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Pamphlet 40-501

Medical Services

# Army Hearing Program

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**UNCLASSIFIED**

# ***SUMMARY of CHANGE***

DA PAM 40-501  
Army Hearing Program

This major revision, dated 8 January 2015--

- o Changes the title from Hearing Conservation Program to Army Hearing Program (cover).
- o Establishes and describes the four components of the Army Hearing Program (chap 3-1).
- o Outlines the functions needed to implement the Army Hearing Program (chap 3-2).
- o Defines hearing readiness enrollment and examination requirements for Soldiers (chap 3-3).
- o Defines hearing conservation enrollment and examination requirements for the Department of the Army Civilian workforce (chap 3-4).
- o Defines and explains requirements for the hearing readiness component (chap 4).
- o Defines and explains requirements for the Clinical Hearing Services component (chap 5).
- o Defines and explains requirements for the Operational Hearing Services component (chap 6).
- o Outlines the internal and external reporting measures for program evaluation (chap 9).

## Medical Services

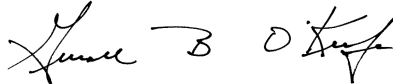
# Army Hearing Program

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By Order of the Secretary of the Army:

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Official:



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**History.** This publication is a major revision.

**Summary.** This pamphlet implements the Army Hearing Program requirements prescribed by policy contained in Department of Defense Instruction 6055.12 and as established in Army Regulation 40–5.

**Applicability.** This pamphlet applies to the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve, unless otherwise stated. This pamphlet is applicable during mobilization.

**Proponent and exception authority.** The proponent of this pamphlet is The Surgeon General. The proponent has the authority to approve exceptions or waivers to this pamphlet that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this pamphlet by providing justification that includes a full analysis of the expected benefits of the waiver and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through the higher headquarters to

the policy proponent. Refer to AR 25–30 for specific guidance.

**Suggested improvements.** Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to The Surgeon General (DASG–PPM–NC), 7700 Arlington Boulevard, Falls Church, VA 22042–5140.

**Distribution.** This publication is available in electronic media only and is intended for command levels A, B, C, D and E for the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

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\*This pamphlet supersedes DA Pam 40–501, dated 10 December 1998.

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## **Chapter 1**

### **Introduction**

#### **1–1. Purpose**

This pamphlet provides procedures for implementing the Army Hearing Program (AHP). It applies to all military and all Department of the Army (DA) Civilian personnel exposed to noise hazards and sets standards for implementing, managing, and enforcing the AHP.

#### **1–2. References**

Required and related publications and prescribed and referenced forms are listed in appendix A.

#### **1–3. Explanation of abbreviations and terms**

Abbreviations and terms used in this pamphlet are explained in the glossary.

#### **1–4. Applicability**

This pamphlet—

*a.* Applies to all military and DA Civilian personnel exposed to operational and occupational noise hazards to ensure active enforcement of hearing readiness and hearing conservation program elements.

*b.* Applies to all phases of deployment and training exercises to ensure that appropriate hearing surveillance is conducted and hearing protection is available and used to prevent noise-induced hearing loss.

#### **1–5. Stakeholders**

The AHP affects all Army personnel Components: Active Duty, the Army National Guard (ARNG), the U.S. Army Reserve (USAR), and DA Civilians. Individual AHP components provide useful data to many healthcare disciplines, organizations and working groups. Among the stakeholders are The Surgeon General (TSG), the Department of Defense (DOD) Hearing Center of Excellence, DOD Health Affairs, the DOD Hearing Conservation and Readiness Working Group, commanders, supervisors, Soldiers, and DA Civilians. All personnel play a critical role in influencing and supporting local and Armywide AHPs focusing on preventing noise-induced hearing loss in all Soldiers and DA Civilians routinely exposed to hazardous noise.

#### **1–6. Program assistance**

*a.* The U.S. Army Public Health Command (USAPHC) Army Institute of Public Health (AIPH) AHP office provides program guidance and implementation strategies to all stakeholders of the AHP, to include the following:

- (1) Noise abatement and acoustical engineering consultations.
- (2) AHP support and consultations.
- (3) AHP and monitoring audiometry training and support.
- (4) Hearing readiness and Medical Protection System (MEDPROS) support.
- (5) Program metrics and reporting.
- (6) Health hazard assessments of new materiel.
- (7) Telephonic consultations.
- (8) Standard hearing health education materials.
- (9) Standard strategic communication materials.
- (10) Professional working group representation.

*b.* AHP assistance may be obtained by—

(1) Writing through command channels to Commander, USAPHC, AIPH, AHP, 5158 Blackhawk Road, Building E–1570 (MCHB–IP–MAH), Aberdeen Proving Ground, MD 21010–5403.

(2) Sending electronic mail to the following address: [usarmy.apg.medcom-phc.mbx.army-hearing-program@mail.mil](mailto:usarmy.apg.medcom-phc.mbx.army-hearing-program@mail.mil).

## **Chapter 2**

### **Hearing, Hearing Loss, and Effective Communication**

#### **2–1. Mission**

The mission of the AHP is to maximize Soldier and DA Civilian hearing and communication abilities through implementation of the components of hearing readiness, clinical and operational hearing services, and hearing conservation, thus contributing to survivability, lethality, mission effectiveness, and quality of life.

## 2-2. Basics of hearing

The human ear is the organ of hearing and balance and consists of three main parts: the outer, middle, and inner ear. The inner ear is further divided into two main parts.

*a.* Cartilage and soft tissue form the outer ear, and its two major components are the pinna and the external ear canal. An important function of the pinna is to focus energy to enable the listener to localize the direction of sound. The external ear canal, approximately one inch long, connects the pinna to the eardrum. The ear canal serves as a natural resonator, making sounds louder, deeper, and clearer.

*b.* The middle ear contains the eardrum, ossicles, and eustachian tube. Individually, the ossicles are known as the malleus (hammer), incus (anvil), and stapes (stirrup), collectively referred to as the ossicular chain. The ossicular chain links the eardrum to the inner ear and transmits vibrations through the middle ear into the inner ear. The eustachian tube connects the middle ear to the back of the nose and throat and serves as a pressure equalizer. The tube opens and closes to equalize air pressure within the middle ear, making it easier for sound to travel to the inner ear. This action also protects the eardrum from pressure imbalances in the middle ear that could damage the eardrum.

*c.* The inner ear has two main parts: the cochlea and the vestibular system. The cochlea houses the sound-analyzing cells, and the vestibular system houses the balance organs.

(1) The cochlea, which is coiled like a snail shell, is a fluid-filled tube divided into three cavities: scala media, scala tympani, and scala vestibuli. The basilar membrane, which forms a partition between the scala media and scala tympani, contains the Organ of Corti. Approximately 20,000 hair cells, to which hair-like projections called stereocilia are attached, are located in the Organ of Corti. These hair cells respond based on the frequency of a sound and create signals that become nerve impulses. The acoustic nerve (eighth cranial nerve) carries the nerve impulses through the brainstem to the auditory processing centers in the brain. The central auditory system is responsible for processing sound, thus allowing comprehension of sounds and speech.

(2) The vestibular system, located in the inner ear, consists of the utricle, the saccule, and three fluid-filled, semicircular canals. The three semicircular canals signal the brain regarding the direction of body movement, while the utricle and saccule respond to changes in linear acceleration and control posture and balance.

## 2-3. Hearing loss

The three general types of hearing loss are conductive, sensorineural, and mixed. A hearing loss is usually categorized by which part of the ear is damaged.

*a.* Conductive hearing loss occurs within the outer and/or middle ear and is often corrected medically or surgically. This type of hearing loss occurs when the sound is not conducted efficiently through the outer and middle ear to the inner ear, resulting in a reduction in the sound level heard or the ability to hear soft sounds. Some causes of conductive hearing loss are fluid in the middle ear, eardrum perforation, impacted earwax, ear infection, or eustachian tube dysfunction.

*b.* Sensorineural hearing loss (SNHL), usually a permanent condition, occurs when the inner ear is damaged. SNHL reduces the ability to hear faint sounds such as the consonants in speech. To a person with SNHL, speech may sound unclear or unintelligible even when it is loud enough to be heard. Some causes of SNHL are illnesses, ototoxic drugs (ear poisons), aging, head trauma, or unprotected exposure to hazardous noise.

*c.* Mixed hearing loss is present when a conductive hearing loss occurs in combination with a sensorineural hearing loss. There may be damage in the outer or middle ear concurrent with damage in the inner ear.

## 2-4. Noise-induced hearing loss

Noise-induced hearing loss (NIHL) is a permanent hearing loss caused by exposure to hazardous noise, if hearing protection is not worn properly. NIHL is one of the most common occupational diseases; it can occur gradually over time or result from one, single high impulse noise exposure incident on or off duty.

*a.* Repeated, unprotected exposure to hazardous noise over a period of time causes permanent inner ear damage. This type of NIHL may develop gradually and is caused by multiple exposures to any source of hazardous noise at home and/or in the workplace. Exposure to loud concerts, shooting guns off duty without hearing protection devices (HPDs), and other off duty high impulse noise exposures can cause NIHL, as well.

*b.* NIHL can also be the result of a one-time, unprotected exposure to high-intensity noise such as small-arms fire, improvised explosive devices, or artillery fire.

*c.* Individuals with NIHL may be unaware of their hearing loss and may not notice communication difficulties when in quiet listening situations. However, in noisy listening environments, such as, communicating in combat, near military vehicles and aircraft, weapons fire, or industrial operations, hearing becomes more difficult, and its loss can adversely impact communication and mission effectiveness. The early stage of NIHL is usually associated with a high-frequency, sensorineural hearing loss.

*d.* Continued, unprotected exposures to hazardous noise can produce a marked loss in one's ability to communicate. This is due to an inability to hear the sound frequencies necessary for understanding speech clearly, resulting in reduced job performance and quality of life.



## **2-5. Temporary threshold shift**

*a.* Unprotected exposure to hazardous noise, either impulse or steady-state, may result in temporary hearing loss, also known as temporary threshold shift (TTS). TTS usually abates within 48 hours but might last longer. Symptoms of TTS may include a temporary muffling of sound after hazardous exposure, a sensation of fullness in the ear(s), tinnitus, and increased feelings of stress or fatigue.

(1) A TTS may result from operating noisy equipment, riding in a tactical vehicle, exposure to explosions, firing a weapon, attending loud music concerts or using power tools without wearing hearing protection devices.

(2) Repeated temporary threshold shifts can result in a permanent hearing loss, also known as permanent threshold shift (PTS). Thresholds are the softest sounds heard at the frequencies, or pitches that are critical for understanding speech. The “shift” refers to a significant change in the ability to hear these critical sounds.

*b.* A TTS caused by impulse or steady-state noise exposure can be prevented by the regular use of properly fitted hearing protection, monitoring audiometry, and command enforcement.

*c.* The full effect of a TTS on military operations is not yet fully understood; however, anecdotal evidence indicates a significant impact. Soldiers should be aware of the risks to communication and mission effectiveness that result from even one unprotected noise exposure or hazardous noise incident.

## **2-6. Permanent hearing loss**

*a.* This loss results from steady-state noise exposure occurring gradually over time, often over many years. Since there are no outward symptoms associated with this type of permanent hearing loss, the Soldier or DA Civilian worker is often unaware of the gradual change in hearing. One-time exposure to high intensity noise such as, weapon fire, sometimes causes permanent NIHL, as well.

*b.* Permanent hearing loss due to impulse or steady-state hazardous noise exposure initially results in hearing loss in the higher audiometric test frequencies (typically 3000–6000 Hertz (Hz)) of the range of human hearing. Consequently, many speeches sound, especially high-frequency consonants such as “s” and “f,” become inaudible and are subsequently misheard.

(1) Since consonant sounds make speech intelligible by segmenting the vowel sounds, hearing loss causes speech to become distorted and difficult to hear distinctly, particularly in the presence of background noise.

(2) Vowel sounds are lower in pitch and are typically still audible even in the presence of noise-induced permanent hearing loss. As a result, Soldiers or DA Civilian workers with hearing loss may state that they can hear speech but cannot understand what is being said.

*c.* No cure is available for permanent hearing loss. However, permanent hearing loss caused by impulse or steady-state hazardous noise exposure can be prevented by the regular use of hearing protection. It is important to protect the hearing that is left from getting worse.

## **2-7. Tinnitus**

*a.* Damage to the inner ear resulting from unprotected, high-intensity noise exposure can lead to a perceived ringing, buzzing, or hissing sound. This symptom of inner ear damage is called tinnitus.

(1) Stress, tobacco use, or alcohol use, combined with inadequate protection from hazardous noise, can contribute to, or worsen, tinnitus.

(2) Tinnitus may be temporary and may serve as a warning sign that overexposure has occurred in the workplace environment. Tinnitus can also be permanent with or without hearing loss.

(3) Tinnitus treatment may decrease its level of annoyance but does not “cure” the condition.

*b.* Tinnitus associated with noise exposure can be prevented by the regular use of hearing protection.

## **2-8. Ototoxin exposure**

*a.* Exposure to certain chemicals, either alone or in combination with hazardous noise, may result in hearing loss. Enrollment in the AHP is required when exposure to the ototoxin exceeds 50 percent of the occupational exposure limit. The National Institute for Occupational Safety and Health estimates that millions of American workers are exposed to occupational combinations of noise and chemicals that pose a hazard to their hearing.

*b.* Organic solvents are the most commonly identified chemical ototoxins, but others, such as metals and chemical asphyxiants, may also contribute to hearing loss. Some studies have indicated that the combined effects of noise and chemicals on hearing are greater than those observed for exposure to either noise or chemicals alone.

*c.* Table 3-1 provides a list of some of the potential ototoxic chemicals. A review of all chemicals to which a worker may be exposed should be conducted to determine if such chemicals are potentially ototoxic.

## **2-9. Effect on combat readiness**

The following examples demonstrate the importance of hearing in both offensive and defensive missions.

*a.* In offensive operations, hearing is necessary to—

(1) Localize snipers. Enemy snipers can be present even in the absence of visually-observed muzzle flashes.

(2) Locate patrol members. When on night patrol, especially during low illumination, patrol members are often guided more by sound than by vision.

(3) Determine the position, number, and type of friendly and enemy vehicles. Using their hearing, Soldiers are able to differentiate between enemy and friendly armor (mechanized vehicles). Determining the number and location of enemy vehicles is critical to the successful completion of the mission.

(4) Determine the types of combat traps and improvised explosive devices. The various types of trip wires generate different sounds. The sound generated by a trip wire pulling the pin from a grenade is different from that of a pressure-activated explosive. In the instance of a grenade, quick movement away from the area is required. In the case of a pressure-activated device, the Soldier must maintain pressure on the trip wire until the explosive has been deactivated.

*b.* In defensive operations, the Soldier may need to—

(1) Hear the activation of perimeter alarms which sound when movement activates remote sensing devices.

(2) Hear the enemy moving through leaves, grass, twigs, over sand, and on concrete. Experts have long recognized that the high-frequency nature of these sounds requires relatively normal hearing for their detection.

*c.* For both offensive and defensive missions, good hearing is essential and required to—

(1) Determine the enemy's location from the following sounds: wildlife, loading cartridges, removing safety locks, clipping barbed wire, speech, distant weapons fire, and domestic animal sounds.

(2) Hear radio messages and verbal orders. Most military radios clip both high- and low-frequency sounds. A Soldier with a hearing loss has more difficulty communicating on the radio and can confuse similar-sounding verbal orders, such as digits in a grid coordinate or the command to "Fall back!" or "Attack!"

(3) Aid in small arms accuracy and weapon identification. Soldiers on pistol and rifle teams are aware of the advantage of wearing hearing protection while firing small arms. Wearing hearing protection increases accuracy by reducing the Soldier's tendency to flinch at the impact of the weapon. Good hearing can also aid in successful weapon identification. For example, Soldiers need to be able to discriminate the difference in sound between the M16 and AK47 rifles.

(4) Operate in urban terrain. Urban terrain is a particular hazard for the Soldier because it is fraught with visual and physical obstacles such as buildings, alleyways, and ditches. Soldiers must distinguish civilian inhabitants from actual combatants in an often-chaotic environment, a circumstance that further emphasizes the importance of good hearing.

## Chapter 3 Program Outline

### 3-1. Four components of the Army Hearing Program

The AHP provides leadership policies, strategies, and processes to prevent NIHL among military and DA Civilian personnel. The AHP consists of four major components: hearing readiness, clinical hearing services, operational hearing services, and hearing conservation.

*a. Hearing readiness.* Hearing readiness is designed to ensure Soldiers have the required hearing capability to perform their job-specific duties, as well as the appropriate and properly-fitted hearing protection devices for their mission. The primary purpose of hearing readiness is to identify early changes in hearing and provide education, individual counseling, and hearing protection to prevent damage to hearing. A key element of hearing readiness is monitoring audiometry, which is conducted with the current DOD-approved microprocessor audiometer system comprised of the Defense Occupational and Environmental Health Readiness System-Hearing Conservation (DOEHRS-HC) software application, the current DOD-approved audiometer, and the DOEHRS-HC Data Repository (DR) Web-based Application. All Soldiers are required to undergo an annual DOEHRS-HC audiogram. Monitoring audiometry data is made available through MEDPROS, thus providing the capability for monitoring and tracking of hearing for both individual and unit-level hearing readiness.

*b. Clinical hearing services.* These services are intended to determine a Soldier's auditory fitness-for-duty (FFD) by determining the degree and cause of hearing loss and measuring a Soldier's hearing ability against a performance or medical standard. Clinical hearing services for at risk DA Civilians who are exposed to hazardous noise are intended to determine work-relatedness of hearing loss. After degree and cause have been determined, treatment and management plans can be initiated. Treatment plans may include medical or surgical intervention, prescription of personal hearing aids, assistive listening devices, aural rehabilitation, tinnitus management, new hearing protection or monitoring of the condition for changes.

*c. Operational hearing services.* These Services focus on preventing or mitigating NIHL during military operations while maintaining or facilitating the Soldiers' ability to communicate. Operational hearing services focus on noise assessment and abatement strategies, improved communication, and the use of specialized hearing protection devices, such as non-linear and linear dual-function earplugs designed to reduce the impact of noise and NIHL on military operations. Tactical Communications and Protective Systems (TCAPS) are designed to amplify low-volume sounds and facilitate face-to-face and radio communications while simultaneously protecting the ear from hazardous impulse noise

(such as, weapons fire). These types of devices protect hearing in both operational training and combat environments while allowing Soldiers to maintain their ability to hear and communicate, especially in dismounted operations.

*d. Hearing conservation.* For many years, the AHP served as the flagship for the prevention of noise-induced hearing loss. The hearing conservation component of the AHP is industrial-focused and is instrumental in preventing NIHL in primarily fixed-facility work environments. HC efforts are conducted in support of both the DA Civilian workforce and Soldiers working in industrial-based settings. While HC requirements continue to exist in their previous form and function, they now serve in concert with additional AHP components to provide a comprehensive hearing loss prevention and hearing health promotion program.

### **3–2. Implementing functions**

*a. The installation commander—*

- (1) Meets the requirements of AR 40–5 and AR 385–10.
- (2) Issues a command emphasis letter endorsing the Installation Hearing Program.
- (3) Includes the AHP as an item of interest in the Command Inspection Program (see AR 1–201).
- (4) Publishes an installation regulation detailing the AHP.
- (5) Performs additional responsibilities as indicated in chapters 8 and 9.

*b. The DHS and/or Commander, Medical Treatment Facility—*

(1) Facilitates medical surveillance and provides command support and oversight for the hearing program services provided to military personnel and identified, at-risk DA Civilians who are exposed to hazardous noise or ototoxic chemicals.

(2) Identifies and approves access to MEDPROS Web Data Entry (MWDE) for the purpose of documenting hearing readiness information.

(3) Appoints, on orders, a military audiologist, where available, to act as the installation hearing program manager (HPM). If an audiologist is not available, the Director of Health Services (DHS) designates an otolaryngologist or other physician, such as an occupational and environmental medicine physician to act as the installation HPM. Recommend that individual serving as the installation HPM seek additional professional supervisor training and/or certification if responsibilities include determination of work-relatedness for hearing issues and/or oversight of quality assurance for the program. Hearing program management in the ARNG may be performed by a state occupational health nurse or equivalent for Title 32, United States Code (32 USC) technicians and by state medical detachments for the traditional guardsmen.

(4) Performs additional responsibilities as indicated in the remainder of this chapter and in chapters 7 and 9.

*c. The installation HPM—*

(1) Manages and implements all aspects of the AHP outlined in this pamphlet.

(2) Develops and ensures the publication of an installation regulation detailing the local AHP.

(3) Notifies command teams and civilian directorates of the required monitoring audiometry requirements and maintains a systematic method of scheduling audiometry (for example, by unit, birth month, or work site).

(4) Supervises the hearing technicians who provide annual monitoring audiometry services, to include predeployment and post-deployment and follow-up evaluations. Uses authorized monitoring audiometry equipment and ensures hearing tests are provided in accordance with hearing readiness and hearing conservation requirements, or the latest guidance provided by the USAPHC, AIPH, AHP office.

(5) Ensures monitoring audiometry tests are electronically captured as authorized DD Form 2215 (Reference Audiogram) and DD Form 2216 (Hearing Conservation Data) and are referenced in the electronic health record (see AR 40–66).

(6) Performs clinical, diagnostic audiometric testing services for Soldiers with a hearing readiness classification (HRC) 3; a significant threshold shift (STS) on 2; any other diagnostic referral; or referrals from other primary care sources. Provides clinical diagnostic hearing services to noise-exposed DA Civilians who exhibit a positive STS on 2 or other diagnostic referral criteria.

(7) Maintains an adequate supply of nonlinear and linear earplugs and a variety of preformed earplugs.

(8) Provides training to unit medical assets or support personnel for their certification as hearing technicians. Training requirements must meet, at a minimum, both the standards of the USAPHC, AIPH, AHP office and the Council for Accreditation in Occupational Hearing Conservation (CAOHC) certification as occupational hearing conservationists.

(9) Provides at least quarterly, or upon request, hearing readiness courses for brigade-level, battalion-level, and company-level hearing program (HP) officers. An assigned HP officer should be a noncommissioned or commissioned officer assigned to the unit where they serve as the HP officer.

*(a)* Instructs HP officers on the requirements and procedures for maintaining and monitoring unit hearing readiness, nuisance-noise abatement strategies, and methods for preventing NIHL, while maintaining critical communication ability.

(b) Certifies HP officers to fit personnel with a variety of hearing protective devices and to provide annual hearing protection integrity checks for unit personnel.

(10) Ensures hearing health education (operational and occupational) is provided at least annually for all Soldiers and hazardous noise-exposed DA Civilian personnel.

(11) Ensures unit-level hearing program training is provided and that personnel who fit individuals with preformed earplugs are medically trained by the installation AHP office. Examines, at least annually, earplug fit checks.

(12) Provides TCAPS training, both classroom instruction and range exercises, to supported operational units.

(13) Conducts noise surveys in field training environments to teach Soldiers how to use effective noise abatement strategies for both hazardous and nuisance noise.

(14) Conducts announced site assistance visits and in coordination with commanders, unannounced inspections of hazardous noise areas.

(15) Notifies appropriate personnel such as commanders, DA Civilian supervisors, and safety and occupational health managers when an individual sustains a confirmed STS and/or an Occupational Safety and Health Administration (OSHA) reportable hearing loss (RHL).

(16) Reports program participation, hearing readiness, and quality assurance through the Chief, Program Manager (PM) or Chief, Occupational Health and/or Medicine to the DHS at least annually.

(17) Performs additional responsibilities as indicated in the remainder of this pamphlet.

*d. The Industrial Hygiene PM—*

(1) Surveys, using approved and calibrated equipment, all known and suspected hazardous noise areas, equipment, and ototoxic exposures at least once and within 30 days of any change in operation (see chap 7 and para 7-4).

(2) Performs an initial evaluation within 30 days of notification of potential hazardous noise or ototoxic work sites identified by the safety manager or local supervisor.

(3) Establishes an 8-hour time-weighted average sound level (TWA) for all DA Civilians working in hazardous noise areas and Soldiers working in hazardous noise industrial operations as per the guidance provided in DA Pam 40-503.

(4) Uses the Defense Occupational and Environmental Health Readiness System-Industrial Hygiene (DOEHRs-IH) module to maintain a current inventory of all hazardous noise areas. Such an inventory may also be kept on DD Form 2214 (Noise Survey) and DD Form 2214C (Noise Survey Continuation Sheet).

(5) Maintains a current list of all ototoxin-hazardous areas and operations.

(6) Provides to the installation HPM, in writing, the names and social security numbers, or equivalent identification numbers, of noise-exposed and ototoxin-exposed personnel and the magnitude of their noise exposure. This information is an annual requirement and is used to determine HC compliance and participation reports. The roster should—

(a) Identify all persons enrolled in the local AHP based on their ototoxin exposures and/or noise-exposure levels.

(b) Identify the area and location of the hazardous noise, and identify specific AHP requirements for those environments or situations.

(7) Uses the DOEHRs-IH module to conduct noise hazard surveys. Provides results of all noise or ototoxin surveys to the installation HPM, safety, and medical personnel.

(8) Notifies the unit commander or supervisor, in writing, of the following:

(a) Magnitude of noise exposure-based on a TWA for DA Civilian employees working in hazardous noise areas and for Soldiers working in hazardous noise industrial operations.

(b) Results of noise hazard evaluations for subsequent employee notification.

(c) Compliance with AHP requirements, including the use of hearing protection.

(9) Establishes risk assessment codes (RACs) and forwards all noise survey results indicating hazard abatement violation to the designated safety and occupational health (OH) officials.

(10) Establishes indoor and outdoor noise contours where appropriate and feasible. Advises unit commanders and supervisors on how to properly post noise contours.

(11) Notifies the Civilian Personnel Advisory Center of hazardous noise and ototoxic areas for inclusion in job descriptions.

(12) Collaborates with installation HPMs to inspect hazardous noise areas, including military-unique areas, such as firing ranges.

(13) In the ARNG, an equivalent industrial hygiene program manager (IHPM) position is an industrial hygiene (IH) technician, although most states and territories do not have IH technicians. In those states and territories IH functions are contracted. However, all states and territories are supported by regional industrial hygienists from the National Guard Bureau (NGB).

*e. The Chief, Occupational Health and/or Medicine—*

(1) Coordinate with the IHPM and HPM to identify and maintain a database of all DA Civilians who are exposed to ototoxins and hazardous noise (see chap 7).

(2) Schedules and performs DOEHRS–HC reference, periodic, and termination audiograms for DA Civilians enrolled in the HC component of AHP. Coordinates with the HPM to ensure DOEHRS–HC audiograms are performed as required for DA Civilians enrolled in the hearing conservation component of the AHP (see chap 7).

(3) Ensures OH staff is properly trained to fit personnel with hearing protection devices and provide annual hearing health education.

(4) Ensures preformed earplugs and all other hearing protection devices are available for initial issue, as well as annual refits.

(5) Refers individuals for further audiological testing as appropriate (see chap 5).

*f.* The flight surgeon—

(1) Ensures initial baseline and periodic DOEHRS–HC audiograms are performed for all personnel on flight status.

(2) Ensures personnel meeting referral guidelines described in the “remarks” section of the DOEHRS–HC audiogram obtain clinical hearing services.

(3) Monitors the fit and use of aviator helmets, and inspects helmet conditions.

(4) Ensures annual hearing health education for all personnel on flight status.

(5) Ensures all aviation life support equipment is inspected and maintained by a school-trained aviation life support equipment technician.

*g.* The safety and OH manager in accordance with AR 385–10—

(1) Inspects worksites to identify potential noise hazards, and refers these potential hazards to the installation HPM and IHPM for evaluation. In the ARNG, State or territory safety manager, occupational health nurse, or IH technician identifies potential noise hazards.

(2) Includes noise-hazard abatement projects in the installation hazard abatement plan.

(3) Monitors the wearing and/or use of hearing protection devices in identified hazardous noise areas and notifies the installation HPM and DA Civilian employee’s and/or Soldier’s supervisor of noncompliance with the hearing protection requirement.

(4) OH records an OSHA RHL as an occupational illness (for example, repetitive trauma) on the OSHA 300 log of injury and illness for DA Civilians. Safety records OSHA RHL as a one-time acoustic trauma on the OSHA log of injury and illness for DA Civilians and on the DA Form 285 (Technical Report of U.S. Army Ground Accident) for Soldiers.

(5) Evaluates local hearing program compliance during standard safety and occupational health inspections.

(6) Works in concert with the HPM and IHPM to ensure AHP requirements are met.

*h.* The Civilian Personnel Advisory Center—

(1) Ensures that OH is included on in-processing and out-processing checklists for new, transferring, or terminating personnel. Doing so alerts the DHS of the audiometric evaluations required for these personnel.

(2) Coordinates with the IHPM to properly identify noise- and ototoxin-hazardous positions for annotation on job descriptions. Ensures that appropriate job descriptions include the requirement to wear personal protective equipment (hearing protectors and noise dosimeters), as required, and to report for scheduled medical surveillance, including follow-up testing, as needed.

(3) Informs the DHS and safety manager of all workers’ compensation claims for hearing loss.

*i.* The Director of Public Works (or an equivalent position in the ARNG)—

(1) Erects and maintains noise hazard warning, danger, and caution signs in accordance with AR 420–1 and DA Pam 385–11.

(2) Implements, whenever feasible, acoustical engineering control measures for hazardous noise in accordance with AR 40–5.

*j.* The Director, Army National Guard and the Chief, U.S. Army Reserve must establish and implement an organizational AHP for their respective components by (consistent with AR 40–5)—

(1) Appointing a military audiologist, area of concentration (AOC) 72C, or designated individual from within the Occupational Medicine staff to serve as HPM and to provide AHP services and program oversight.

(2) Ensuring the use of DOD-approved DOEHRS–HC equipment for monitoring audiometry to ensure the minimum standard of hearing care is met across the organization.

(3) Ensuring contracted audiology and hearing technician services use the template statement of work endorsed by the Army NGB or USAR.

(4) The Director, Army National Guard and USAR must develop an organizational AHP policy to provide hearing services to the inactive duty training (IDT) Soldier, as well as the full-time support Soldier.

*k.* The unit commander (brigade-level, battalion-level, and company-level), director, or supervisor of noise-exposed personnel (see AR 40–5)—

(1) Appoints, on orders, an individual (officer, noncommissioned officer, or DA Civilian) to serve as the unit HP officer. The unit HP officer’s duties include the following:

(a) Completes HP officer course provided by the installation HPM within 3 months of receiving appointment orders.

- (b) Ensures unit personnel receive all required annual AHP services such as hearing testing, HPD fittings, and hearing health education.
  - (c) Ensures an adequate supply of hearing protectors is available, including preformed, handformed (foam earplugs) helmets, noise muffs, active HPDs, and other specialized HPDs.
  - (d) Requisitions HPDs through current channels for Class VIII supplies.
  - (e) Fits HPDs, as required, following successful completion of an HP officer course.
  - (f) Prepares a unit standard operating procedure detailing the AHP.
  - (g) Notifies the IHPM and the installation HPM of any suspected hazardous noise levels or changes in hazardous noise levels in work areas.
  - (h) Ensures annual hearing health education is provided for the unit through coordination with a qualified subject matter expert, or may conduct the training following successful certification through an HP Officer course.
  - (i) Ensures hearing health education participation is documented in the Digital Training Management System or other unit training tracking system.
  - (j) Tracks unit's hearing readiness status, schedules unit's annual and/or predeployment and/or post-deployment audiograms with the installation readiness center, and reports compliance data to the commander. Tracks Soldiers' follow-up hearing tests to ensure they complete their required evaluations.
  - (k) Provides appropriate hearing protectors, free of charge, to noise-exposed personnel per AR 385–10.
  - (l) Inspects helmets and noise muffs.
  - (m) Ensures the unit HP meets all requirements as specified on the installation's unit inspection checklist.
- (2) Ensures that noise-exposed and ototoxin-exposed DA Civilian personnel under their supervision—
- (a) Receive appropriate reference, periodic (at least annually), follow-up hearing tests and termination audiograms, as required.
  - (b) Participate in annual hearing health education briefings.
  - (c) Follow recommendations from audiometric examinations, medical evaluations, and noise and ototoxin surveys.
  - (d) Wear hearing protectors in hazardous noise areas, as required.
  - (e) Report for scheduled DOEHRS–HC follow-up hearing tests.
  - (f) Receive notification of individual noise and/or ototoxic chemical exposure levels.
  - (g) Choose from appropriate Army-approved hearing protectors.
  - (h) Report for termination hearing tests at least 6 weeks prior to, and within 6 months of departure from, Government service.
  - (i) Wear noise and ototoxic chemical dosimeters, when requested.
- (3) Ensures that all Soldiers and hazardous noise-exposed DA Civilians under their supervision retain a pair of preformed earplugs and an earplug carrying case as an item of individual equipment.
- (4) Requires Soldiers to wear the earplug carrying case with earplugs as part of the Army combat uniform (ACU), on the Soldier's front right belt loop of the ACU trousers in garrison, on the Soldier's tactical vest, and in the left arm pocket of the aircrew uniform or coverall, or wherever the commander and mission determine is most appropriate to ensure easy access and use.
- (5) Provides copies of regulations, technical bulletins, and other AHP documents to employees or their representatives on request.
- (6) Ensures that hazardous noise areas, vehicles, and equipment are marked with proper danger and caution signs and decals (see chap 7).
- (7) Posts 29 Code Federal Regulations (CFR) 1910.95. The standard is available through normal publication channels as DA Poster 40–501A (Occupational Noise Exposure Standard and Hearing Conservation Amendment).
- (8) Monitors and enforces the use of engineering and administrative noise controls (see chaps 6 and 7).
- (9) Refers any personnel under their supervision to the medical treatment facility for any hearing problems or complaints associated with wearing hearing protectors. Personnel who have experienced an acoustic trauma or sudden hearing loss should be referred within a 24-hour period. In the ARNG, refers any personnel under their supervision to the deputy state surgeon (DSS) for any hearing problems. The DSS will issue a voucher for the IDT Soldier to seek medical care in a civilian medical facility.
- (10) Initiates disciplinary action for hearing protection and/or monitoring audiometry noncompliance when appropriate (see AR 385–10).
- (11) Ensures that the following actions are included in military and DA Civilian supervisors' performance standards and evaluation reports, when applicable:
- (a) Enforces the use of personal protective equipment.
  - (b) Ensures that employees report for scheduled DOEHRS–HC hearing tests and required follow-ups when a change in hearing is detected on periodic examination (see chap 5).
    - l. Soldiers and noise-exposed personnel—
      - (1) Report for in-processing or out-processing, predeployment and/or post-deployment, annual, and termination

hearing program DOEHRS–HC examinations. Complete follow-up testing, as required, when changes in hearing are detected.

(2) Use approved and properly-fitted hearing protectors when exposed to hazardous noise such as weapons firing, tactical vehicles, motorcycles, and power tools; around engines and generators; and in all other environments identified as hazardous noise.

(3) Report for all scheduled DOEHRS–HC hearing tests and hearing health education briefings.

(4) Report any hearing or hearing protector problems to their supervisor or chain of command.

(5) Maintain hearing protectors in a sanitary and serviceable condition.

(6) Carry the earplug case on the uniform, either on the front right belt loop of their ACU trousers, on their tactical vest, in the left arm pocket of the aircrew coverall, or wherever the commander determines is most appropriate to ensure easy access and use.

(7) Wear noise and ototoxic chemical dosimeters to evaluate exposures, when requested.

(8) Keep hearing protection readily available at their job sites and use as required. Use of hearing protection during hazardous noise exposures when off-duty is also strongly recommended.

### **3–3. Hearing readiness enrollment and examination requirements for Soldiers**

*a.* All Soldiers will receive a reference audiogram (DD Form 2215) during initial entry training (IET) or basic officer leader course prior to hazardous noise exposure and before firing any Army weapons for the first time). The following Soldiers also require an annual periodic audiogram (DD Form 2216):

(1) All Soldiers assigned to a table of organization and equipment (TOE) unit or who have a Professional Filler System assignment to a TOE unit.

(2) All active component Soldiers assigned to a table of distribution and allowances unit.

(3) Soldiers assigned to a designated hazardous noise area (see chap 7).

*b.* Deploying Soldiers (from all components) require a predeployment DOEHRS–HC audiogram within the 12 months preceding their deployment. Redeploying Soldiers are required to complete a post-deployment DOEHRS–HC audiogram in accordance with Department of the Army Personnel Policy Guidance for Overseas Contingency Operations.

(1) If a Soldier has not received a baseline reference audiogram, a reference audiogram will be conducted prior to deployment, and a periodic post-deployment audiogram will be conducted upon redeployment.

(2) ARNG and USAR Soldiers who require clinical hearing services for hearing profile determination or audiologic evaluation should complete these during Soldier Readiness Process (SRP) prior to arriving at their mobilization site.

(3) ARNG and USAR Soldiers will receive a post-deployment DOEHRS–HC audiogram in conjunction with their Post-Deployment Health Assessment prior to release from active duty.

(4) Active-duty Soldiers will receive a DOEHRS–HC post-deployment audiogram within 6 months of redeployment or in conjunction with their post-deployment health reassessment evaluation.

### **3–4. Hearing conservation enrollment and examination requirements for the Department of the Army Civilians and Soldiers**

*a.* In accordance with Department of Defense Instruction (DODI) 6055.12, DA Civilian personnel and Soldiers in industrial operations will be enrolled in the hearing conservation component of the AHP when they are occupationally exposed to the following:

(1) Continuous and intermittent noise (20 to 16,000 Hz) that has an 8-hour TWA noise level of 85 decibels A-weighted (dBA) or greater.

(2) Impulse noise sound pressure levels (SPLs) of 140 decibels peak (dBp) or greater.

(3) Ultrasonic exposures which occur under special circumstances that require specific measurement and hazard assessment calculations.

(4) Known or suspected ototoxins. Exposure to workplace ototoxins, even in the absence of hazardous noise, can result in hearing loss. Table 3–1 provides a partial list of potentially ototoxic chemicals; however, there are others. All chemical exposures should be researched to determine if they are potentially ototoxic. Ototoxins in combination with noise exposure can have a synergetic impact on hearing, producing more damage than a higher exposure to either hazard alone. Enrollment in the AHP is required when the exposure to the ototoxin exceeds 50 percent of the occupational exposure limit.

*b.* An Occupational Ototoxins and Hearing Loss Fact Sheet is available at the USAPHC Web site [http://phc.amedd.army.mil/PHC%20Resource%20Library/Ototoxin\\_FS\\_51-002-0713.pdf](http://phc.amedd.army.mil/PHC%20Resource%20Library/Ototoxin_FS_51-002-0713.pdf).

*c.* New DA Civilian personnel will receive a reference audiogram as soon as possible but not later than 30 days after initial exposure. All noise-exposed and/or ototoxin-exposed DA Civilian personnel must receive annual and termination audiograms, as well as follow-up hearing tests in the event of an abnormal audiogram.

*d.* Profoundly hearing-impaired DA Civilians working in hazardous noise areas must receive reference and termination audiograms.

### **3–5. Termination audiogram requirements for Soldiers and Department of the Army Civilians enrolled in the Army Hearing Program**

*a.* Termination DOEHRS–HC audiograms must be conducted at least 6 weeks prior to, and within 6 months prior to an employee’s departure from Government service to allow sufficient time for required follow-up testing if an STS occurs. A Soldier’s or DA Civilian’s already-completed periodic hearing test may be used as the termination audiogram if completed within 6 months before departure from Government service. In order to designate a previously completed periodic hearing test as a termination hearing test, the examiner will edit the test type in DOEHRS–HC from periodic to termination hearing test. The installation HPM is responsible for ensuring hearing tests are correctly identified as termination audiograms in DOEHRS–HC. For the ARNG and USAR, the periodic hearing test may be used as the termination audiogram if completed within 12 months before departure from Government service.

*b.* Soldiers require a termination (separation) audiogram when they—

- (1) Reach their expiration, term of service.
- (2) Retire from military service.
- (3) Change their branch of service, such as from Army to Navy.
- (4) Change their service component, such as from Active Duty to the ARNG.
- (5) Change their service status from military to DA Civilian.

*c.* DA Civilians require a termination audiogram when they—

- (1) No longer work in hazardous noise operations.
- (2) Terminate their employment.
- (3) Change their service status from DA Civilian to military.

### **3–6. Monitoring audiometry equipment**

*a.* The current DOD-approved equipment for hearing conservation and hearing readiness monitoring is the DOEHRS–HC System. DOEHRS–HC provides data to the DODwide DOEHRS–HC Data Repository (DOEHRS–HC DR), which, in turn, provides data to the MEDPROS for hearing readiness monitoring and classification. DOEHRS–HC can be used to complete up to eight audiometric tests simultaneously and can also be used as a management tracking and reporting tool. The DOEHRS–HC audiometer—

(1) Automates audiometric tests and the completion of test forms.

(2) Must receive an annual, comprehensive electro-acoustical calibration to ensure it is functioning properly and in accordance with the American National Standards Institute (ANSI) Standard S3.6. Prior to its use each day, the equipment will receive biological calibration and function checks to ensure it remains in calibration and is properly functioning. The DOEHRS–HC User Manual contains instructions for completing biological calibration and function checks.

*b.* The audiometric test environment background noise levels must not exceed those shown in table 3–2. The HPM is responsible for ensuring that qualified personnel evaluate the test environment on an annual basis using equipment conforming to—

(1) Type 1 sound level meter requirements of ANSI Standard S1.4 and S1.4A Amendment (or latest approved ANSI standard).

(2) Requirements for Order 3, Type 3–D, extended range as specified by the latest ANSI Standard S1.11.

*c.* The current audiometric booth certification must be posted on the outside of the booth in an easily seen location.

*d.* Ventilation systems in audiometric test booths must provide adequate air exchange for patient comfort and must not interfere with the required allowable noise levels when turned on (see table 3–2).

*e.* Do not paint the interior of audiometric test booths. Painting the metal interior will interfere with its noise-reducing effectiveness.

*f.* Any significant new noise, either inside or outside of the booth, or the relocation of the booth, requires calibration recertification.

*g.* The Audiometric Test Booth Certification Form and Fact Sheet is available at the USAPHC Website <http://phc.amedd.army.mil/PHC%20Resource%20Library/AudiometricTestBoothCertification.pdf>. DOEHRS–HC testing is conducted in a standard, calibrated, certified environment only.

### **3–7. Certified hearing technician training requirements**

*a.* Monitoring audiometry is administered by a certified hearing technician. Training and certification are obtained through the Army, Navy, or Air Force hearing programs or CAOHC certification as occupational hearing conservationists. DOD hearing technician courses meet or exceed CAOHC training requirements.

*b.* Hearing technicians must administer audiometric tests under the supervision of an audiologist or a physician.

- (1) For assistance in locating hearing technician certification courses, contact local HPMs, regional military



audiologists, or the USAPHC, AIPH, AHP office available at the USAPHC Web site <https://usaphcapps.amedd.army.mil/TrainCon/eform.aspx?Name=PotentialStudents>.

(2) For locally-sponsored hearing technician training courses, the certified CAOHC course director must obtain certification numbers through the AHP office at USAPHC.

(3) Requests for certification numbers from the USAPHC AHP must be submitted at least one week prior to the scheduled course to allow for processing.

c. When conducting monitoring audiometry, the hearing technician must—

(1) Ensure hearing aids and any other objects that may interfere with testing (glasses, earrings, barrettes, and gum) are removed prior to administering any monitoring audiometry hearing tests.

(2) Explain the results of the hearing test to the individual.

(3) In the case of an STS, ensure the individual signs the DD Form 2216 to acknowledge that the test results and required next steps to be followed were explained to the individual.

(4) In the case of an STS, immediately schedule a follow-up hearing test and provide documentation to the individual's supervisor of the need for same.

(5) In the case of a missed follow-up audiogram, notify the individual's supervisor.

(6) Ensure appropriate follow through with all DOEHS–HC recordkeeping and reporting requirements.

**Table 3–1  
Potential ototoxic chemicals in the occupational environment**

Arsenic	Organophosphate pesticides
Carbon disulfide	Organic tin
Carbon monoxide*	Paraquat
Chemical warfare nerve agent	Perchloroethylene
Cyanide	Stoddard solvent
Ethyl benzene	Styrene*
Fuels	Trichlorethylene*
Lead and derivatives	Toluene*
Manganese	Xylene
Mercury and derivatives	
N-hexane	<b>*High-priority ototoxins</b>

**Table 3–2  
Allowable background noise levels for Defense Occupational and Environmental Health Readiness System - Hearing Conservation monitoring audiometry test environments**

Octave band center frequencies	Octave band levels in dB re: 20 micropascals (Pa)
500	27
1000	29
2000	34
4000	39
8000	41

## Chapter 4 Hearing Readiness

### 4–1. Hearing readiness purpose

The purpose of hearing readiness is to ensure that Soldiers have adequate hearing ability to successfully conduct military operations. Hearing readiness includes identifying early changes in hearing and providing training, individual counseling, and hearing protection to prevent and/or mitigate temporary and/or permanent hearing loss. Without proper hearing readiness, Soldiers may enter into combat with communication and auditory situation awareness problems directly resulting from poor hearing. Poor hearing jeopardizes the unit mission and increases the likelihood of a serious mishap due to a Soldier's inability to understand verbal orders and radio communications, localize the direction of sounds, gauge distances accurately, and have good overall auditory situation awareness.

#### 4-2. Monitoring audiometry

a. A key component of hearing readiness is monitoring audiometry using the DOEHRS–HC System. Chapter 3 provides detailed information regarding DOEHRS–HC equipment and Soldier testing requirements.

b. DOEHRS–HC uses computer software and a microprocessor audiometer to test hearing. The audiometric records are saved in a local database and then exported to the DOD-wide DOEHRS–HC DR.

(1) Initial DOEHRS–HC audiograms are recorded on DD Form 2215. All Soldiers are required to obtain a reference audiogram during IET or basic officer leader course prior to their first exposure to hazardous noise. A Soldier must be away from noise for at least 14 hours prior to receiving the reference audiogram.

(2) The DD Form 2215 serves as a baseline evaluation that measures how well the individual hears before being exposed to noise.

(3) Subsequent hearing tests are recorded on DD Form 2216 and are then compared to the Soldier’s DD Form 2215 to determine if a change in hearing, known as a STS, has occurred. If such is the case, additional audiometric follow-up is required (see chap 7).

#### 4-3. Medical Protection System

a. The MEDPROS hearing readiness module is used to track and monitor individual and unit-level hearing readiness. DOEHRS–HC audiograms from the DOEHRS–HC DR are processed into the MEDPROS hearing readiness to calculate hearing readiness status.

(1) MEDPROS receives data from the DOEHRS–HC DR.

(2) MEDPROS uses the date of examination and projected hearing profile (H-x) to calculate the HRC. Soldiers are assigned an HRC from 1 to 4; HRC 1 and 2 designate deployable status; HRC 3 and 4 indicate that further medical testing is required.

(3) Basic DOEHRS–HC data elements can be manually entered into the MWDE module. MWDE immediately updates HRC, but manual entries are retained only until MEDPROS receives the authoritative DOEHRS–HC data or until the MWDE data retention window for hearing expires, whichever comes first. The current MWDE data retention window, which is subject to change, is 180 days. All manually-entered data is overwritten, and HRCs are automatically updated when MEDPROS processes the DOEHRS–HC test data.

b. MEDPROS hearing readiness provides unit-level and individual monitoring and reporting.

c. Unit HP officers can monitor and track unit hearing readiness status through MEDPROS hearing readiness reporting functions, which can provide detailed information regarding unit and Soldier compliance. The unit HP officers monitor and track unit STS under the “Hearing Readiness” tab in MEDPROS.

(1) DOEHRS–HC audiogram results prior to June 2012 can be obtained through the MWDE portal.

(2) Soldiers can obtain copies of their DOEHRS–HC audiogram results through their personal Army Knowledge Online (AKO) accounts. This data is located under the “My Medical Readiness” tab in AKO.

#### 4-4. Medical Protection System training

a. MEDPROS training provides Soldiers with the proper skills to use the hearing readiness features in MEDPROS. This training ensures the unit HP officer or designated MEDPROS unit representative is able to accurately report individual and unit hearing readiness.

b. For medical personnel who require data entry training, a class schedule is available by contacting the nearest MEDPROS readiness coordinator (see MRC contact maps on the MEDPROS home page at <http://www.mods.army.mil> or by contacting the Medial Operational Data System (MODS) help desk at 1-888-849-4341 or 703-681-4976).

c. MEDPROS reports, MWDE, and MODS QWS3270S training manuals are located under the Help tab, (Documentation/Files), in the MEDPROS module at <http://www.mods.army.mil>.

#### 4-5. Hearing readiness classification

The HRC designations are as follows:

a. *Hearing readiness classification 1.* Soldier has received a DOEHRS–HC audiogram within 12 months; unaided hearing is within H–1 standards for both ears, in accordance with AR 40–501. No corrective action is required.

b. *Hearing readiness classification 2.* Soldier has received a DOEHRS–HC audiogram within 12 months; unaided hearing is within H–2 or H–3 standards. Soldier has a current DA Form 3349 in e-Profile assigned (H–2 or H–3) and a completed Speech Recognition in Noise Test (SPRINT) and military occupational specialty (MOS) administrative retention review (MAR2) (H–3) with no active middle ear disease or medical pathology in the better ear. Soldier has hearing aids (if required) and a 6-month supply of batteries. No corrective action is required.

c. *Hearing readiness classification 3.* Soldier has received a DOEHRS–HC audiogram within 12 months; unaided hearing is within H–2 or H–3 standards, but the Soldier requires audiological evaluation to determine and document an H–2 or H–3 hearing profile on a DA Form 3349 in e-Profile. Both the SPRINT and MAR2 are required for all Soldiers with H–3 hearing loss.

(1) *Hearing readiness classification 3A.* The audiological evaluation is not complete.

(2) *Hearing readiness classification 3B.* The DA Form 3349 in e-Profile is not complete, but the audiological evaluation has been completed.

(3) *Hearing readiness classification 3C.* The MAR2 is not complete, but the audiological evaluation and DA Form 3349 in e-Profile have been completed.

(4) *Hearing readiness classification 3D.* The MAR2 finds the Soldier does not meet readiness and/or deployment standards for hearing.

(5) *Hearing readiness classification 3E.* Soldier meets HRC 2 standards but does not have the required hearing aid(s) and at least a 6-month supply of batteries on-hand.

*d. Hearing readiness classification 4.* Soldier has not received a DOEHRS–HC audiogram within 12 months, or Soldier has received a DD Form 2216 audiogram within 12 months but requires a follow-up test to rule out or confirm an STS. This designation includes Soldiers who have not received a DD Form 2215 audiogram. In such cases, the HRC is unknown.

(1) *Hearing readiness classification 4A.* The Soldier’s most recent DOEHRS–HC audiogram is more than 12 months old.

(2) *Hearing readiness classification 4B.* The Soldier has received a DOEHRS–HC audiogram within the last 12 months; however, an STS has been identified, and a follow-up hearing test is required.

(3) *Hearing readiness classification 4C.* The Soldier demonstrated a STS and did not complete follow-up testing within 90-days of the periodic hearing test.

#### **4–6. Hearing readiness classifications disposition**

*a.* Soldiers with an HRC 1 or HRC 2 designation are deployable.

*b.* Soldiers with an HRC 3A–C designation are nondeployable and require a referral to an audiologist for the completion of a diagnostic evaluation, profile assignment, and/or referral to MAR2 (H–3 profiles).

*c.* Soldiers with an HRC 3E designation are not recommended for deployment and require either a hearing aid fitting and/or a 6-month supply of batteries for their issued hearing aid(s).

*d.* Soldiers with an HRC 4A designation require a DD Form 2215 or DD Form 2216 DOEHRS–HC audiogram.

*e.* Soldiers with an HRC 4B designation are not recommended for deployment and require a follow-up audiogram due to STS detected on the annual or periodic audiogram. The follow-up audiogram must be completed within 90 days of the annual or periodic audiogram.

*f.* Soldiers with HRC 4B or 4C designation are not recommended for deployment until all required follow-up hearing tests are complete.

#### **4–7. Hearing health education**

*a.* The HPM or designee must ensure that hearing health education is provided at least annually to all noise-exposed personnel in the AHP in fulfillment of 20 CFR Part 1910.95. Annual unit hearing health education briefings can be accomplished in conjunction with—

(1) Scheduled hearing readiness monitoring.

(2) Refit of earplugs.

(3) Soldier readiness processing (see AR 350–1).

*b.* Unit HP officers are required to track unit hearing health education requirements and maintain documentation (via Digital Training Management System or sign-in rosters) for completion of annual education.

*c.* Annual hearing health education can be delivered at the time of annual hearing surveillance and should include the following topics:

(1) Effects of noise on hearing.

(2) Purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types; and instructions on their selection, fitting, use, and care.

(3) Purpose of audiometric testing, and an explanation of test procedures and results.

*d.* Additional hearing health education topics for Soldiers may include the following:

(1) An overview of the AHP.

(2) The importance of hearing as a critical sense for mission accomplishment.

(3) The mechanisms of hearing loss, and the impact of hearing loss on communication during training, operational exercises, and combat missions.

(4) The selection, fit, use, and care of hearing protectors, and the importance of hearing protector use during training.

(5) The purpose of hearing readiness monitoring, to include hearing tests.

(6) Hearing loss prevention tactics, alternative strategies, and noise surveillance and abatement strategies.

*e.* Additional information regarding hearing health education materials can be obtained from the local HPM or from

the USAPHC, AIPH, AHP Web site that is available at <http://phc.amedd.army.mil/topics/workplacehealth/hrc/Pages/default.aspx>.

#### **4–8. Hearing protection**

*a.* Soldiers and deployable DA Civilians with hearing readiness requirements will be refitted with preformed earplugs at least annually. Refit and/or integrity checks should be accomplished during—

- (1) Scheduled hearing readiness monitoring.
- (2) Annual unit hearing health education briefings.
- (3) SRP.

*b.* Additional information regarding unit hearing protection training, such as TCAPS, can be obtained from the installation HPM.

#### **4–9. Tinnitus screening**

*a.* Soldiers will be periodically screened for tinnitus. Physicians can document the presence or absence of tinnitus on the following forms:

- (1) DD Form 2795 (Pre-Deployment Health Assessment).
- (2) DD Form 2796 (Post-Deployment Health Assessment).
- (3) DD Form 2900 (Post-Deployment Health Re-Assessment).
- (4) DD Form 2807–1 (Report of Medical History).

*b.* Hearing technicians are required to document the presence or absence of tinnitus on the following forms:

- (1) DD Form 2215.
- (2) DD Form 2216.

## **Chapter 5**

### **Clinical Hearing Services**

#### **5–1. Clinical Hearing Services purpose**

Clinical hearing services are designed to determine the degree, cause, and impact of hearing loss on auditory FFD status. Once a Soldier or DA Civilian has been identified with hearing loss, a treatment and management plan is put into place. Audiologists provide clinical hearing services that include medical evaluation, treatment, determination of auditory FFD, medical profiling, hearing loss prevention education, and clinical studies. The plan may include referral for medical or surgical intervention, prescription of personal hearing aids, assistive listening devices, aural rehabilitation, tinnitus assessment, and/or monitoring.

#### **5–2. Referrals for diagnosis and disposition**

*a.* DOEHS–HC automatically generates recommendations for referral when specific referral criteria are met. The presence of one or more of the following conditions will result in a referral:

- (1) Low-frequency hearing loss.
- (2) High-frequency hearing loss.
- (3) Masking required due to unilateral and/or asymmetric hearing loss.
- (4) Asymmetric hearing loss.

*b.* It is the responsibility of the hearing technician to inform both the individual and the installation HPM of the need for a referral. Referrals to the installation HPM are completed immediately following the annotation of a problem on the DD Form 2215. For annual, periodic, or predeployment and/or post-deployment DD Form 2216 audiograms, referrals are provided after DOEHS–HC follow-up testing has been completed and the reason for the referral has been verified.

*c.* Diagnostic audiology referrals are made to—

- (1) Confirm permanent changes in hearing.
- (2) Determine the cause and type of the hearing loss.
- (3) Conduct a tinnitus assessment, if applicable.

*d.* Once the need for a referral has been determined, the referral should be completed within 30 days of periodic hearing test.

*e.* Health technicians will refer patients to the primary care manager for any cases involving suspected tympanic membrane perforation, bulging tympanic membrane, or otitis media. The patient should be instructed that once the pathology is resolved they must return to complete a follow-up hearing test to determine whether the hearing loss has resolved or if a referral to the audiologist is still required.

f. If a sudden SNHL is suspected the audiologist or ear, nose and throat physician should be contacted immediately.

### **5-3. Diagnostic audiometry**

a. Only audiologists, otolaryngologists, or other physician trained and certified as a Professional Supervisor may diagnose NIHL.

b. The provider must use all reasonable methods of differential diagnosis. These methods include, but are not limited to the following:

- (1) An investigation of the individual's medical history, to include the review of any previous hearing tests.
- (2) A complete diagnostic audiologic assessment.

c. The diagnostic audiologic assessment should include the following:

- (1) Pure tone air-conduction and bone-conduction threshold testing.
- (2) Speech reception thresholds and word recognition testing.
- (3) Acoustic-immittance testing, including acoustic reflex measurements.
- (4) Masking, when indicated.
- (5) Otoacoustic emissions, if applicable.
- (6) Further diagnostic tests, such as vestibular testing or progressive audiologic tinnitus management, as warranted.

d. Soldiers with H-3 hearing profiles must receive the SPRINT per AR 40-501, or another current, Army-approved auditory FFD test.

e. The SPRINT will be repeated when Soldiers with H-3 hearing profiles have a confirmed STS or when the individual provides a subjective report of decreased hearing ability or other associated symptom, such as tinnitus, since the time of the initial SPRINT. The Soldier will be returned to the MAR2 process if the repeated SPRINT results indicate a change in recommendation category.

### **5-4. Hearing profile calculation**

a. The "H" position, the fourth value in the profile series, is the designation for hearing and condition of the ears. A projected hearing profile is based on the DOEHRs-HC audiogram. Only an audiologist or physician can assign an actual hearing profile. The four hearing profile categories are H-1, H-2, H-3, and H-4.

b. Additional information regarding hearing profile guidelines is available in AR 40-501.

c. A full audiologic evaluation is required prior to the initiation of a hearing profile.

### **5-5. Temporary and permanent hearing profiles**

a. Only an audiologist or a physician can write a permanent hearing profile. Hearing profiles must be based on the results of the diagnostic audiologic evaluation. A permanent hearing profile cannot be established from DOEHRs-HC test results, as a diagnosis cannot be determined based on air-conduction thresholds alone. Hearing profiles will be documented using the e-Profile software application (see para 5-6).

b. A profile is considered permanent unless a modifier of "T" (temporary) is added. Temporary and permanent hearing profiles (H-2) may be assigned or changed by an audiologist. Permanent profiles (greater than H-2) require the co-signature of a physician.

c. A temporary profile is assigned if the condition is considered transitory, such as a middle ear infection or other medically-treatable condition that is likely to result in better hearing sensitivity upon completion of treatment.

d. Soldiers on active duty and IDT Soldiers with a temporary profile will be medically evaluated at least once every three months. The temporary profile can be extended, if needed.

e. Temporary profiles should specify an expiration date. Otherwise, the profile will automatically expire at the end of the third month.

f. Temporary profiles should not be extended beyond 12 months without positive action either to correct the defect or to effect another appropriate disposition.

g. When recording the temporary hearing profile on a DA Form 3349 in e-Profile, the modifier "T" will be entered immediately preceding the appropriate "H" numerical designator (TH2, for example).

h. Temporary hearing profiles are not entered into MEDPROS.

### **5-6. e-Profile**

a. e-Profile is a software application within the MODS suite that allows global tracking of Soldiers who have a temporary or permanent medical condition that may render them not medically ready to deploy. Hearing profiles must be manually entered into MEDPROS as e-Profile does not automatically update in MEDPROS.

b. e-Profile fully automates completion of the DA Form 3349 (Physical Profile), allowing seamless visibility of Soldiers' profiles, effectively eliminating "pocket profiles." Automating the profile process provides a mechanism for two-way communication between the commander and the profiling officer, thus ensuring Soldiers receive corrective intervention. The e-Profile is at the core of the medical readiness process, allowing commanders the ability to monitor and identify those Soldiers who are not medically ready to deploy.

c. The e-Profile application follows the physical profiling guidelines found in AR 40–501 and the MAR2 policy (see para 5–7). In accordance with AR 40–501, the SPRINT score should be annotated on the e-Profile.

d. Additional information regarding e-Profile is available at <https://medpros.mods.army.mil/eprofile/Public/About.aspx>. A 25-minute training video on how to use e-Profile can be accessed at <https://medpros.mods.army.mil/eprofile/public/demo>.

e. A course entitled “Medical Profiles” is available through the Army Learning Management System. This course provides a minimal level of training/knowledge on how to write a profile. Additional information regarding the course is available at <https://www.atrrs.army.mil/atrrscc> (in “Course Title,” enter “Medical Profiles,” click on the course number link, and follow the instructions).

### **5–7. Military occupational specialty administrative retention review**

a. The MAR2 is an administrative process for Soldiers who meet medical retention standards but who nonetheless may not be able to satisfactorily perform their primary military occupational specialty (PMOS) required duties. The MAR2 process will be used to determine whether the Soldier will be retained in the PMOS or reclassified into another PMOS. Soldiers who do not meet PMOS standards and who do not qualify for reclassification will be referred to the Physical Disability Evaluation System.

b. The MAR2 process is accomplished by an administrative review of the Soldier’s DA Form 3349, Permanent Hearing Profile, against the AOC and/or PMOS standards outlined in DA Pam 611–21 and recommendations from the Soldier and the chain of command regarding the Soldier’s ability to perform in the specialty in an operational environment.

c. The e-Profile MAR2 module contains the following:

- (1) A workflow-driven approach similar to the profiling process.
- (2) An automated distribution of profiles to the person managing the MAR2 process, based on the Soldier’s location.
- (3) Tracking tools for the Soldier and a checklist for use during the review process.
- (4) A selection tool to schedule Soldiers for the MAR2.

d. The MAR2 will determine one of three outcomes for the Soldier:

- (1) Retain in AOC and/or PMOS.
- (2) Reclassify to another AOC and/or PMOS.
- (3) Refer to the Physical Disability Evaluation System.

e. For ARNG Soldiers, the State ARNG G1 is the final approving authority for MAR2.

f. Additional information regarding the MAR2 process is available at <https://medpros.mods.army.mil/eprofile/Help/pdfs/MAR2%20User%20Guide.pdf>

## **Chapter 6 Operational Hearing Services**

### **6–1. Operating Hearing Services purpose**

Maintaining normal hearing ability is essential to effective communication, especially in operational environments where hazardous noise and nuisance noise are prevalent. Deployed personnel who cannot hear well on today’s high-technology battlefield cannot communicate effectively and therefore cannot perform optimally. In an operational environment, an individual with normal hearing can lose their hearing in an instant as the result of an explosion or other noise exposure. This loss of hearing immediately renders the individual combat-ineffective, as they are unable to rely on their hearing to maintain situation awareness. This chapter provides operational hearing guidelines focusing on operational noise assessment and abatement strategies, as well as tactical hearing protection systems to reduce the impact of hazardous noise on communication capabilities. The overall goal of operational hearing services is to prevent NIHL during military operations. Hearing loss should not be an accepted by-product of military service, especially with today’s hearing loss prevention program and technologies.

### **6–2. Nuisance noise**

a. This noise is defined as any unwanted sound that interferes with communication, interferes with the ability to achieve restful sleep periods, or produces a startle. The ear is a critical sensory warning system that continuously processes environmental sounds while the Soldier is awake or asleep.

b. Acceptable noise levels, however, are task-specific; for example, the amount of tolerable background noise is greater for a tactical operations center (TOC) than for a sleep tent. See paragraph 6–6 for examples of task-specific, allowable noise levels.

### **6-3. Nonauditory effects of noise**

*a.* The presence of unwanted or intrusive noise has been heavily researched, and the resulting insights can assist in maximizing Soldier hearing health.

*b.* Nuisance noise capitalizes on the nonauditory effects of noise, creating stress and fatigue in dangerous combinations for Soldiers and DA Civilians. Nuisance noise annoys, awakens, angers, frustrates, reduces efficiency, induces depression, and disrupts communication and concentration, thus affecting overall mission performance capability.

*c.* Preserving ease of communication, including face-to-face briefings or radio communications, significantly reduces stress levels and increases the operational efficiency of all personnel.

*d.* Maintaining sufficient sleep cycles in sleep and/or rest areas will—

(1) Increase the immune system's ability to fight disease.

(2) Sustain keen perception ability.

(3) Preserve higher mental abilities and motor skills.

*e.* For more information on the nonauditory effects of noise see <http://phc.amedd.army.mil/topics/healthyliving/sleep/Pages/default.aspx>.

### **6-4. Operational noise hazard assessments (base camp assessments)**

*a.* The installation HPM will provide training and assistance for nuisance noise assessments. Unit HP officers will be trained in the noise assessment and abatement strategies detailed in paragraph 6-5. Unit HP officers will be responsible for implementing the recommendations from onsite installation HPs. Assistance may be requested from supporting PM personnel.

*b.* Operational environments, including TOCs, sleep and/or rest areas, and dining facilities will be assessed, and strategies for noise abatement will be implemented.

*c.* Historically, nuisance noise was not usually recognized, addressed, or limited, but its effects (such as, stress, fatigue, and sleep interference) can be devastating to the Soldier, the unit, and the mission.

### **6-5. Basic noise abatement strategies**

*a.* Basic strategies for nuisance noise abatement in the operational environment include the following:

(1) Move generators away from tents or buildings, and use air-conditioner extension hoses, whenever feasible to increase distance from the sound source. The inverse square law predicts that doubling the distance from a sound source decreases intensity levels by 6 decibels (dB) (outdoors), which the average human perceives as a significant reduction in overall noise levels.

(2) Place generators behind natural berms, or place sand bags between the generators and the receivers (those who will hear the noise). Point the vented side of generators (normally the loudest side of the equipment) away from tents. If available, add other sound barriers, such as, dirt-filled, 7-foot Hercules Engineering Solutions Consortium barriers or 12-foot Bremer walls (T-walls), to deflect noise away from sensitive locations and further isolate the generator.

(3) Design the TOC layout for maximum communication efficiency. Place briefing areas away from radios, entrances and/or exits, break areas, or other nuisance noise sources.

(4) Provide handformed earplugs for use in sleep tents to reduce the effects of intrusive noise and to ensure Soldiers' maximum ability to achieve rapid eye movement sleep.

*b.* Units should implement these strategies during routine field training exercises and during deployments.

### **6-6. Ideal noise levels**

*a.* Ideal noise levels for the operational environment consist of the following:

(1) Noise levels in TOCs and common areas should not exceed 55 dBA in order to preserve the ability to communicate comfortably at distances of up to 15 feet.

(2) Steady-state noise levels for sleep areas should not exceed 40 dBA in order to allow for sufficient sleep cycles. In noisy environments, however, "maskers" or broadband noise (such as that produced by a fan) may be required to eliminate the negative effects of relatively low-level intrusive noise (such as intermittent field radio communications).

(3) The impact of intrusive noise varies (for example, intermittent rotary and/or fixed-wing aircraft, or tactical vehicles entering and/or leaving the compound). The sound level will depend on the engine type and distance from the source. For example, a UH-60 helicopter will produce up to 90 dBA of intrusive noise inside a sleeping tent located 150 yards from the landing pad; such noise may disturb or awaken tent occupants.

*b.* The use of hearing protection devices is the best remedy for situations where intrusive noise is produced regularly and noise abatements are not available.

### **6-7. Engineering controls**

*a.* For hearing purposes, engineering controls are methods designed to reduce noise exposure by decreasing the amount of noise reaching a deployed DA Civilian or Soldier's ear. These controls can include equipment modification, replacement, or related physical change at the noise source or noise pathway. Engineering controls may also require

assistance from a noise control engineer available at USAPHC, AIPH, AHP. In addition, PM resources may also provide assistance.

b. Engineering controls can range from the simple, such as sandbagging, to the extremely complex, such as designing a quiet engine. Complex engineering controls require an advanced survey by IH personnel.

### **6–8. Administrative controls**

a. These controls are the last resort for reducing noise exposure; they limit the time a Soldier and/or deployed DA Civilian is exposed to noise. Such controls inevitably mean the performance of a given noisy task will take longer, or more individuals will be needed to perform the task.

b. The most effective administrative control is to provide quiet areas where Soldiers and/or deployed DA Civilians can experience relief from workplace noise. Break areas and dining facilities should be located away from noise. If these areas must be near noise, noise barriers should be appropriately placed to minimize background noise levels.

c. Industrial hygiene or PM personnel should be consulted regarding more complex administrative controls.

### **6–9. Tactical communications and protective systems**

a. TCAPS are designed with active electronic filters that protect hearing in operational training and combat environments while still allowing the Soldier to maintain their ability to hear and communicate, especially in dismounted operations. In general, TCAPS contain talk-through capabilities and are designed to work in conjunction with at least one radio and/or an intercom. TCAPS that interface with radios may be either single-channel or dual-channel.

(1) Single-channel versions interface with one radio or the vehicle intercom.

(2) Dual-channel versions can connect up to two radios, or one radio and the vehicle intercom.

b. TCAPS devices may have external and/or internal microphones.

(1) External microphones are located outside the ear canal. An external microphone enables perception of environmental sounds while independently processing sound from different directions to better enable localization, that is, the ability to locate a sound source. When integrated with a radio, some TCAPS also use the external microphones for outgoing communications.

(2) Internal microphones are located in the ear canal. Placement of the microphone inside the ear canal reduces interference from background noise. Some TCAPS also use the internal microphone for radio communications.

(3) Both external and internal microphones may be equipped with an active noise reduction circuit that reduces ambient noise, allowing for improved speech understanding in high-noise environments.

c. The three basic configurations of TCAPS are in-the-ear (ITE) devices, over-the-ear (OTE) devices, and a hybrid ITE and/or OTE device. The ideal configuration is often MOS-specific or duty-specific; OTE TCAPS may provide greater advantages for the mounted Soldier whereas ITE TCAPS may provide greater advantages for the dismounted Soldier.

d. Specific recommendations for unit or individual system purchase or training can be obtained from the local or regional HPM.

e. Do not use hearing aids or personal listening devices with TCAPS devices because of the potential for increased hearing loss under such conditions.

### **6–10. Integrated helmet systems**

a. *Aviator helmets (HGU–56/P and IHADSS).*

(1) These aviator helmets are intended for use in rotary-wing aircraft. They provide impact protection, intercom communication, and hearing protection. The built-in eyewear is compatible with the ear cups. The helmet will provide head protection and maximum noise reduction when fitted correctly and worn with securely-fastened chin straps.

(2) Use of handformed earplugs combined with the helmet ear cups is appropriate when noise in the aircraft exceeds the level of hearing protection provided by the helmet.

b. *Combat vehicle crewman helmet.*

(1) The vehicle-issued CVC helmet is designed to provide ballistic protection, intercom communication, talk-through capabilities, and hearing protection for Soldiers in combat vehicles.

(2) The unit HP officer must fit and inspect CVC helmets semiannually to determine whether the helmets, including ear cup seals and chin straps, need to be serviced to replace torn, punctured, or hardened seals.

c. *Noise muffs.* The unit HP officer inspects the condition of noise muffs, including ear cup seals and foam lining, semiannually to—

(1) Determine whether the noise muffs need to be serviced.

(2) Replace unserviceable seals.



## **6-11. Dual-function linear and/or nonlinear hearing protection**

*a.* A dual-function linear and/or nonlinear earplug allows for effective communication and situation awareness while providing protection from hazardous impulse and steady-state noise.

*b.* This type of earplug combines two types of hearing protection into one device. It serves as a dual protection earplug for steady-state and impulse noise hazards.

*c.* Several versions of the dual-function linear and/or nonlinear hearing protection have been fielded and are available for order within the federal supply system. The dual-function earplug is a standard issue item for deploying Soldiers. The dual-function linear and/or nonlinear earplug allows the Soldier to adjust the earplug between impulse and steady-state noise hazard protection modes. Older versions of the linear and/or nonlinear earplug require the user to take the earplug out of the ear to change modes. More current models allow the user to change between the linear and nonlinear modes while the earplug remains in the ear.

(1) The open and/or weapons fire mode protects from impulse noise hazards.

(2) The closed and/or constant protection mode protects from steady-state noise hazards.

(3) The dual-function earplug requires fitting by medically trained personnel. Medically trained personnel must examine the fit and condition of the earplugs at least annually. The dual-function earplug is a standard issue item issued to all IET Soldiers to provide them the opportunity to train with it prior to using it in combat. Additional information regarding dual-function linear and/or nonlinear hearing protection can be obtained from local HPM or PM personnel.

## **Chapter 7 Hearing Conservation**

### **7-1. Hearing conversation purpose**

*a.* Hearing conservation focuses on protecting employees from hearing loss due to occupational and/or industrial noise exposure.

*b.* Essential elements of hearing conservation includes the following:

(1) Noise hazard identification and assessment.

(2) Engineering controls.

(3) Hearing protectors.

(4) Monitoring audiometry.

(5) Health education.

(6) Leadership and/or enforcement.

(7) Program evaluation.

### **7-2. Waiving of hearing conservation requirements**

*a.* Implementation of all available hearing conservation measures is not necessary under certain circumstances, as determined by the DHS. For example—

(1) Visitors to hazardous noise areas must wear hearing protectors but are not required to enroll in the hearing conservation component of the AHP.

(2) In certain situations, noise levels rise infrequently and unpredictably to 85dBA or greater for very short durations (during aircraft flyovers, for example). In such situations, hearing protectors may be impractical and unnecessary.

*b.* Before waiving any program requirements, the DHS will—

(1) Require a thorough noise-hazard evaluation of the area.

(2) Consider all factors that may potentially cause hearing impairment.

(3) Consult with the installation HPM, IHPM, safety officer, and OHPM.

### **7-3. Noise hazard identification**

*a.* As part of the IH Program, the IHPM is responsible for conducting noise hazard assessments (per DA Pam 40-503).

*b.* Detailed information regarding specific IHPM duties and responsibilities are included in chapter 3 and DA Pam 40-503.

### **7-4. Noise hazard criteria**

Noise is one of the most common occupational health hazards. Hazardous noise is common in heavy industrial and manufacturing environments, as well as in military operational environments. A major health outcome of unprotected noise exposure is permanent hearing loss. The four main types of noise hazard are steady-state, impulse, ultrasonic, and blast overpressure.

*a.* Steady-state noise is defined as a periodic or random variation in atmospheric pressure. It may be continuous, intermittent, or fluctuating, with an SPL varying over a wide range, provided such variations have a duration exceeding one second.

(1) Exposure to any steady-state noise level of 85 dBA or greater (regardless of duration of exposure) is considered hazardous and requires use of hearing protection. Personnel exposed to average levels that equal or exceed 85dBA (averaged over the course of an 8-hour work period) must additionally be enrolled in the hearing conservation component of the AHP.

(2) Table 7–1 provides examples of steady-state noise.

*b.* Impulse noise is defined as high-level, short-duration acoustic energy which lasts for less than one second. Examples of impulse noise are small arms fire and the noise produced by loud machines such as punch presses or forging hammers. All impulse noise at or above 140 dB is considered hazardous. Personnel exposed to this level of impulse noise must use HPDs and must be enrolled in the hearing conservation component of the AHP.

(1) Typical measures of impulse noise are the initial peak level and the duration of the first over-pressure. This is the A-duration and is less than 1 millisecond (msec) for small arms fire and several milliseconds for large cannons.

(2) The two principal descriptors for impulse noise are the highest peak in a series of successive peaks (reverberations) and the B-duration. The B-duration is defined as the time that it takes noise to decay from the highest peak level to either 20 dB or 10 percent of the highest peak level. B-durations range from under 10 to more than 300 msec.

(3) The number of permissible exposures to impulse sounds depends on the combination of peak level and B-duration. Additional information is available in Military Standard-1474D (MIL–STD–1474D).

(4) Table 7–2 provides examples of impulse noise.

*c.* Ultrasonic noise is defined as sound above the normal range of audibility for the human ear, although subharmonics of ultrasonic noise may be audible. Although ultrasonic sound is not generally heard, it may still affect hearing and produce other negative health effects. Many ultrasonic welders have a fundamental operating frequency of 20 kilohertz (kHz), a sound that is at the upper frequency of audibility of the human ear. However, a substantial amount of noise may be present at 10 kHz, the first subharmonic frequency of the 20 kHz operating frequency, and is therefore audible to many individuals.

*d.* Blast overpressure is defined as an instantaneous change in air pressure, typically emitted by an explosive device upon detonation, which imparts mechanical energy to contacted objects.

(1) Blast overpressure injury risk is related to the mechanics of the pressure wave and the physical properties of the tissue contacted. When blast waves encounter human tissue, they yield mechanical stresses that can injure if they are of sufficient intensity and/or frequency.

(2) The middle ear and other air-containing organs such as the heart, lungs, esophagus, stomach, and intestines are most susceptible to blast overpressure injury. Other possible health concerns range from mild, transient cognitive dysfunction to visceral injury and death.

*e.* Additional information regarding noise is available at <http://phc.amedd.army.mil/topics/workplacehealth/hha/Pages/HazardCategory-AcousticEnergy.aspx>.

## **7–5. Noise survey equipment and calibration**

*a.* Steady-state noise assessment is conducted using a sound level meter that meets or exceeds the requirements for a Type 2 sound level meter per ANSI Standard S1.4 and S1.4A Amendment.

*b.* TWA exposures are determined using a noise dosimeter or integrating sound level meter capable of measuring sound levels with a slow meter response setting, and integrating all sound levels from 80 to 130 dB using a 3dB time-intensity exchange rate. Dosimeters must meet or exceed specifications in the latest approved ANSI Standard S1.25. TWA exposures may alternatively be determined through calculations using an ordinary sound level meter. In all cases, TWA exposures should take into account actual measurement time versus full shift duty time and any breaks from the noise exposure during the duty time. Industrial hygiene should be contacted for further clarification.

*c.* Impulse noise assessments require the use of a Type 1 sound level meter that meets or exceeds specifications in ANSI Standard S1.4 and S1.4A. Program assistance may be needed to survey impulse noise levels on firing ranges (see para 1–6). The sound level meter must have the following components and/or capabilities to measure impulse noise:

(1) A peak-hold circuit.

(2) A rise time not exceeding 35 microseconds.

(3) Ability to measure peak SPLs exceeding 140 dB.

*d.* Surveying airborne high-frequency and ultrasonic noise requires specialized equipment that is not usually available at installations. For this type of survey, the USAPHC, AIPH, AHP office can refer you to consultants who can do the work (see para 1–6).

*e.* Calibrations of the sound level meter or dosimeter must be completed before and after each survey on the day measurements are taken. Following calibration, the readings must fall within plus or minus 1 dB of the actual calibrator output. Use only the acoustic calibrator recommended by the noise dosimeter or sound level meter manufacturer.

*f.* The sound level meter, noise dosimeter, and acoustic calibrator must be calibrated annually, including frequency response checks, internal noise measurement, meter circuits checks, and microphone and amplifier sensitivity. Submit

calibration requirements on a DA Form 3758-R (Calibration and Repair Requirements Worksheet) to the medical equipment calibration coordinator.

#### **7-6. Noise survey personnel**

*a.* Only those personnel trained in the use of noise measurement equipment may perform noise surveys. Guidance for performing noise surveys is provided in DA Pam 40-503.

*b.* Only those personnel trained in the DOEHRS-IH may record, store, or input hazardous noise survey results.

#### **7-7. Risk assessment**

*a.* Risk assessment includes using damage risk criteria and assigning RACs to evaluate the impacts of new weapons systems and equipment.

(1) Damage risk criteria provide an individual medical appraisal of the potential harm from an exposure.

(2) Risk assessment codes provide a method for identifying the impact of hazardous exposure in terms of the number of personnel involved, the level of the hazard, and the prioritization of the impact.

*b.* Only trained U.S. Army Medical Department (AMEDD) personnel will assign RACs to potentially hazardous noise areas and operations.

*c.* The risk of each individual hazard in an operation, including noise, must be considered. The procedures for assigning RACs to operations are detailed in DA Pam 40-503. The RACs are a component to an installation's hazard abatement plan.

#### **7-8. Engineering controls**

*a.* The most desirable and effective means of reducing noise hazards is to reduce noise levels at their source. This includes eliminating hazardous noise wherever possible and mitigating nuisance noise that affects personal well-being. The implementation of engineering controls is generally feasible when they are technologically and operationally practicable and cost-effective and when noise reduction is considered early in the research, development, and purchasing process of noise-producing technology or workspaces.

*b.* In some instances, the implementation of engineering controls requires funding which is rank ordered on the installation hazard abatement plan per AR 385-10 and DA Pam 40-11. In other instances, simple maintenance of the equipment, vehicles, or facilities will eliminate or control the noise hazard.

*c.* To evaluate the engineering controls applicable to hazardous noise, request technical assistance per paragraph 1-6.

#### **7-9. Posting of hazardous noise areas and equipment**

*a.* All hazardous noise areas and items will be posted with applicable signage.

*b.* Posting of hazardous noise areas and equipment is important as it warns personnel of the hazards associated with exposure to high-intensity noise and the need to wear hearing protection.

(1) Posting areas with danger signs indicates immediate danger and the need for special precautions to be taken. OSHA specifies that the red, black, and white colors used for danger signs must be in accordance with the ANSI standards for safety colors (ANSI Z535.1). The signs and labels must be in accordance with ANSI Z535.4.

(2) Posting areas with CAUTION signs warns against potential hazards or cautions against unsafe practices. OSHA specifies that the standard color scheme for caution signs will be a yellow background, black panel, and yellow letters. All letters used against the yellow background will be black. The colors must be in accordance with ANSI Z535.1. The signs and labels must be in accordance with ANSI Z535.4.

*c.* Hazardous noise areas must be posted as follows, in accordance with DA Pam 385-11.

(1) Post the entrance to, or periphery of, hazardous noise areas (85 dBA to 100 dBA) with the appropriate CAUTION sign.

(2) Post the entrance to, or periphery of, hazardous noise areas above 100 dBA with the appropriate DANGER sign.

*d.* Hazardous noise equipment must be posted as follows:

(1) Post hazardous noise tools and equipment (85 dBA to 100 dBA) with the appropriate CAUTION sign, label, or tag.

(2) Post extremely hazardous noise tools and equipment (above 100 dBA) with the appropriate DANGER sign, label, or tag.

(3) Post all firing ranges and other impulse areas (140 dBP and above) with appropriate DANGER signs. Post 140 dBP noise contours with DANGER signs.

*e.* For hazardous noise areas or equipment that exceed 108 dBA or 165 dBP, consult the local DHS for proper posting procedures. The DHS will determine the following:

(1) Whether daily exposure limits will be imposed.

(2) The hearing protection requirements for a particular piece of equipment as defined in the health hazard assessment report or included in the user's documents, such as technical guides and manuals.

## **7–10. Noise control measures for existing equipment and facilities**

Whenever feasible, use engineering controls to reduce steady-state noise levels to below 85 dBA and impulse noise levels to below 140 dBP. If these levels cannot be met, reduce the noise to the maximum extent possible. The IHPM, after consulting with an acoustical engineer, when appropriate, may recommend the following noise-control measures:

- a.* Maintain equipment by—
  - (1) Replacing or adjusting worn, loose, or unbalanced machine parts.
  - (2) Lubricating machine parts correctly.
  - (3) Shaping and sharpening cutting tools.
- b.* Substitute machines by replacing—
  - (1) Larger, slower machines with smaller, faster ones.
  - (2) Single operation dies with step dies.
  - (3) Hammers with presses.
  - (4) Square shears with rotating shears.
- c.* Substitute processes by replacing—
  - (1) Impact riveting with compression riveting.
  - (2) Riveting with welding.
  - (3) Cold working with hot working.
  - (4) Rolling or forging with pressing.
- d.* Control vibration and impact by—
  - (1) Using suitable vibration isolation.
  - (2) Avoiding resonant frequencies.
  - (3) Varying mass.
  - (4) Varying stiffness.
  - (5) Increasing damping.
  - (6) Reducing the driving force on vibrating surfaces.
  - (7) Reducing the area of the vibrating surface.
- e.* Reduce sound transmission through solids by using—
  - (1) Flexible (vibration isolation) mountings.
  - (2) Flexible sections in pipe runs or ducts.
  - (3) Flexible shaft couplings.
  - (4) Resilient flooring.
- f.* Reduce sound produced by air or gas flow by—
  - (1) Using intake and exhaust mufflers.
  - (2) Designing fan blades to reduce turbulence.
  - (3) Substituting smaller, high-speed fans with larger, low-speed fans.
- g.* Isolate noise sources by—
  - (1) Enclosing individual machines.
  - (2) Using baffles.
  - (3) Confining high-noise machines to sound-treated rooms.
- h.* Isolate the operator by providing a sound-treated booth.
- i.* Use electronic noise cancellation technology.

## **7–11. Control measures for new equipment and facilities**

*a.* Specifications for all new facilities, vehicles, equipment, substantial modification projects, weapon systems, and subsystems should include noise levels (see AR 40–5). The objective will be to ensure, if possible, a steady-state noise level of less than 85 dBA at all personnel locations during normal operations.

*b.* Procuring new equipment, vehicles, or facilities must include the implementation of noise controls. The Tactically Quiet Generator (TQG) Program represents one of the most successful applications of acoustic noise controls. The TQG and detailed specifications can be ordered by accessing the following links: <http://peoc3t.army.mil/mep/tep.php> and <http://www.globalsecurity.org/military/systems/ground/mep-tqg.htm>. Safe noise limits can be inserted into both the mission needs statement and the equipment specifications as a performance requirement. The following paragraph may be included in the procurement document: “The noise level at the operator’s head position will not exceed 80 dBA when the equipment is operating in its noisiest operating mode. Noise measurements taken to demonstrate compliance with this specification will be obtained with the equipment installed on a hard, acoustically reflective surface. (Note: If known, specify the exact location of the operator’s head position.)”

*c.* The suggested paragraph above may represent stricter than state-of-the art standards for the type of equipment or vehicle being procured, but these are usually not known until after the contractors have placed their bids. In such cases,

the lowest noise levels must be accepted, even if above 80 or 85 dBA. Even so, inserting noise limits in the procurement specifications increases the probability of receiving quieter equipment, facilities, and vehicles.

*d.* Acoustic consultancy should be included in designs and modifications of shoot houses and firing ranges to take into account weapon usage to define noise controls to permit safe operation and usage at the facilities and adequate sound insulation to minimize the effects of neighboring facilities.

### **7-12. Noise surveillance and abatement in operational and deployed settings**

*a.* Consideration should be given to the use of engineering controls for both hazardous and nuisance noise levels in operational and deployed environments.

*b.* Additional information regarding noise surveillance and abatement assessments in operational and deployed environments is provided in chapter 6.

### **7-13. Hearing protector requirements**

*a.* DA Civilians and Soldiers must wear appropriate hearing protection when working with or around equipment, vehicles, aircraft, or weapons that produce hazardous noise levels, as follows:

(1) Exposure to steady state noise levels of 85 dBA of any duration, to 103 dBA TWA duration requires single hearing protection (that is, earplugs or earmuffs).

(2) Exposure to steady state noise levels of 103 dBA TWA and up to and including 108 dBA TWA requires the use of double hearing protection (either earplugs and helmet, or earplugs and noise muffs).

(3) Exposure to steady state noise greater than 108 dBA TWA is not permitted. Exception: The 108 dBA TWA limit may be increased by demonstrating that at-ear levels are reduced to a TWA of 85 dBA or less using attenuation reduced by one standard deviation based on method A (experimenter fit) of ANSI S12.6-1997.

(4) Exposure to impulse noise levels of greater than 140 dBP to 165 dBP requires the use of single hearing protection.

(5) Exposure to impulse noise levels greater than 165 dBP, but less than or equal to curve Z per MIL-STD-1474D (requirement 4, see fig 4-1) requires the use of double hearing protection.

(6) Exposure to impulse noise greater than curve Z requires approval from TSG.

*b.* In combat, Soldiers should wear appropriate authorized hearing protectors, especially when firing weapons or riding in tactical vehicles or aircraft. Hearing protectors improve readiness and prevent permanent or temporary threshold shifts which impair the ability to communicate and to detect and localize quiet or low-volume, mission-critical-level combat sounds. Additional information regarding operational hearing protection devices is provided in chapter 6.

### **7-14. Hearing protection**

*a.* All personnel working in or visiting potentially hazardous noise areas must have and wear hearing protectors while in the presence of hazardous noise.

*b.* Hearing aids will not be worn in hazardous noise environments. Hearing aids do not reduce noise or provide any hearing protection.

*c.* Personal listening devices such as personal music players are not a form of hearing protection and will not be used in hazardous noise environments.

*d.* Hearing protectors include earplugs, noise muffs, ear canal caps, noise-attenuating helmets, TCAPS, or a combination of these.

*e.* Personnel may select a hearing protector from an approved list unless contraindicated for medical and/or environmental reasons.

*f.* Hearing protectors are issued at no charge to all personnel working in potentially hazardous noise areas. An earplug carrying case (National Stock Number (NSN) 6515-01-100-1674) must also be provided, at no charge, with each set of preformed earplugs. This case may also be used to carry and protect handformed earplugs.

*g.* All personnel must wear hearing protectors during training to increase the likelihood of confident use in industrial, operational, and combat environments.

*h.* For detailed hearing protector studies, request technical assistance in accordance with paragraph 1-6.

### **7-15. Fit-testing requirements**

Any personnel whose periodic DOEHRS-HC audiogram indicates a positive STS will receive fit testing and targeted education and counseling for purpose of mitigating any further progression of hearing loss. Fit testing should be conducted by the hearing technician or installation HPM, as applicable following the second follow-up hearing test. Recommended best practices for fit testing would be the use of fit testing equipment which can establish an objective personal attenuation rating for the individual with hearing protection inserted.

### **7-16. Hearing protector types**

*a.* *Earplugs.*

(1) All personnel must be fitted with preformed earplugs, either triple- or quad-flange. Medically-trained personnel must fit and examine these earplugs at least annually to ensure their proper fit and condition. Preformed earplugs are the first type of earplug that medically-trained personnel attempt to fit. If these do not fit properly, the individual must be fitted with another type of earplug.

(2) Approved handformed earplugs are made of polyvinyl foam; they are disposable and do not require medical fitting. Foam earplugs should only be worn once; they should not be re-used. DO NOT use foam earplugs if hazardous materials such as solvents or grease may be transferred from the hand to the ear via the earplug.

*b. Musician's earplugs.*

(1) Musician's earplugs provide flatter reduction across frequencies, thus preserving the quality of sounds important to musicians better than the traditional handformed or preformed earplugs.

(2) These earplugs are recommended for musicians or listeners who need to differentiate between small differences in sound.

(3) The Army will provide preformed or custom-molded musician's earplugs to Army band members. The preformed musician's earplug is "one size fits most" and must be fitted by medically-trained personnel.

(4) A more expensive, custom-molded earplug is available for harder-to-fit ear canals. Only audiologists; ear, nose, and throat (ENT) specialists; or AMEDD-credentialed personnel may take impressions of the ear for the custom-molded option.

(5) Medically-trained personnel must examine the fit and condition of the musician's earplugs at least annually.

(6) Band unit funds will be used to purchase the necessary preformed and/or custom musician's earplugs.

*c. Custom-molded earplugs.*

(1) If deemed necessary by an audiologist or ENT physician, the Army will provide custom-molded earplugs to personnel who cannot be properly fitted with preformed or handformed hearing protectors. Possible justifications for custom earplugs are the abnormality of an individual's ear canal, or significant discomfort experienced by an individual while wearing preformed or handformed earplugs.

(2) Only audiologists; ENT specialists; or AMEDD-credentialed personnel may take impressions of the ear for the custom-molded option.

(3) Medically-trained personnel must examine the fit and condition of the custom-molded earplugs at least annually. Quantitative measures will be used to determine adequacy of fit (for example, fit check system).

*d. Ear canal caps.*

(1) Ear canal caps are only appropriate for short or intermittent exposures to noise levels of 95 dBA or less.

(2) Ear canal caps do not attenuate noise as effectively as earplugs or noise muffs.

*e. Noise muffs.*

(1) To be effective, noise muffs must be worn with—

(a) The headband adjusted for a snug fit.

(b) A crown strap, if provided with Type II noise muffs when the headband is worn in back of the head or under the chin.

(c) Earcup seals must fit snugly around the eyeglass temples.

(d) The proper acoustic filler (foam lining) in place. Do not remove or add foam or cotton to the linings of noise muffs, even when cleaning, as this will change the noise reduction characteristics of the noise muff.

(2) Noise muffs, tactical headsets, and noise-attenuating helmets available through the federal supply system may be equipped with an additional set of earcup seals.

(a) Replacing the foam lining is necessary for maintaining adequate noise attenuation. Some manufacturers allow the acoustic filler in their noise muffs to be replaced when it begins to degrade.

(b) Upon inspection, if the filler starts to crumble or tear when rubbed, it should be replaced. If the filler cannot be replaced, new noise muffs are required.

(3) Using noise muffs is impractical in some situations. Noise muffs are incompatible with certain types of required headgear and are unsatisfactory in warm temperatures or limited space areas where earplugs or ear canal caps are preferred. Noise muffs are also inappropriate for use with glasses and goggles unless the eyeglass temples or straps can be worn over the noise muffs. This is important because any break in the seal between the noise muffs and the outside of the ear will significantly decrease the noise muffs' noise-reduction capability.

*f. Helmets.*

(1) Aviator helmets (SPH-4B or HGU-56/P) and the CVC helmet (DH-132 or the vehicular intercommunication system CVC helmet) will provide head protection and maximum noise attenuation when—

(a) Fitted correctly.

(b) Worn with securely-fastened chin straps.

(c) Worn with properly-maintained earcup seals and chin straps.

(2) To maintain a comfortable fit and adequate noise attenuation, replace the earcup seals in hearing protectors when the seals are torn, punctured, or have hardened from age or perspiration.

*g. Dual-function linear and/or nonlinear earplugs.*

(1) The dual-function linear/non-linear earplug's two modes allow it to function as either a linear or a nonlinear earplug. When in linear mode, the device performs as a typical preformed earplug and should be used when exposed to steady state noise. The nonlinear mode allows for effective communication and situation awareness while providing protection from hazardous impulse noises; it is well suited to a dismounted Soldier in an operational environment.

(2) Additional information regarding dual-function linear and/or nonlinear earplugs is provided in chapter 6.

*h. Tactical Communications and Protective Systems.*

(1) All TCAPS must be approved for use by the USAPHC, AIPH, AHP office.

(2) Additional information regarding TCAPS is provided in chapter 6.

*i. Other.* Do NOT use hearing aids, personal listening devices, or noise muffs with built-in radios designed for recreational listening in place of, or in conjunction with, approved hearing protectors. The potential for increased hearing loss exists under these conditions.

## **7-17. Requisition**

*a.* It is an AMEDD responsibility to provide approved preformed hearing protection to all individuals in the AHP. Handformed (foam) earplugs, noise muffs, active hearing protectors and other specialized HPDs are procured by the unit or acquired through other funding sources.

*b.* Preformed hearing protection requires an initial fitting by medically-trained personnel and an annual check to ensure the fit is still appropriate. Handformed hearing protection used only occasionally by personnel visiting a noise hazardous area does not require fitting by medically-trained personnel. However, the user should be informed of the need for an appropriate fit and good seal to ensure protection from hazardous noise.

*c.* The unit HP officer—

(1) Requisitions only AHP-approved hearing protectors.

(2) Maintains an adequate supply of handformed earplugs for visitors who do not possess preformed earplugs.

(3) Obtains approved handformed earplugs, noise muffs, and active hearing protectors through commercial sources, as well as through the federal supply system.

*d.* The installation HPM must maintain a supply of approved preformed earplugs in all sizes for dispensing to Soldiers and noise-exposed DA Civilians.

*e.* Handformed earplugs and/or noise muffs will be made available for use in all facilities with identified hazardous noise areas.

*f.* Consideration for tactical environments, including communication ability, must be made when hearing protection for Soldiers is selected.

*g.* Tables 7-3, 7-4, and 7-5 provide information on ordering hearing protection.

## **7-18. Special maintenance requirements**

The following are specific requirements for the care and use of hearing protectors:

*a. Preformed earplugs.*

(1) Clean the earplugs with a mild soap; rinse thoroughly; and dry before returning them to the earplug carrying case.

(2) Do NOT alter the earplugs in any manner.

*b. Handformed earplugs.*

(1) Always wash hands with soap and water before inserting earplugs into ears.

(2) Do NOT alter the earplugs in any manner. For example, cutting them in half significantly decreases the amount of noise reduction provided to the wearer and may render them difficult to remove.

*c. Helmets.* See chapter 6 for additional information regarding helmets.

*d. Specialized devices.* Follow the provided preventive maintenance checks and services information specific to each TCAPS device.

## **7-19. Hearing health education requirements**

*a.* The installation HPM or designee (the HP officer or hearing technician, for example) must provide hearing health education at least annually to all Soldiers and noise-exposed DA Civilians in the AHP in accordance with 29 CFR 1910.95.

*b.* Health education can be provided at the time of annual hearing tests or through unit training provided by the installation HPM or a designee, such as the HP officer, who is qualified to provide this training.

*c.* At minimum, in accordance with 29 CFR 1910.95, hearing health education will include the following topics:

(1) The effects of noise on hearing, including the functional impact of temporary hearing loss.

(2) The purpose of hearing protectors, their advantages and disadvantages, and the attenuation of the various types.

(3) The selection, fit, care, and use of hearing protectors and the importance of hearing protector use during training.

(4) The purpose of audiometric evaluations, an explanation of the test procedures, and the types of required hearing tests (baseline, periodic, and termination audiograms).

(5) The use of hearing protection during off-duty activities involving or producing hazardous noise such as mowing the lawn, woodworking, attending concerts, and hunting.

*d.* Additional recommended topics includes the following:

(1) An overview of the AHP.

(2) The importance of hearing, a critical sense, for mission accomplishment.

(3) The mechanisms of hearing loss and the impact of hearing loss on communication during training, operational exercises, combat missions, and at work.

(4) Hearing loss prevention tactics, alternative strategies, and noise surveillance and/or abatement strategies for both on-duty and off-duty activities.

*e.* Hearing health education will be tracked by the installation HPM. When training is provided by the HP officer, they should maintain participation rosters and provide the rosters to the installation HPM.

### **7–20. Monitoring audiometry**

*a.* Monitoring audiometry detects changes in an individual's hearing sensitivity and helps identify those individuals who are susceptible to noise-induced hearing loss. Such a determination is made by comparing hearing test results over time.

*b.* Soldiers and DA Civilians exposed to hazardous noise are required to undergo periodic monitoring audiometry. Additional information regarding hearing conservation component enrollment requirements is provided in paragraph 3–4.

*c.* The only DOD-approved audiometric equipment for hearing conservation and hearing readiness monitoring is the DOEHRS–HC. Additional information regarding test equipment is provided in paragraph 3–7.

### **7–21. Referrals for diagnosis and disposition**

*a.* Referrals for clinical diagnostic evaluation by an audiologist or an ENT physician are completed to determine the etiology of a hearing or ear problem, to confirm or rule out permanent changes in hearing, and to determine further disposition regarding the management of an individual with a hearing or ear problem. Clinical diagnostic evaluation results may also indicate a more serious hearing issue that requires further medical evaluation.

*b.* The DOEHRS–HC automatically generates recommendations for referrals when specific criteria are met (see chap 5).

*c.* Referrals for diagnostic audiology services should be completed in a timely manner upon determination of the need for a referral. When a positive STS on a follow-up 2 hearing test is the cause for a referral the referral must be accomplished within 30 days of the DOEHRS–HC follow-up 2 hearing test.

### **7–22. Funding for referral services**

*a.* Soldiers and DA Civilians may obtain their required diagnostic referrals from in-house medical treatment facilities, another Service's military treatment facilities, or civilian health care providers at the discretion of the installation AHP. Funding responsibility rests with the local medical treatment facility or program equivalent, per AR 40–3.

*b.* The DSS, ARNG, will issue a voucher for IDT Soldiers to seek medical care in a civilian medical facility.

*c.* The following guidance applies to compensation claims:

(1) If a DA Civilian employee receives referral services from a non-AMEDD source to determine compensation and a compensation claim is awarded, the AMEDD is responsible for the cost of the diagnostic evaluation.

(2) If a compensation claim is NOT awarded, the individual is responsible for the cost of the evaluation.

### **7–23. Recordkeeping**

*a.* DOEHRS–HC monitoring audiometry tests include the following:

(1) DD Form 2215.

(2) DD Form 2216.

(3) DD Form 2217 (Biological Audiometer Calibration Check).

(4) Non-hearing conservation test.

*b.* Upon completion of the DOEHRS–HC audiogram—

(1) The examiner will explain the results of the hearing test to the individual.

(2) If an STS is present, the individual tested must sign the DD Form 2216 to acknowledge that the test results have been explained and the individual understands the necessary steps which must now be followed.

(3) An audiologist, physician, or certified hearing technician will review the audiogram for validity and proper patient disposition.



## **7-24. Notification procedures for significant threshold shift**

*a.* The DOEHRS–HC software will automatically determine whether an STS is present and will so indicate by printing the applicable information on the DD Form 2216. If an STS is noted, the software and corresponding applicable documentation will provide further instructions. Age corrections do not apply to this calculation.

*b.* When a positive STS occurs on a periodic test, DA Civilians must obtain a DOEHRS–HC follow-up test within 30 days of the periodic test, and Soldiers must obtain a follow-up test within 90 days of the periodic test. The follow-up for Soldiers is 90-days rather than 30-days to accommodate and support challenging military operation missions. This ensures appropriate time for completion of the follow-up.

*c.* When a positive STS is confirmed on the second follow-up hearing test, the installation HPM notifies—

(1) The Soldier or DA Civilian employee, in writing, within 21 days from the completion date of the periodic audiogram.

(2) The Soldier’s unit commander or the DA Civilian employee’s immediate supervisor.

(3) The Civilian employee’s OH Program for inclusion in any OH reports.

(4) The Safety and Occupational Health Advisory Council (see AR 385–10).

*d.* Fit testing for the individual’s hearing protectors should be conducted by the hearing technician or installation HPM, as applicable, at the time of the second follow-up hearing test. The individual should be referred for clinical audiological evaluation in accordance with HPM guidance. For example, the HPM can determine that an individual with a positive STS but whose hearing is still within a normal range does not require a referral for clinical evaluation. This guidance should be included in local standard operating procedures and periodically updated by the HPM.

*e.* When a positive STS is confirmed on the second follow-up DOEHRS–HC hearing test, the hearing technician or HPM will electronically re-establish the individual’s DOEHRS–HC reference hearing test in DOEHRS–HC before the follow-up period expires. This will create a new baseline to which future hearing test results will be compared.

*f.* A positive STS indicates the hearing has significantly decreased relative to the current reference audiogram. Failure to provide appropriate follow-up testing will not allow for appropriate intervention that could reduce the likelihood of a TTS progressing to a PTS. Failure to accomplish the follow-up within the required timeframe will result in increased STS rates for the unit and poor patient care for the individual.

*g.* A negative STS indicates the individual’s hearing has significantly improved relative to the reference audiogram. When a negative STS occurs on a periodic test, a follow-up test is completed immediately to confirm the findings.

(1) When a negative STS is confirmed on the first follow-up hearing test, the software electronically re-establishes the individual’s reference hearing test to be used as the new baseline for the comparison of future hearing tests.

(2) When a negative STS is not confirmed on the first follow-up hearing test (that is, hearing is consistent with the baseline test), the individual will return for the next required hearing test, as required by recordkeeping processes (for example, the annual hearing test).

## **7-25. Occupational Safety and Health Administration reportable hearing loss**

*a.* The DOEHRS–HC Software will electronically determine if an OSHA RHL is present. Age corrections do not apply to this calculation.

*b.* AR 385–40 requires that separate logs be maintained for recording Soldier and DA Civilian occupational illnesses and injuries.

(1) Civilian employees’ occupational illnesses and/or injuries are recorded in the OSHA Form 300

(2) Soldiers’ injuries are recorded on DA Form 285.

*c.* When an OSHA RHL has been identified, the installation HPM must notify both the employee and the employee’s immediate supervisor, or the Soldier and Soldier’s unit commander, in writing, within 21 days.

*d.* The receipt of written notification must be verified within 6 workdays.

(1) The DA Civilian employee and the employee’s supervisor must complete either of the following forms:

(*a*) A Department of Labor (DOL) Form CA–1 (Federal Employee’s Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation). This is used only in cases of acoustic trauma, such as a one-time accident.

(*b*) A DOL Form CA–2 (Notice of Occupational Disease and Claim for Compensation). This form is used for cases of gradual changes in hearing over time.

(2) The Soldier and their unit commander must complete the DA Form 285.

*e.* Completing the DOL Form CA–1 or 2 does not obligate the employee to file a claim for compensation unless the employee so desires.

*f.* All completed forms (DOL Form CA–1, DOL Form CA–2, and DA Form 285) should be sent to the safety and/or OH offices.

(1) Illness and injury logs should be maintained by the OH office and safety office, for Soldier or DA Civilian employee review.

(2) Any DA Civilian hearing loss claims that are disputed will be logged; however, claims that have been denied by the Office of Workers’ Compensation Programs may be deleted from a log.

## **7-26. Data availability and record access**

*a.* All DOEHRs–HC data must be uploaded to the DOEHRs–HC DR at the end of each test day, at a minimum. For locations with significant throughput, periodic uploads throughout the day are recommended.

*b.* Noise-exposed DA Civilian personnel can access their hearing tests via their installation HPM and their occupational health record.

*c.* Soldiers have access to their DOEHRs–HC audiograms in AKO (under My Medical Readiness), in MEDPROS, or through their local HPM.

*d.* Upon written request, the DHS—

(1) Provides copies of an employee’s audiometric test and noise exposure records to the employee, former employee, or persons designated in writing by the employee to receive the records, and representatives designated by the Assistant Secretary of Labor for Occupational Safety and Health per 29 CFR 1910.95(m)(4).

(2) Ensures that all DD Form 2215, DD Form 2216, nonhearing conservation and clinical hearing tests, and dispositions and/or referrals are included in the individual’s electronic medical record per AR 40–66. All noise exposure documentation will also be a permanent part of the individual’s electronic medical record.

(3) Ensures that audiometric and noise exposure records are retained for the duration of the individual’s service or employment, and an additional 30 years, in accordance with AR 25–400–2.

## **7-27. Hearing health educational materials**

*a.* Hearing health educational materials should be considered an integral and important part of any educational strategy. The careful selection and use of well-designed educational materials will enhance Soldier and DA Civilian educational programs and learning experiences. Hearing health educational materials should promote understanding and change behaviors.

*b.* In addition, hearing health educational materials should—

(1) Be used in conjunction with oral presentations. Providing only a brochure or pamphlet is insufficient. Oral instructions help reinforce the information.

(2) Be available in a variety of formats such as written brochures, pamphlets, or videos.

(3) Focus on a specific point that needs reinforcement, such as safe listening practices, hearing protection, or the dangers of noise exposure.

(4) Be used interactively. Highlight the information that is most important to the Soldier or DA Civilian.

(5) Be clear and consistent, and use a format and terminology that are appropriate for the audience. Information should be—

(*a.*) Organized so that the most important points are discussed first.

(*b.*) Divided into smaller, understandable sections. Avoid large paragraphs or statements containing complex information.

(*c.*) Written in simple language with technical terms clearly defined.

(*d.*) Presented in the active voice.

*c.* On request, the DHS provides hearing health education materials such as posters, DVDs, CDs, cards, brochures, and pamphlets. Hearing health educational materials may also be obtained through the USAPHC, other Government agencies, or from commercial vendors.

*d.* Requests for AHP health education materials should be made to Commander, USAPHC, AIPH, AHP, (MCHB–IP–MAH), Building E–1570m, 5158 Blackhawk Road Aberdeen Proving Ground, MD 21010–5403, or via the AHP Web site at <http://phc.amedd.army.mil/topics/workplacehealth/hrc/Pages/default.aspx>.

*e.* Additional materials can be obtained from the following:

(1) DOD Hearing Center of Excellence, <http://hearing.health.mil/>.

(2) National Institutes of Health (Noisy Planet), <http://www.noisyplanet.nidcd.nih.gov/>

(3) NASA EAR Lab Auditory Demonstration Laboratory, <http://buyquietroadmap.com/>.

(4) Navy and Marine Corps Public Health Center, Occupational Audiology and Hearing Conservation Division, <http://www.med.navy.mil/sites/nmcphc/occupational-and-environmental-medicine/oahcd/>

(5) OSHA Publications on noise, <http://www.osha.gov/pls/publications/publication.searchResults?pSearch=Noise>.

(6) National Institute for Communication Disorders and Deafness, <http://www.nidcd.nih.gov/health/Pages/>

(7) CDC Noise and Hearing Loss Prevention, <http://www.cdc.gov/niosh/topics/noise/pubs.html>

*f.* An authoritative and trusted source for hearing health, as well as diseases, conditions, and wellness educational materials is the National Library of Medicine’s MedlinePlus. MedlinePlus, the premier Web site of consumer health information, is updated daily and is available without charge at <http://medlineplus.gov/>.

## **7-28. Enforcement**

*a.* The HPM will conduct announced site assistance visits and in coordination with the commander, unannounced inspections of hazardous noise areas to ensure compliance with engineering and administrative noise controls, proper

hearing protection use, and hearing health education training records. Inspection results will be reported through command channels as appropriate.

b. Additional information regarding leadership and/or enforcement of the AHP is provided in chapter 8.

### 7–29. Program effectiveness

a. Hearing conservation will be evaluated by means of both external and internal evaluation measures. Program effectiveness indicators such as quality assurance and testing compliance will be monitored and reported to DHS on a quarterly basis.

b. Chapter 9 provides additional AHP effectiveness measures.

**Table 7–1**  
**Examples of continuous noise**  
**Source: <http://phc.amedd.army.mil/topics/workplacehealth/hrc/Pages/ResourceMaterials.aspx>**

Noise source	Speed and/or distance	dB(A) level
M113 Armored Personnel Carrier (APC)	25 miles per hour (mph)	118 dB(A)
M2/A2 Bradley Fighting Vehicle	30 mph	115 dB(A)
CH-47D (Chinook) Helicopter	100 knots	110 dB(A)
UH-60 (Black Hawk) Helicopter	100 knots	108 dB(A)
M88A1E1 (Hercules) Recovery Vehicle	15 mph	105 dB(A)
High Mobility Multipurpose Wheeled Vehicle	50 mph	88 dB(A)
Palletized Load System Truck	55 mph	87 dB(A)
3-kilowatt (kW) TQG	2 feet	81–84 dB(A)
Normal conversation		60 dB(A)
Whisper		34 dB(A)
Softest sound most humans can hear		0 dB(A)

**Table 7–2**  
**Examples of impulse noise**  
**Source: <http://phc.amedd.army.mil/topics/workplacehealth/hrc/Pages/ResourceMaterials.aspx>**

Impulse noise	Charge or distance	dB(P) level
Multiservice anti-armor anti-personnel weapons system (MAAWS)		184-190 dB(P)
155millimeter (mm) Howitzer		181 dB(P)
60mm Mortar	Charge-4 at 1 meter	180 dB(P)
M2 .50-caliber machine gun		161 dB(P)
M26 Grenade	100 feet	157 dB(P)
M9 9mm Pistol and M16 Rifle (5.56mm)		156 dB(P)

**Table 7-3  
Earplug and carrying case requisition information**

Earplug type and size	Nomenclature	NSN	Fitting requirements
Triple-flange (small)	Earplug, hearing protection, triple-flange, 12 pairs/package	6515-00-442-4821	For small-size fits. (10 percent) Size-fitting required (contact local HPM.)
Triple-flange (medium)	Earplug, hearing protection, triple-flange, 12 pairs/package	6515-00-442-4818	For medium-size fits. (85 percent) Size-fitting required (contact local HPM.)
Triple-flange (large)	Earplug, hearing protection, triple-flange, 12 pairs/package	6515-00-467-0092	For large-size fits. (5 percent) Size-fitting required. (contact local HPM.)
Elvex quad-flange (regular size fits most)	Earplug, hearing protection, quad-flange, 100 pairs/box	6515-01-492-0443	Reg. size fits most. (90 percent) Size-fitting required (contact local HPM.)
Howard Leight quad-flange (small)	Earplug, hearing protection, quad-flange, 100 pairs/box	6515-01-461-7931	For small-size fits. (10 percent) Size-fitting required (contact local HPM.)
Combat Arms Earplug (small, O.D. green)	Combat Arms Earplug (single-ended), 100 pairs/box	6515-01-576-8837	For small-size fits. (20 percent) Size-fitting required (contact local HPM.)
Combat arms earplug (regular, desert tan)	Combat arms earplug (Single-ended), 100 pairs/box	6515-01-576-8861	For regular-size fits. (70 percent) Size-fitting required (contact local HPM.)
Combat arms earplug (large, coyote brown)	Combat arms earplug (Single-ended), 100 pairs/box	6515-01-57-8869	For large-size fits. (10 percent) Size-fitting required (contact local HPM.)
Sound guard foam earplugs, handformed	Earplug, hearing protection, foam, 200 pairs/box (orange/green color)	6515-00-137-6345	Medium size fits most. Orange color must not show after insertion. For disposable, "back-up" use.
Amigo (small) foam earplugs, handformed	Earplug, hearing protection, foam, 200 pairs/box (yellow-orange-yellow color)	CS7981730-WYSTVH, GSA #: GS-06F-0070R	For small ear canals. Orange ring must not show after insertion. For disposable, "back-up" use.
Grande (large) foam earplugs, handformed	Earplug, hearing protection, foam, 200 pairs/box (yellow-orange-yellow color)	CS7981729-WYST19, GSA #: GS-06F-0070R	For large ear canals. Orange ring must not show after insertion. For disposable, "back-up" use.
Plug ear foam tipped (small) Surefire, for limited liability company	Earplug, hearing protection, foam, 25 pairs/box	6515-01-622-1984	For small-size fits. (20 percent) Size-fitting required (contact local HPM.)
Plug ear foam tipped (medium) Surefire, for limited liability company	Earplug, hearing protection, foam, 25 pairs/box	6515-01-622-2539	For regular-size fits. (70 percent) Size-fitting required (contact local HPM.)
Plug ear foam tipped (large) Surefire, for limited liability company	Earplug, hearing protection, foam, 25 pairs/box	6515-01-622-2558	For large-size fits. (10 percent) Size-fitting required (contact local HPM.)
Battleplugs impulse earplug (small)	Earplug, hearing protection, 50 pairs/box	426-4J, 6497	For small-size fits. (20 percent) Size-fitting required (contact local HPM.)
Battleplugs impulse earplug (medium)	Earplug, hearing protection, 50 pairs/box	426-4J, 6498	For regular-size fits. (70 percent) Size-fitting required (contact local HPM.)
Battleplugs impulse earplug (large)	Earplug, hearing protection, 50 pairs/box	426-4J, 6499	For large-size fits. (10 percent) Size-fitting required (contact local HPM.)
Earplug carrying case	Earplug, carrying case, 20/box	6515-01-100-1674	ACU, Front pocket or beltloop, as applicable, for earplug, carrying case

**Table 7-4**  
**Aviation items**

Nomenclature	NSN	Quantity	Description
Comply tips, standard	5965-01-504-0071	6 pairs	Couples to communications ear-plug
Comply tips, slim	5965-01-504-0072	6 pairs	Couples to communications ear-plug
Comply tips, short	5965-01-504-0073	6 pairs	Couples to communications ear-plug

**Table 7-5**  
**Example of standard requisition: company-sized unit (100-160 personnel)**

Type and size	Nomenclature	NSN	Quantity
Triple-flange (small)	Earplug, hearing protection, triple-flange, 12 pairs/package	6515-00-442-4821	2 packages: small-size fits (10 percent)
Triple-flange (medium)	Earplug, hearing protection, triple-flange, 12 pairs/package	6515-00-442-4818	12 packages: medium-size fits (85 percent)
Triple-flange (large)	Earplug, hearing protection, triple-flange, 12 pairs/package	6515-00-467-0092	For large-size fits. (5 percent)
Elvex quad-flange (regular size fits most)	Earplug, hearing protection, quad-flange, 100 pairs/box	6515-01-492-0443	2 boxes: size fits most (85 percent)
Howard Leight quad-flange (small)	Earplug, hearing protection, quad-flange, 100 pairs/box	6515-01-461-7931	For small-size fits. (10 percent)
Combat Arms Earplug (small, O.D. green)	Combat Arms Earplug (single-ended), 100 pairs/box	6515-01-576-8837	1 box: small-size fits (20 percent)
Combat arms earplug (regular, desert tan)	Combat arms earplug (single-ended), 100 pairs/box	6515-01-576-8861	2 boxes: regular-size fits (70 percent)
Combat arms earplug (large, coyote brown)	Combat arms earplug (single-ended), 100 pairs/box	6515-01-57-8869	1 box: large-size fits (10 percent)
Sound guard foam ear-plugs, handformed	Earplug, hearing protection, foam, 200 pairs/box (orange/green color)	6515-00-137-6345	2 boxes: medium size fits most. For disposable "back-up" use
Amigo (small) foam ear-plugs, handformed	Earplug, hearing protection, Foam, 200 pairs/box (yellow-orange-yellow color)	CS7981730-WYSTVH, GSA #: GS-06F-0070R	1 box: small ear canals. For disposable, "back-up" use
Grande (large) foam ear-plugs, handformed	Earplug, hearing protection, Foam, 200 pairs/box (yellow-orange-yellow color)	CS7981729-WYST19, GSA #: GS-06F-0070R	1 box: large ear canals. Orange ring must not show after insertion. For disposable, "back-up" use.
Earplug carrying case	Earplug, carrying case, 20/box	6515-01-100-1674	8 boxes

## Chapter 8 Leadership and/or Enforcement

### 8-1. Command support

*a.* Installation command support is essential for the success of the AHP. Therefore, the installation HPM should inform leaders at all levels of the AHP's role in direct support of medical readiness and Soldier and DA Civilian hearing loss prevention.

*b.* The installation HPM should ensure the commander and senior leaders are aware of how hearing affects readiness. Additionally, the HPM must ensure command awareness and understanding of hearing as a critical sense for communication and Soldier effectiveness in training and on the battlefield.

*c.* The implementation and overall success of the local AHP depend on the cooperation and support of unit commanders and supervisors as well as multifaceted PMs. The installation HPM should provide support and guidance to leaders to ensure full AHP implementation and enforcement.

*d.* The installation HPM will coordinate with the Public Affairs Office (PAO) to help promote the AHP by publishing hearing-related information in the installation newspaper, weekly bulletin, and other publications. The PAO

performs a critical liaison role with agencies and communication avenues (newspapers, television, and radio) outside the DOD for the marketing and advertising of AHP accomplishments. The PAO's liaison role also helps to remind and educate personnel and Family members about hazardous noise exposure and prevention of NIHL.

## **8-2. Command emphasis**

- a.* The unit commander or supervisor of personnel working in hazardous noise areas will endorse—
  - (1) The installation commander's AHP command emphasis letter.
  - (2) The installation AHP guidance.
  - (3) Wearing of the earplug carrying case as part of the ACU or equivalent.
  - (4) The use of DOEHRs-HC and the MEDPROS hearing readiness module.
- b.* The ARNG and USAR must establish and implement an organizational AHP by—
  - (1) Appointing a military audiologist, 72C, or designated individual from within the occupational medicine staff to serve as HPM, to provide AHP services, and provide AHP program oversight. In the ARNG, depending on the State, some of the hearing conservation functions are performed by the occupational health nurse or equivalent for 32 USC federal technicians and by state medical detachments for the IDT Soldier as part of Medical Readiness Program.
  - (2) Ensuring the use of DOD-approved DOEHRs-HC equipment for monitoring audiometry to ensure the standard of hearing care is met across the organization.
  - (3) Ensuring contracted audiology and hearing technician services use the template statement of work endorsed by the Army NGB or USAR.
- c.* The ARNG must develop an organizational AHP policy to provide hearing services to the IDT Soldier, as well as to the Active Guard Reserve Soldier and the federal technician.

## **8-3. Performance standards**

- a.* Supervisors or unit commanders should include AHP responsibilities in the first-line DA Civilian supervisor's performance standards (see AR 385-10). Soldiers and DA Civilian employees under their supervision will actively participate in the AHP by—
  - (1) Obtaining annual DOEHRs-HC monitoring audiometry for hearing readiness or hearing conservation, as required.
  - (2) Completing follow-up hearing testing, as required, when changes in hearing are detected.
  - (3) Wearing approved and properly-fitted hearing protectors when exposed to noise hazards.
  - (4) Participating in annual hearing health education training.
- b.* The military supervisor's officer evaluation report (OER) or noncommissioned officer evaluation report (NCOER) should also include the responsibilities listed above.
- c.* Supervisors and/or unit commanders must ensure that the responsibilities listed above are included in the support forms of industrially noise-exposed Soldiers and the performance plans of noise-exposed DA Civilians.

## **8-4. Enforcement and monitoring**

- a.* Supervisors of hazardous noise areas must—
  - (1) Enforce the use of properly-fitted hearing protection by all noise-exposed personnel under their supervision and take disciplinary action, as appropriate, for noncompliance.
  - (2) Ensure that all noise-exposed DA Civilians under their supervision complete required hearing conservation monitoring audiometry and hearing health education.
  - (3) Set the example by always using hearing protection where required, receiving hearing tests, as appropriate, and attending annual hearing health education training.
  - (4) Provide written responses to personnel conducting hazardous noise area inspections. Responses made to personnel conducting the inspection must include planned actions to correct deficiencies.
- b.* Unit commanders (brigade-level, battalion-level, and company-level) must—
  - (1) Ensure that all Soldiers under their supervision retain a pair of preformed earplugs and an earplug carrying case as an item of individual equipment.
  - (2) Ensure that Soldiers complete annual hearing readiness monitoring and hearing health education.
  - (3) Require Soldiers to wear the earplug carrying case with earplugs as part of the ACU.
  - (4) Enforce the use of properly-fitted hearing protection by all noise-exposed personnel under their supervision, and take disciplinary action, as appropriate for non-compliance.
- c.* The safety manager will—
  - (1) Conduct announced site assistance visits and in coordination with the commander, unannounced inspections of hazardous noise industrial operations and work sites to ensure enforcement of the proper use of hearing protection around noise hazards.

(2) Conduct announced site assistance visits and in coordination with range control personnel, unannounced inspections of firing ranges to ensure enforcement of the proper use of hearing protection by range personnel as well as by individual Soldiers and DA Civilians.

(3) Report inspection results through command channels to the installation commander, unit commander, work site supervisor, HPM, and IHPM.

d. The HPM will—

(1) Conduct announced site assistance visits and in coordination with the commander, unannounced inspections of hazardous noise areas to ensure enforcement of the proper use of hearing protection around noise hazards.

(2) Conduct announced site assistance visits and in coordination with range control personnel, unannounced inspections of firing ranges to ensure enforcement of the proper use of hearing protection by range personnel, as well as by individual Soldiers and DA Civilians.

(3) Report inspection results through command channels to the installation commander, unit commander, work site supervisor, unit HP officer, safety manager, and IHPM.

e. The IHPM will—

(1) Inspect and monitor noise hazardous areas, to include firing ranges, to ensure compliance with hearing protector requirements during both announced and unannounced IH surveys.

(2) Report inspection results through command channels to the installation commander, unit commander, work site supervisor, HPM, safety manager, and OHPM.

## **8-5. Discipline**

a. If a DA Civilian employee violates hearing protector requirements or fails to comply with audiometric evaluation procedures and/or hearing health education training, the employee's supervisor will apply appropriate disciplinary action in accordance with AR 690-700, or Technical Personnel Regulation (TPR) 752 for ARNG 32 USC technicians. Appropriate penalties for failure to observe written regulations, orders, rules, or procedures are stated in AR 690-700 or TPR 752, as applicable. The table of penalties for various offenses range from a written reprimand to permanent removal, depending on the safety risk and the number of times the failure occurs. Army major command or activity regulations and policies or collective bargaining agreements may also apply.

b. If military personnel violate hearing protector requirements or fail to comply with audiometric evaluation procedures, the chain of command will apply the appropriate disciplinary action.

## **Chapter 9 Program Evaluation**

### **9-1. Program evaluation requirements**

Both internal and external metrics will be used to evaluate major command, regional, and Armywide AHP effectiveness, quality, and participation. HP metrics are identified, designed and implemented by the USAPHC, AIPH, AHP office via electronic tools and Web access, as available. Local HPMs periodically report selected hearing program metrics on hearing readiness, clinical hearing services, operational hearing services, and hearing conservation to USAPHC, AIPH, AHP office. Program evaluations are also incorporated to the AMEDD's Organizational Inspection Program. This chapter details the current metrics used to evaluate each of the four AHP components at both the installation and strategic levels and how this information is provided to leaders and supervisors. Paragraphs 9-3 through 9-6 list the reporting requirements for each of the four AHP components.

### **9-2. External reporting**

The USAPHC, AIPH, AHP office provides the following:

a. *Staff assistance visits or virtual consultation.*

(1) Evaluate AHP components at the installation and supported area levels as defined in paragraph 3-1.

(2) Evaluate the program regarding staffing, physical space, and equipment requirements.

(3) Facilitate partnership-building with key personnel, such as IHPM, OHPM, safety personnel, and range safety personnel.

(4) Provide an AHP in-brief and out-brief to command leadership.

(5) Provide the installation HPM and supported leaders with a written after action report, including recommendations for implementation of the four AHP components.

b. *Hearing health hazard assessment consultations.*

(1) Evaluate hazardous noise environments, weapons systems, munitions, vehicles, aircraft, and other hazardous noise-producing technology.

(2) Provide subject matter expertise in eliminating or controlling noise hazards to address the potential effects of materiel systems' health hazards on the personnel who test, produce, use, maintain, repair, or support the systems.

(3) Recommend engineering controls, administrative controls, and changes to tactics, techniques, and procedures to mitigate hazardous-noise exposure.

*c. Hearing protection requirements.*

(1) Provide current hearing protector technology evaluation criteria to the auditory research and acquisition communities.

(2) Maintain a list of qualified hearing protector technologies on the USAPHC, AIPH, AHP Web site.

(3) Review all acquisition, technology, and logistics documents that include hearing protector technologies.

*d. Data support.*

(1) Provides formally requested and approved data for briefings and professional presentations.

(2) Collaborates with DOEHRS Program Office and MEDPROS office regarding data integration.

(3) Integrates DOEHRS–HC and DOEHRS–HC DR data into the Strategic Management System (SMS) for leader and program manager access.

*e. Installation hearing program manager consultations.*

(1) Provide regular, strategic updates and guidance via email, phone, and teleconferences.

(2) Provide leadership, reinforcement, and support as requested or needed.

*f. Operational Hearing Services.* The USAPHC, General Accounting Office, the U.S. Army Audit Agency, and the Regional Medical Command may periodically conduct announced evaluations of installation hearing programs. Evaluation results will be reported through the installation HPM to the safety office, range control (if applicable), and unit chains of command to the senior medical advisor, such as the division surgeon or DHS, and the senior brigade-level or higher commander.

### **9–3. Internal reporting: Hearing Readiness**

The local HPM evaluates the hearing readiness component by using the DOEHRS–HC, the DOEHRS–HC DR and the MEDPROS hearing readiness reporting tools to monitor and report program participation and effectiveness. Internal hearing readiness evaluations provide commanders and key leaders with relevant information regarding Soldiers' hearing readiness and deployability status. The MEDPROS reporting tools evaluate hearing readiness participation, and the DOEHRS–HC reporting tools evaluate hearing readiness status. Methods for measuring internal hearing readiness participation and effectiveness are listed below.

*a. Medical Protection System reporting.*

(1) Formal reporting for participation in hearing readiness monitoring audiometry will be submitted to senior command teams for TOE and table of distribution and allowances Soldiers (through the battalion commander to the brigade commander, for example).

(2) Formal reporting for installation wide hearing readiness monitoring audiometry participation will be submitted through the division surgeon and/or DHS to the installation commander, as follows:

(a) Report the number of Soldiers enrolled in hearing readiness who completed the annual DOEHRS–HC monitoring audiometry, by unit or tenant activity, at least quarterly.

(b) Report hearing readiness deployability status through senior command teams (through the battalion commander to the brigade commander, for example).

(3) Report installation-wide hearing readiness deployability status through the division surgeon and/or DHS to the installation commander, as follows:

(a) Report the number of deployable Soldiers (that is, HRC 1 or HRC 2, by unit), at least quarterly.

(b) Report the number of nondeployable Soldiers (that is, HRC 3 or HRC 4, by unit), at least quarterly.

*b. Defense Occupational and Environmental Health Registry System - Hearing Conservation reporting.*

(1) Using the DOEHRS–HC, report workload and STS rates to the HPM's department chief, as follows:

(a) At least monthly, report the number of hearing tests provided at a given location, based on the DOEHRS–HC daily report log.

(b) At least monthly, report the positive STS rates, based on the positive STS report.

(2) Using DOEHRS–HC DR, report compliance and threshold shifts through the DHS to the installation or Army commands (ACOMs), Army service component commands (ASCCs), and/or direct reporting units (DRUs), as follows:

(a) Report follow-up testing compliance, using the positive STS report, at least quarterly.

(b) Report PTS and TTS rates, using the positive STS report, at least quarterly.

(c) Report new STS cases, using the positive STS report, at least quarterly. The percent new cases (total) identifies the incidence of STS at a given installation.

*c. Other reporting.*

(1) Report annual hearing health education compliance through the DHS to the installation or ACOM, ASCC, and/or DRU [A1]commander, as follows:

(a) Report the percentage of units compliant with annual hearing health education training, at least quarterly.

(b) Use the hearing health training tracking tools available on the USAPHC, AIPH, AHP Web site.



(2) Report hearing loss rates to the safety and OH offices. This report is compared to the accident reports generated by commanders. Data for the report is gathered by logging the memoranda sent to individuals' commanders, at least quarterly.

(3) Report hearing protection use in hazardous-noise operations and firing ranges through the DHS to the installation commander.

(a) Report compliance with hearing protection use in hazardous noise environments by unit, using the AHP worksite inspection report, at least quarterly.

(b) Sample reporting templates are available on the USAPHC, AIPH, AHP Web site.

#### **9-4. Internal reporting: Clinical Hearing Services**

The local HPM evaluates the clinical hearing services component by monitoring and reporting clinical audiometric trends and quality assurance metrics. Use the following to measure internal clinical hearing services compliance and effectiveness:

a. Data obtained from the Armed Forces Health Surveillance Center on coded, noise-induced hearing injuries, including tinnitus, SNHL, NIHL, and comorbidities.

b. Peer review of diagnostic audiometric data.

c. Hearing aid statistics in the Remote Order Entry System.

d. Tinnitus reporting in DOEHRS-HC.

#### **9-5. Internal reporting: Operational Hearing Services**

Internal operational hearing services evaluations provide commanders and key leaders with relevant information regarding the hearing health of deployed Soldiers. Announced and unannounced inspections of unit operations will be conducted periodically, but no less than annually, and will be reported through safety, range control (if applicable), and unit chains of command to the senior brigade-level or higher commander. Tools for conducting range inspections are available on the USAPHC, AIPH, AHP Web site.

a. Static range inspections will include the following:

(1) Posting of warning signs.

(2) Hearing protection use.

(3) Hearing protectors that are serviceable, fit properly, and are available in multiple sizes, styles, and quantities, as appropriate to the mission.

(4) Hearing protection fit checks of each Soldier prior to entering the range.

(5) A hearing protection fitting demonstration as part of the range safety briefing.

b. Maneuver range inspections will include the following:

(1) Posting of warning signs.

(2) Hearing protection use during both live fire and blank fire exercises, including travel to and from ranges in hazardous-noise vehicles.

(3) Hearing protectors that are serviceable, fit properly, and are available in multiple sizes, styles, and quantities, as appropriate to the mission.

(4) A hearing protection fitting demonstration as part of the range safety briefing.

(5) Hearing protection as part of the range safety briefing.

(6) Use of TCAPS, as appropriate to the mission.

(7) Hearing protection and communication capabilities as part of both the planning documents (for example, operation order), and the after action report.

c. Base camp evaluations will include the following:

(1) Evaluating the setup and location of hazardous noise equipment and areas. The TOCs, rest areas, and sleeping areas will be evaluated to ensure noise hazards and nuisance noise are minimized to the maximum extent possible.

(2) Posting of warning signs, as appropriate.

(3) Engineering control implementation.

#### **9-6. Internal reporting: Hearing Conservation**

The local HPM evaluates the hearing conservation component by using the DOEHRS-HC DR reporting tools to monitor and report program compliance and effectiveness. Internal hearing conservation evaluations provide commanders and key leaders with relevant information regarding employees hearing health. Methods for measuring internal hearing conservation monitoring audiometry compliance and effectiveness are listed below.

a. *Defense Occupational and Environmental Health Readiness System - Hearing Conservation reporting.*

(1) Using DOEHRS-HC, report the hearing conservation workload and STS rates to the installation HPM's department chief.

(a) Report the number of hearing tests completed at a given location at least monthly, using the DOEHRS-HC daily report log.

- (b) Report positive STS rates at least monthly, using the positive STS report.
- (2) Using the DOEHRS–HC DR, report DA Civilian compliance and threshold shifts through the DHS to the installation or ACOM, ASCC, and/or DRU commander.
  - (a) Report follow-up testing compliance at least quarterly, using the positive STS report.
  - (b) Report PTS and TTS rates at least quarterly, using the positive STS report.
  - (c) Report new STS cases at least quarterly, using the positive STS report. The percent new cases (total) identifies the incidence of STS at a given installation.
    - b. *Other hearing conservation reporting.*
      - (1) Report annual hearing health education compliance through the DHS to the installation or ACOM, ASCC, and/or DRU commander.
        - (a) Report the percentage of units that are in compliance with annual hearing health education training, at least quarterly.
        - (b) Hearing health training tracking tools are available on the USAPHC, AIPH, AHP Web site.
      - (2) Report recordable STS rates to the OH and safety offices. The STS report is compared to the accident reports generated by supervisors. Data is gathered by logging the memoranda sent to individuals' commanders, at least quarterly.
    - (3) Report hearing protection use in hazardous-noise operations and firing ranges through the DHS to the installation commander.
      - (a) Report compliance with hearing protection use in hazardous noise environments by unit, using the AHP work-site inspection report, at least quarterly.
      - (b) Sample reporting templates are available on the USAPHC, AIPH, AHP Web site.

## **Appendix A References**

### **Section I Required Publications**

#### **ANSI SI S1.4–1983 (R 2006)**

Specification for Sound Level Meters (Cited in paras 3–6b(1), 7–5a, and 7–5c.) (Available at <http://www.ansi.org/>.)

#### **ANSI S1.4A**

American National Standard Specification for Sound Level Meters: Amendment to ANSI S1.4–1983 (Cited in paras 3–6b(1), 7–5a, and 7–5c.)

#### **ANSI S1.11**

Specification for Octave-Band and Fractional-Octave-Band Analog and Digital Filters (Cited in para 3–6b(2).)

#### **ANSI S3.6**

Specification for Audiometers (Cited in para 3–6a(2).)

#### **ANSI Z535.1**

American National Standards for Safety Colors (Cited in para 7–9b(1) and 7–9b(2).)

#### **ANSI Z535.4**

Product Safety Signs and Labels (Cited in para 7–9b(1) and 7–9b(2).)

#### **AR 40–5**

Preventive Medicine (Cited in paras 3–2a(1), 3–2i(2), 3–2j, and 3–2k.)

#### **AR 40–66**

Medical Records Administration and Health Care Documentation (Cited in paras 3–2c(5), 7–26d(2).)

#### **AR 40–501**

Standards of Medical Fitness (Cited in paras 4–5a, 5–3d, 5–4b, 5–6c, and 7–11a.)

#### **AR 385–10**

The Army Safety Program (Cited in paras 3–2a(1), 3–2g, 3–2k(1)(k), 3–2k(10), 7–8b, 7–24c(4), and 8–3a.)

#### **AR 420–1**

Army Facilities Management (Cited in para 3–2i(1).)

#### **AR 690–700**

Personnel Relations and Services (General) (Cited in para 8–5a.)

#### **DA Pam 40–11**

Preventive Medicine (Cited in para 7–8b.)

#### **DA Pam 40–503**

The Army Industrial Hygiene Program (Cited in paras 3–2d(3), 7–3a, 7–3b, 7–6a, 7–7c, and terms.)

#### **DA Pam 611–21**

Military Occupational Classification and Structure (Cited in para 5–7b.)

#### **DA Pam 385–11**

Army Guidelines for Safety Color Codes, Signs, Tags and Markings (Cited in paras 3–2f, 3–2i(1), 7–9c.)

#### **Department of Army Personnel Policy Guidance for Overseas Contingency Operations**

(Available at <http://www.armyg1.army.mil/MilitaryPersonnel/ppg.asp>.) (Cited in para 3–3b.)

#### **DODI 6055.12**

DOD Hearing Conservation Program (HCP) (Cited on the title page, para 3–4a, and terms.)

## **Section II**

### **Related Publications**

A related publication is a source of additional information. The user does not have to read it to understand this pamphlet. DOD publications, are available at <http://www.dtic.mil/whs/directives/>; ANSI publications are available at <http://www.ansi.org>.

#### **ANSI S1.25–1991 (R 2007)**

Specification for Personal Noise Dosimeters

#### **ANSI S12.6–2008**

Methods for Measuring the Real-Ear Attenuation of Hearing Protectors

#### **Army Directive 2012–18**

Military Occupational Specialty Administrative Retention Review (MAR2)

#### **AR 1–201**

Army Inspection Policy

#### **AR 11–35**

Deployment Occupational and Environmental Health Risk Management

#### **AR 25–30**

The Army Publishing Program

#### **AR 40–3**

Medical, Dental, and Veterinary Care

#### **AR 40–10**

Health Hazard Assessment Program in Support of the Army Acquisition Process

#### **AR 95–1**

Flight Regulations

#### **AR 350–1**

Army Training and Leader Development

#### **AR 360–1**

The Army Public Affairs Program

#### **AR 670–1**

Wear and Appearance of Army Uniforms and Insignia

#### **CTA 8–100**

Army Medical Department Expendable/Durable Items (Available at <https://webtaads.belvoir.army.mil/usafmsa.>)

#### **DA Poster 40–501A**

Occupational Noise Exposure Standard and Hearing Conservation Amendment (Available at <https://usaphcapps.amedd.army.mil/HIOShoppingCart/default.aspx.>)

#### **DODD 6200.04**

Force Health Protection

#### **DODD 6490.02E**

Comprehensive Health Surveillance

#### **DODI 6490.03**

Deployment Health

#### **FM 4–02.17**

Preventive Medicine Services

## **MIL-STD 1474D**

Noise Limits

### **Occupational Noise-Induced Hearing Loss**

American College of Occupational and Environmental Medicine (ACOEM) Task Force on Occupational Hearing Loss (Available at [http://journals.lww.com/joem/Fulltext/2012/01000/Occupational\\_Noise\\_Induced\\_Hearing\\_Loss\\_\\_ACOEM.18.aspx](http://journals.lww.com/joem/Fulltext/2012/01000/Occupational_Noise_Induced_Hearing_Loss__ACOEM.18.aspx).)

### **ST 4-02.501**

Army Hearing Program (Available at [http://militaryaudiology.org/site/wp-content/images/st\\_4\\_02\\_501.pdf](http://militaryaudiology.org/site/wp-content/images/st_4_02_501.pdf).)

### **TPR 352**

Discipline and Adverse Action (Available at [http://www.ngbpdc.ngb.army.mil/pubs/TPR/tpr752\\_2010.pdf](http://www.ngbpdc.ngb.army.mil/pubs/TPR/tpr752_2010.pdf).)

### **29 CFR 1910.95**

OSHA Occupational Noise Exposure Standard and Hearing Conservation Amendment

### **29 CFR 1960.78, Subpart J**

Evaluation of Federal Occupational Safety and Health Programs

### **32 USC**

National Guard

## **Section III**

### **Prescribed Forms**

Unless otherwise indicated, DD Forms are available on the Office of the Secretary of Defense (OSD) Web site (<http://www.dtic.mil/whs/directives/infomgt/forms/index.htm>).

#### **DD Form 2214**

Noise Survey (Prescribed in para 3-2d(4).)

#### **DD Form 2214C**

Noise Survey (Continuation Sheet) (Prescribed in para 3-2d(4).)

#### **DD Form 2215**

Reference Audiogram (Prescribed in paras 3-2c(5), 3-3a, 4-2b(1), 4-2b(3), 4-5a, 4-6d, 4-9b(1), 5-2b, 7-23a(1), and 7-26d(2).)

#### **DD Form 2216**

Hearing Conservation Data (Prescribed in paras 3-2c(5), 3-3a, 3-7c(3), 4-2b(3), 4-5a, 4-6d, 4-9b(2), 5-2b, 7-23a(2), 7-23b(2), 7-24a, and 7-26d(2).)

#### **DD Form 2217**

Biological Audiometer Calibration Check (Prescribed in para 7-23a.)

## **Section IV**

### **Referenced Forms**

Unless otherwise indicated, DA Forms are available on the Army Publishing Directorate (APD) Web site (<http://www.apd.army.mil>); DD Forms are available on the Office of the Secretary of Defense (OSD) Web site ([www.dtic.mil/whs/directives/infomgt/forms/index.htm](http://www.dtic.mil/whs/directives/infomgt/forms/index.htm)); DOL Forms are available at <http://webapps.dol.gov/libraryforms/>. OSHA Form available at <https://www.osha.gov/recordkeeping/RKforms.html>.

#### **DA Form 285**

Technical Report of U.S. Army Ground Accident

#### **DA Form 2028**

Recommended Changes to Publications and Blank Forms

#### **DA Form 3758-R**

Calibration and Repair Requirements Worksheet

**DA Form 3349**

Physical Profile

**DD Form 2795**

Pre-Deployment Health Assessment

**DD Form 2796**

Post-Deployment Health Assessment

**DD Form 2807-1**

Report of Medical History

**DD Form 2900**

Post-Deployment Health Re-Assessment

**DOL Form CA-1**

Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation

**DOL Form CA-2**

Notice of Occupational Disease and Claim for Compensation

**OSHA Form 300**

Log of Work-Related Injuries and Illnesses

## **Glossary**

### **Section I Abbreviations**

#### **ACOM**

Army command

#### **ACU**

Army combat uniform

#### **AHP**

Army Hearing Program

#### **AIPH**

Army Institute of Public Health

#### **AKO**

Army Knowledge Online

#### **AMEDD**

U.S Army Medical Department

#### **ANSI**

American National Standards Institute

#### **AOC**

area of concentration

#### **AR**

Army regulation

#### **ARNG**

Army National Guard

#### **CAOHC**

Council for Accreditation in Occupational Hearing Conservation

#### **CFR**

code of federal regulations

#### **CVC**

combat vehicle crewman

#### **DA**

Department of the Army

#### **dB**

decibel

#### **dB(A)**

A-weighted decibel

#### **dB(P)**

peak decibel

#### **DHS**

Director of Health Services

#### **DOD**

Department of Defense

**DODI**

Department of Defense Instruction

**DOEHRS–HC DR**

Defense Occupational and Environmental Health Readiness System–Hearing Conservation Data Repository

**DOEHRS–HC**

Defense Occupational and Environmental Health Readiness System–Hearing Conservation

**DOEHRS–IH**

Defense Occupational and Environmental Health Readiness System–Industrial Hygiene

**DOL**

Department of Labor

**DRU**

direct reporting unit

**DSS**

deputy state surgeon

**ENT**

ear, nose, and throat

**FFD**

fitness-for-duty

**HP**

Hearing Program

**HPM**

hearing program manager

**HRC**

hearing readiness classification

**Hz**

hertz

**IDT**

inactive duty training

**IET**

initial entry training

**IH**

industrial hygiene

**ITE**

in-the-ear

**HPD**

hearing protection device

**IHPM**

industrial hygiene program manager

**kHz**

kilohertz



**MAR2**

MOS administrative retention review

**MEDPROS**

Medical Protection System

**MODS**

Medical Operational Data System

**MOS**

military occupational specialty

**MWDE**

MEDPROS Web Data Entry

**NIHL**

noise-induced hearing loss

**OH**

occupational health

**OSHA**

Occupational Safety and Health Administration

**OTE**

over-the-ear

**PMOS**

primary military occupational specialty

**PTS**

permanent threshold shift

**RAC**

risk assessment code

**RHL**

reportable hearing loss

**SNHL**

sensorineural hearing loss

**SPRINT**

Speech Recognition in Noise Test

**STS**

significant threshold shift

**TCAPS**

Tactical Communications and Protective Systems

**TOC**

tactical operations center

**TOE**

table of organization and equipment

**TQG**

tactically quiet generator

**TTS**

temporary threshold shift

**TWA**

time-weighted average

**USAPHC**

U.S. Army Public Health Command

**USAR**

U.S. Army Reserve

**Section II****Terms****Army Hearing Program**

Represents the leadership policies, strategies and processes to prevent noise-induced hearing loss among military and DA Civilian personnel. The AHP consists of four major components: hearing readiness, clinical hearing services, operational hearing services, and hearing conservation.

**Audiogram**

The softest sounds which can be heard at specific pure-tone frequencies, in each ear.

**Audiometer**

An instrument for measuring hearing thresholds. Only those audiometers that conform to the requirements of the current version of ANSI Standard S3.6 are permitted for use by the DA, to include the ARNG and the USAR.

**Blast overpressure**

An instantaneous change in air pressure, typically emitted by an explosive device when it detonates, that imparts mechanical energy to contacted objects.

**Certified hearing technician**

Responsible for conducting DOEHRs–HC monitoring audiometry. Hearing technicians obtain certification and training through Army, Navy, or Air Force HPs which meet or exceed CAOHC training requirements. Hearing technicians can also obtain certification through CAOHC.

**Change in operations**

Any increase in the number of noise-exposed employees and/or any technological changes in the work environment. For example, production line modifications, building renovations, additional or reduced numbers of hazardous noise equipment per 29 CFR 1910. 95(d)(3)).

**Clinical hearing services**

Determine the degree and cause of hearing loss. After a Soldier or DA Civilian has been identified with a hearing loss, treatment and management plans are put into place. Certified and licensed audiologists provide clinical hearing services, including prevention, medical evaluation, treatment, education, and clinical studies.

**Conductive hearing loss**

Occurs within the outer and/or middle ear and is often corrected medically or surgically. This type of hearing loss occurs when the sound is not conducted efficiently through the outer ear to the middle ear, resulting in a reduction in sound level or the ability to hear soft sounds. Possible causes of conductive hearing loss include fluid in the middle ear, eardrum perforation, impacted earwax, ear infection, and Eustachian tube dysfunction.

**DA Civilian routinely-noise exposed**

Defined as a continuous and intermittent noise (20 to 16,000 Hz) that has an 8-hour TWA noise level of 85 dBA or greater. Impulse SPLs of 140 dBP or greater.

**dB(A)**

Sound pressure level measured with a sound level meter set to the A-weighted network and that meets the ANSI S1. 4–1983 requirements. The A-weighting network reduces the contribution of lower frequencies, which are a lesser concern for hearing conservation.

**dB(P)**

Unit used to express the peak sound pressure level of impulse noise. It is equal to 20 times the common logarithm of the ratio of the highest instantaneous sound pressure to a reference pressure of 20  $\mu$ Pa.

**Deafness**

The otological condition in which the hearing threshold levels for speech or the average hearing threshold level for pure tones at 500, 1000, and 2000 Hz is at least 93 dB bilaterally. This condition is generally accepted as representing a 100-percent hearing handicap for hearing everyday speech.

**Decibel**

A unit of measurement used to express sound pressure level. The dB level of a sound is related to the logarithm of the ratio of sound pressure to a reference pressure. The decibel level has meaning only when the reference quantity is known. The internationally accepted reference pressure in air for acoustics is 20  $\mu$ Pa, which corresponds to 0 dB. This value is used in the most current acoustical literature. In the past, other units, including 20 micronewtons per square meter, 0.0002 microbar, and 0.0002 dynes per square centimeter, all of which are physically equivalent to 20  $\mu$ Pa, have been used.

**Director of Health Services**

The unit and/or command surgeon, medical treatment facility commander, or the medical asset who is designated as the lead medical officer for the installation.

**Eight-hour time-weighted average sound level**

A measure of the severity of the employee's workday noise environment. The TWA is an expression of the constant noise level, measured in dBA, which can potentially produce the same hearing damage over an 8-hour period, as the actual workday noise exposure. The TWA is always computed as if the TWA noise level is present for an 8-hour work shift, whether or not the workday noise lasts for 8 hours. Because the TWA is a measure of the noise environment, it does not reflect the effects of any hearing protection worn by employees. Implicit in the TWA is a 3-dB time-intensity exchange rate, per DODD 6055.12.

**Hazardous noise (continuous)**

85 dBA or greater, regardless of duration of exposure, due to the possibility of such noise causing harm to hearing once exposure is taken into account.

**Hazardous noise (impulse)**

140 dB(P) or greater, regardless of duration of exposure, due to the possibility of such noise causing harm to hearing once exposure is taken into account

**Hearing conservation**

An industrial-focused effort that is instrumental in preventing noise-induced hearing loss in primarily fixed facility settings. Although some Soldiers work in industrial-based settings, hearing conservation efforts are primarily directed at the DA Civilian workforce.

**Hearing program manager**

Manages and implements all aspects of the installation AHP outlined in this pamphlet.

**Hearing program officer**

The individual designated in writing to manage the unit's hearing program and to serve as a point of contact for the installation hearing program manager.

**Hearing readiness**

Identifies early changes in hearing and provides education, individual counseling, and hearing protection to prevent further damage to hearing. The key element of hearing readiness is monitoring audiometry using the DOEHRs-HC System and MEDPROS for readiness status.

**Hertz**

Unit of measure for frequency, numerically equivalent to cycles per second.

**Impulse noise**

A short burst of acoustic energy consisting of either a single impulse or a series of impulses. The pressure-time history of a single impulse includes a rise of 40 dB or more in one second or faster to a peak pressure, followed by a somewhat slower decay of the pressure envelope to ambient pressure, both occurring within 1 second. When the

intervals between impulses are less than 500 milliseconds, the noise is considered continuous, except for short bursts of automatic weapons fire, which are considered impulse noise. Exposure to impulse/impact noise levels=140 dBP is potentially hazardous.

**Industrial hygiene program manager**

The individual designated to execute the installation's IH Program according to DA Pam 40-503.

**Installation hearing program officer**

The individual (usually a 72C) designated to execute the installation's HP.

**Mixed hearing loss**

The occurrence of a conductive hearing loss in combination with a sensorineural hearing loss. The outer, middle, and/or inner ear may be damaged.

**Noise**

In the nontechnical sense, any unwanted sound. Noise may be steady, either a pure tone or a combination of tones, or it may consist of one or more impulses. The term is usually applied to sounds having a complex character with numerous separate frequency components extending over a wide range of frequencies and that are not generated to convey meaning or information.

**Noise contour**

Boundary area where hearing protectors are required.

**Noise dose**

The ratio of the severity of a noise environment to the severity of exposure to 85 dBA for 8 hours per day, expressed as a percentage.

**Noise-induced hearing loss**

A permanent hearing loss caused by exposure to hazardous noise. NIHL can occur gradually over time or as the result of a single incident.

**Nonlinear hearing protection**

Hearing protection that allows for effective communication and situation awareness while providing protection from hazardous impulse noises.

**Nuisance noise**

Any unwanted sound that interferes with communication or the ability to achieve restful sleep periods.

**Occupational medicine staff**

An occupational and environmental medicine physician, audiologist, OH nurse, industrial hygienist, health physics officer, optometrist, and the technicians of each specialty area.

**Operational Hearing Services**

Services that focus on preventing or mitigating noise-induced hearing loss during military operations while maintaining or enhancing the ability to communicate. These services focus on noise assessment and abatement strategies, increased communication effectiveness, and the use of specialized hearing protection devices designed to reduce the impact of noise and noise-induced hearing loss on military operations.

**Ototoxic exposure**

A hearing loss that may result from exposure to certain chemicals, either alone or in conjunction with noise, which may cause hearing loss. Organic solvents are the most commonly identified chemicals, but others, such as metals and chemical asphyxiants, may be involved.

**Occupational Safety and Health Administration reportable hearing loss**

Present when an individual has an increase in hearing thresholds=25 dB for the average of 2000, 3000, and 4000 Hz in either ear, as compared to the individual's original (first) baseline hearing test. Such a loss is reported once and cannot be reported again until there is an additional increase of=25 dB for the average of 2000, 3000, and 4000 Hz, in the same ear in which the previous increase occurred, or there is a change in hearing=25 dB for the average of 2000, 3000, and 4000 Hz in the other ear, as compared to the original baseline. For example, if the first OSHA RHL is reported in

2013 and an additional average increase of 25 dB does not appear until 2016, the OSHA RHL would only be reportable in 2013 and 2016, not in the intervening years.

### **Peak pressure level**

The highest instantaneous pressure reached during an impulse noise event and expressed in dB. For Army hearing conservation purposes, peak pressure levels are unweighted; that is, a weighting scale is not used when measurements are taken.

### **Pressure**

As used in acoustics, refers to the change in the instantaneous pressure relative to the ambient atmospheric pressure.

### **Reference audiogram**

The DD Form 2215 reference audiogram (baseline) is used for comparisons with future hearing tests to detect changes in hearing over time. Individuals must have a reference audiogram on record before any other DOEHS–HC audiogram can be performed. The four occasions for establishing a reference audiogram include: Prior to Initial Duty in Hazardous Noise Areas, Following Exposure in Noise Duties, Re-establishment After a Follow-up Program, Change in Service Component.

### **Risk assessment code**

An expression of risk that combines the elements of mishap probability and health hazard severity. Risk assessment codes are expressed in the Arabic numerals one through five (1–5). The RAC rank-orders the hazard. Hazards with lower RAC numbers require more immediate attention than those with higher RAC numbers.

### **Sensorineural hearing loss**

A permanent hearing loss that occurs when the inner ear has been damaged. SNHL reduces one's ability to hear faint sounds. Although speech may still be audible, it may sound unclear or muffled. Possible causes of SNHL include illnesses, ototoxic exposures, aging, head trauma, and noise exposure.

### **Significant threshold shift**

A change in hearing of an average of  $\pm 10$  dB at 2000, 3000 and 4000 Hz in either ear, relative to the individual's earliest or most current re-established reference audiogram.

### **Steady-state noise**

A periodic or random variation in atmospheric pressure. It may be continuous, intermittent, or fluctuating, with a sound pressure level that varies over a wide range, provided such variations have a duration exceeding 1 second. Exposure to steady-state noise having a TWA of  $\geq 85$  dBA is potentially hazardous noise.

### **Tactical Communication and Protective System**

Protective systems designed with active filters that protect hearing in operational training and combat environments while allowing the Soldier to maintain their ability to hear and communicate, especially in dismounted operations.

### **Time-intensity exchange rate**

The DOD standard for the exchange rate is 3 dB. It is a change in the level of sound required to double the damage potential of sound during a fixed time period of exposure. This exchange rate is implicit in the TWA and noise dose.

### **Tinnitus**

A perceived ringing, buzzing, or hissing sound resulting from damage to the inner ear usually caused by exposure to hazardous noise or ototoxic exposures.

## **Section III**

### **Special Abbreviations and Terms**

This section contains no entries.

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