booth certification form is provided as appendix A. Interior sound levels cannot exceed the following octave band SPLs identified by reference (a):

(a) 500 Hz - 27 dB

(b) 1000 Hz - 29 dB

(c) 2000 Hz - 34 dB

(d) 4000 Hz - 39 dB

(e) 8000 Hz - 41 dB

(2) Preventive and minor maintenance of audiometers which does not affect calibration is accomplished by the local medical equipment maintenance and repair facility in accordance with reference (e). A local pool of audiometers for loan will be maintained for branch clinics and fleet activities, where necessary, to be used for exchanging defective units which cannot be repaired locally. This pool will be controlled by the local HCP Manager. Guidance concerning the pool may be obtained by contacting the audiometer calibration and repair staff at the NAVENVIRHLTHCEN.

(3) Audiometers will be calibrated by physical methods at least annually for compliance with the most recent version of ANSI Standard S3.6, "Specifications for Audiometers." Calibration and major repairs affecting calibration is available from NAVENVIRHLTHCEN at no cost on all audiometers used in the HCP. Clinical or diagnostic audiometers used in otolaryngology or audiology clinics are exempt from these requirements. For remote activities, or for activities where local calibration may be obtained, guidance is available from NAVENVIRHLTHCEN. Costs for local calibration and/or repair will be borne by the requesting command. Guidance to obtain authorization for local calibration is provided in reference (e). NAVENVIRHLTHCEN will also provide audiometric calibration and repair services according to the following criteria:

(a) Failure to meet biological calibration check requirements.

(b) Operational failure beyond the capability of the local medical equipment maintenance and repair facility.

(4) Hearing tests will consist of pure tone, air conduction hearing threshold measurements at test frequencies of 500, 1000, 2000, 3000, 4000, and 6000 Hz. Each ear will be tested separately.

(5) A biological calibration check is performed daily using an electroacoustic device or a normal hearing listener, and will be logged on DD 2217. Additionally, a listening check will be performed daily and logged on a local form. If the daily biological test results differ from baseline audiogram by more than plus or minus 5 dB at 500 - 4000 Hz, or more than plus or minus 10 dB at 6000 Hz, a second listener must be tested. Recalibration of the audiometer is necessary if the second individual's biological test results also differ by more than plus or minus 5 dB from the baseline audiogram. DD 2217's must be maintained on two or more individuals, in addition to the results for the electroacoustic check device, for these biological calibration checks.

(6) Audiometric testing will be performed by trained and certified technicians. Successful completion of the Hearing Conservation Techniques training authorized or conducted by the NAVENVIRHLTHCEN is required for certification. Recertification training is necessary every 3 years. Guidance concerning maintenance on documentation of technician proficiency is provided in Appendix B.

(7) Audiometric testing will be supervised by an audiologist, otolaryngologist, occupational and environmental medicine physician, or other qualified physicians who by training or experience have the ability to manage hearing loss cases.

b. Types of Audiometric Tests.

(1) Reference Hearing Tests. The reference hearing test will not be obtained unless the individual has been free from exposure to ANY noise above 80 dB(A) for at least 14 hours. **THIS REQUIREMENT MAY NOT BE MET BY WEARING HEARING PROTECTIVE DEVICES AND IT INCLUDES EXPOSURE TO NOISE FROM NON-OCCUPATIONAL SOURCES.** The results of any reference hearing test are recorded on DD 2215. The original reference audiogram form, as well as all subsequent audiograms, will be retained permanently in the individual's health record. Three types of reference audiograms are used in the HCP:

(a) An original reference (Baseline) audiogram is performed prior to hazardous noise exposure while in Federal employment.

(b) A Reference audiogram is performed after exposure to hazardous noise when the original reference audiogram was lost or was never accomplished.

(c) A Re-established Reference audiogram is performed as the result of a follow-up program.

(2) Monitoring Hearing Tests. Monitoring hearing tests are used to detect incremental changes in hearing and identify potential problems before the individual experiences hearing loss that interferes with verbal communications. Detection is made by comparing the current monitoring audiogram with the reference audiogram to determine significant changes in hearing. The annual monitoring hearing test may be conducted at any time during the work shift. The results are recorded on DD 2216 and retained permanently in the individual's health record. When a retest is required due to a significant change in hearing, it is important that the individual be evaluated in a timely manner. The DD 2216 monitoring sequence should be completed within two weeks, and cannot exceed 30 days to be considered valid. If follow-up testing is not obtained within 30 days, the sequence must start over.

NOTE: Personnel to be monitored should be instructed to bring their personal hearing protectors to the test site in order to verify fit and effectiveness.

(3) Termination Hearing Tests. All military personnel will receive a hearing test upon termination of Navy service regardless of assignment or exposure to hazardous noise. Civilian personnel who have been routinely exposed to hazardous noise and were enrolled in the HCP will receive a hearing test upon termination of employment. Additionally, all civilian personnel who no longer require inclusion in the HCP due to removal from hazardous noise duties will have a hearing test to document auditory status at the time of reassignment. Results of termination/removal hearing tests are recorded on DD 2216 forms.

c. Significant Threshold Shifts (STS). An STS is defined as a change in hearing threshold relative to the current reference audiogram of 15 dB or greater in either ear at any test frequency from 1000 to 4000 Hz. In addition, a change in hearing threshold averaging 10 dB or more at 2000, 3000, and 4000 Hz, in either ear, will be considered an STS. The STS may be either positive (poorer hearing) or negative (better hearing). Action should be taken as follows:

(1) If the STS is negative, that is, the hearing levels of the monitoring audiogram are better than the reference audiogram, then either the reference audiogram or the monitoring audiogram may be in error. In order to determine which is the case, a retest should be conducted on the same day, if possible. Based upon the results of this retest, the following action will be taken:

(a) If the results of the retest are not significantly different from the reference audiogram, it is assumed that the annual monitoring audiogram was in error. No additional action is necessary.

(b) If the results of the retest remain significantly improved from the reference audiogram, it is assumed that the reference audiogram is in error. Establish the retest as the Re-established Reference audiogram, category 3 on DD 2215. No consult is needed.

(2) If the STS is positive, that is, the hearing levels of the monitoring audiogram are poorer than the reference audiogram, a 14-hour noise-free follow-up test must be administered on a subsequent day to determine if the decrease in hearing is permanent. The supervisor should be notified of the date, time, and reason for the follow-up test(s).

(a) If the results of this first follow-up test do not indicate an STS, no additional follow-up testing is required and the individual may be counseled and returned to annual monitoring.

(b) If positive STS persists on the first followup, then it is efficient and necessary to rule out an obvious conductive (mechanical) or medically significant basis for the shift before proceeding to the second follow-up. The preferred method to rule out conductive hearing loss is through technician-administered tympanometry. A normal tympanogram, in conjunction with normal otoscopy, is a quick and accurate indication that the threshold shift was not caused by an acute medical problem which would invalidate subsequent hearing test results. A health record SF600 entry should be made to document the tympanometric and otoscopic findings. A copy of the tympanogram print-out (if provided) should be attached to the SF600. If the tympanogram is abnormal or the necessary instrumentation is unavailable, then evaluation by a health care provider (medical officer, nurse practitioner, physician's assistant, or independent duty corpsman) must be obtained and documented and the individual followed until cleared medically.

NOTE: The tympanogram or the medical evaluation may be obtained immediately following the determination of STS on the annual testing test, as long as follow-up audiometry is not done on the same day as the annual audiogram.

(c) Perform a second follow-up audiogram if tympanometry/otoscopy and/or medical evaluation are within normal limits. This follow-up test may be administered on the same day as the first follow-up. If the STS persists on the second follow-up, the results are forwarded to an audiologist or qualified physician for review and disposition. The audiologist or qualified physician may elect to provide a specific written referral protocol for disposition of individuals who do not require additional follow-up. The results of the second follow-up test are typically used to create a re-established reference audiogram. If the second follow-up differs significantly from the first follow-up, ie. is unbelievable, then the consulting audiologist or appropriate physician will provide direction.

(3) Individuals who exhibit a positive STS will be informed of this fact, in writing, within 21 days of when an audiologist or qualified health care provider confirms the positive STS is permanent. A sample letter is provided as Appendix C.

d. Permanent Threshold Shift (PTS). A PTS toward poorer hearing is a recordable illness or injury and is reported to the OSH office for entry on OPNAV 5102/7 (Log of Navy Injuries and Occupational Illnesses), or equivalent. In addition, all monitoring results should be reviewed for evidence of an "OSHA-Recordable" STS. This is defined as a 25 dB average shift at the frequencies 2000, 3000, and 4000 Hz in either ear, when compared to the earliest Baseline/Reference audiogram on file. Both these circumstances require written notification to the worker within 21 days.

Within 60 days of notifying the OSH office/commanding officer that a PTS has occurred, Occupational Health or the appropriate medical provider (such as the Medical Officer or the Medical Department Representative aboard ship) will determine if actions have been taken to prevent future hearing loss. These actions may include evaluation of the work-site, determining adequacy of hearing protectors, and ensuring that hearing protectors are being used properly.

e. Additional Referral Criteria.

(1) Individuals who exhibit the following will be seen by a medical officer who may refer them to an audiologist or otolaryngologist (cross-reference SF 513 Consultation Sheet to hearing test data) when:

(a) Hearing threshold levels average greater than 25 dB at 500, 1000, 2000, and 3000 Hz or 45 dB at 4000 and 6000 Hz, in either ear, and have not been previously evaluated.

(b) Unilateral hearing loss (i.e., greater than 20 dB at 500, 1000, or 2000 Hz, or 40 dB at 3000, 4000, or 6000 Hz) that has not been previously evaluated.

(2) Individuals whose hearing thresholds at any test frequency differ by 40 dB or more between ears cannot be tested at the technician level, and must be referred to an audiologist.

(3) Otolaryngology referral is indicated for individuals not responding to treatment of ear canal occlusion, persistent ear pain, or drainage from the ear canal. Significant aural pathology, dizziness, severe and persistent or unilateral tinnitus, or sudden onset of hearing loss warrants immediate otolaryngology consultation.

f. Exclusion From Future Noise Exposure. Individuals who exhibit a progressive series of PTSs must be considered to be at high risk for developing further hearing loss. Accordingly, such personnel must be given special consideration under the HCP.

(1) Individuals monitored under the HCP who have their reference audiogram re-established due to deteriorated hearing on three separate occasions must obtain clearance from an audiologist, otolaryngologist, or occupational and environmental medicine physician before returning to duties involving hazardous noise.

(2) Any individual who has hearing loss in both ears in which the sum of thresholds at the frequencies of 3000, 4000, and 6000 Hz exceeds a sum total of 270 dB will not be assigned to duties involving exposure to hazardous noise without clearance as described above.

(3) If such clearance is inappropriate, the audiologist or physician evaluating the individual will make specific recommendations to the individual's command. These may include the advisability of restriction from noise hazardous work, appropriate placement of the worker, or the need for stricter enforcement of hearing protection policies.

g. Evaluation of Audiometry. The provision of audiometry and other hearing conservation support services will be accomplished under the supervision of an audiologist, otolaryngologist, occupational and environmental medicine physician, or other qualified physician.

(1) A quality assurance sampling technique is recommended for DD 2215 and DD 2216 forms. They will be evaluated for validity, determination of significant threshold shift or hearing loss, and for possible medical referral of the patient.

(2) Technician proficiency in test instructions, administration, and fitting of hearing protective devices will be evaluated and documented. Annual in-service training is recommended.

(3) A sample proficiency assurance/maintenance protocol is contained in Appendix B.

5. Hearing Protective Devices (HPDs). HPDs are provided to and worn by personnel in accordance with references (b) or (c). It is NAVOSH policy that personnel exposed to sound levels greater than 84 dBA or 140 dB peak wear HPDs regardless of duration of exposure. Application of this policy should be based on sound professional judgment. Provision of personal hearing protection of any sort requires basic instruction as to use and care.

a. Fitting Procedures. Preformed earplugs will be fitted and issued only under Medical Department supervision. Before any such device is placed in an ear, a well-lighted visual inspection is necessary to determine whether any condition is present that would make insertion inadvisable, e.g., observable pathology or excessive earwax. Each ear canal will be sized separately. An earplug carrying case (NSN 6515-01-100-1674) must be provided at no cost with each set of preformed earplugs. This case may also be used for hand formed earplugs. All personnel required to wear hearing protection will receive adequate and effective training in the proper use and care of hearing protective devices. Medically trained personnel must examine the fit and condition of preformed and custom earplugs at least annually, preferably in conjunction with the annual hearing test.

b. Hearing Protector Selection. Information on the selection of an appropriate hearing protective device is contained in Appendix D. Although the selection of the hearing protective device is influenced by a combination of several factors, including comfort, the device's attenuation must be sufficient to reduce the employee's noise exposure to below 84 dB(A) and/or 140 dB peak. If this amount of attenuation is not achieved, other exposure control measures must be considered. These measures include engineering control, administrative exposure limitation, or the use of double protection (both plugs and muffs). Information on noise reduction ratings (NRRs) for standard stock hearing protective devices is also given in Appendix E. Recent supply problems for some HPDs have prompted the authorization to open purchase a limited selection of government tested hearing protectors. The NAVENVIRHLTLTEN homepage at <http://www-nehc.med.navy.mil> identifies these acceptable hearing protectors and provides guidance regarding their purchase.

Within the above constraints, the user should be permitted some freedom of choice in the selection of a hearing protective device unless the selected protector is medically contraindicated or inappropriate for a particular noise hazardous area or operation. Audiologic consultation is recommended in instances of significant pre-existing hearing loss, high intensity noise (TWA's in excess of 104 dB, or intense impact noise) or communication-critical situations.

(1) Devices used for recreational listening, such as "noise muffs" with built in radios, must not be used in place of or in conjunction with approved hearing protectors. To hear a desired signal while in noise, the signal must be of greater intensity than the background noise. In some situations this may result in the signal reaching hazardous levels. The radio signal would add to the over-exposure and may also pose a safety hazard by further isolating the listener from his/her environment. In addition, hearing aids must not be used in place of or in conjunction with an approved hearing protector unless approved for that purpose by an audiologist or otolaryngologist.

(2) Personnel may use custom earplugs only if they cannot be properly fitted with approved hearing protectors or if a custom device is required for special circumstances. Preformed or custom molded musician's earplugs will be provided to Service band members. Only audiologists, otolaryngologists, or trained medical technicians may take impressions of the

ear necessary to make the custom earplugs. The cost of custom or musician earplugs is borne by the activity.

c. Administrative Control of Exposure. Administrative control of exposure time will be necessary in cases where hearing protective devices do not provide sufficient attenuation to reduce the employee's effective exposure level to less than an 8-hour TWA of 84 dB(A). The table of noise exposure limits is contained in Appendix F.

6. Education. Other than successful noise abatement operations, nothing is more important to the successful prevention of noise induced hearing loss than motivating personnel to wear hearing protectors appropriately and ensuring compliance with personal protective and surveillance requirements. Personnel must know why they need to protect themselves, when and how to do so, and the consequences of carelessness or deliberate non-compliance. Successful education at all levels of command is vital.

a. Initial hearing conservation training must be given prior to assignment to duties in hazardous noise. For uniformed personnel this should be accomplished at basic training or during advanced training. Training must be documented on the baseline/reference audiogram or elsewhere in the individual health record. Upon reporting to duties involving exposure to hazardous noise, a health record review should be accomplished to ensure that training has been documented, and must be provided/documentated as needed. Initial training should be sufficiently comprehensive to ensure familiarity with the following training elements.

- The physical and psychological effects of noise environments and hearing loss.
- Recognition of posted and unposted noise-hazardous spaces and equipment.
- Audiometric testing and its purpose.
- The proper selection, fitting, use and care of HPDs.
- The responsibilities of both supervisors and employees in the prevention of hearing loss.
- Awareness training as to the hazards of non-occupational noise exposure during recreational activities.
- Impact of hearing loss on job performance and fitness for duty.

b. Annual refresher training is the responsibility of Medical Department personnel, and should be provided in conjunction with the annual monitoring audiogram. Training should be documented on the DD2216 form. In addition, the provision of training should be cited on the command/unit letter which typically accompanies a roster of personnel monitored.

NOTE: While content and duration of training are not specified, effectiveness of initial and refresher training should be documented via follow-up survey or other means.

c. Sources for hearing conservation training materials and information include the NAVENVIRHLTHCEN Occupational Audiology Team at their home page (<http://www-nehc.med.navy.mil>), or by telephone at (757) 462-5500/DSN 253-5500. Additional sources of information are the occupational health offices at Navy MTFs, and Navy Environmental and

Preventive Medicine Units. HCP training should be patterned to local needs, therefore a lesson plan is not offered as part of this manual. However, excellent Navy hearing conservation training films such as "Sound of Sound", "Meet Mr. Noise", the "Navy Hearing Conservation Program, Medical Aspects of High Intensity Noise" are still available on "permanent" loan from: Navy Education and Training Professional Development & Technical Center, Norfolk Regional Electronic Media Center, 9770 Decatur Avenue, suite 250, Norfolk, VA 23551-3292. Point of contact is: Training Requirement Coordinator, COM: (757) 444-3013/1468 or DSN 564-3013/1468, or FAX (757) 444-3771. There are also excellent HCP training resources on the internet. Implying no official endorsement, interesting materials are found at:

- (1) <http://www.pp.okstate.edu/ehs/links/noise.htm>
- (2) <http://facstaff.uww.edu/bradleys/ohc/home.html>
- (3) <http://www.aearo.com/html/industrial/tech01.htm#training>

## 7. Recordkeeping Requirements.

### a. Hearing Conservation Data.

- (1) All hearing conservation data will be recorded using the following forms:
  - (a) DD 2215, Reference Audiogram
  - (b) DD 2216, Hearing Conservation Data
  - (c) DD 2217, Biological Audiometer Calibration Check
  - (d) NEHC 5100/17, Industrial Hygiene Noise Survey Form
  - (e) NEHC 5100/18, Industrial Hygiene Noise Dosimetry Form
- (2) Information concerning DD Forms is contained in Appendix G.
- (3) Disposition of completed DD 2215 and DD 2216 data forms is as follows:
  - (a) A hard copy/print-out is to be placed in the individual's health record.
  - (b) Commands using DOHRS equipment will upload an electronic copy to the DOHRS Data Warehouse at least monthly.
  - (c) An electronic copy must be retained in a local/regional data base for evaluating program compliance.

(3) The NAVENVIRHLTHCEN will no longer accept hard copy DD 2215's or DD2216's. Essential data from commands that do not yet have DOHRS equipment will be added to the data base when they upgrade to the DOHRS format.

b. Employee Health Record. The health record of each individual identified by command for inclusion in the HCP will contain the following:

(1) Original baseline/reference audiogram (DD 2215).

(2) Re-established reference audiogram(s), if different from original baseline audiogram (DD 2215).

(3) All monitoring audiograms (DD 2216).

(4) Individual exposure documentation, typically in the location/place of work block of the DD 2215/2216.

(5) Documentation of initial training, and documentation of refresher training when provided in conjunction with the annual audiogram.

c. Medical Department Documentation. The following records are maintained:

(1) Current roster of exposed employees, as provided by the supported commands. This roster will be updated at least semi-annually.

(2) Results of noise surveys.

(3) Results of daily Audiometer Biological Calibration Checks (DD 2217).

(4) Results of annual audiometric chamber certification.

(5) Records of proficiency evaluation and in-service training of audiometric technicians.

d. Retention of Records

(1) Results of hearing tests performed for hearing conservation, as well as exposure documentation, will be a permanent part of an individual's health record.

(2) Noise exposure data, recorded on a DD 2214, NEHC 5100/17, or 5100/18, will be kept for a minimum of 40 years.

(3) All other documentation will be retained for five years.

8. Program Performance Evaluation. Early detection of changes in hearing allows action to be taken to prevent further hearing loss. Each medical treatment facility will maintain a hearing conservation database for assessing the effectiveness of the HCP. The HCP manager will evaluate program effectiveness of all supported activities, at least annually, based on the following measures:

a. Compliance. This statistic reports the number of individuals enrolled in the HCP who have a current audiogram (date within 12 months) divided by the number of individuals enrolled.

$$\frac{\text{\# in HCP with current audiogram}}{\text{\# in HCP}} \times 100 = \% \text{ compliance}$$

b. Incidence of STS. This statistic reports the number of positive STSs (poorer hearing) at annual monitoring (not counting follow-up exams for the same individual) in the latest fiscal year, divided by the number of individuals monitored.

$$\frac{\text{\# of STS detected}}{\text{\# monitored}} \times 100 = \% \text{ incidence STS}$$

c. Incidence of PTS. This statistic reports the number of PTSs (poorer hearing) in the latest fiscal year divided by the number of individuals monitored during that period.

$$\frac{\text{\# PTS detected}}{\text{\# monitored}} \times 100 = \% \text{ incidence PTS}$$

Additional details and examples are provided in reference (a).

## References

- (a) DODINST 6055.12 "DOD Hearing Conservation Program", April 22, 1996.
- (b) OPNAVINST 5100.23 Series "Navy Occupational Safety and Health (NAVOSH) Program Manual".
- (c) OPNAVINST 5100.19 Series "Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat".
- (d) NAVENVIRHLTHCEN Technical Manual, NEHC-TM91-2, "Industrial Hygiene Field Operations Manual."
- (e) NAVMED P-5132 "Revised Bureau of Medicine and Surgery (BUMED) Equipment Management Manual", February 27, 1997.

