The Big Picture

It can be hazardous to work in the military, especially for your hearing
The Problem

- Hearing loss is prevalent among military veterans
- 2,500,000 veterans received disability payments from the Department of Veterans Affairs (VA) in 2003
- 158,000 new recipients of disability in 2003
U.S. Veterans Compensation for Hearing Loss

Total for 1977-2005 = $7.5 Billion U.S!

Primary Disability Only

$786 million in 2005

$1.2 billion in 2005 (including tinnitus)

Year

Dollars in Millions

Source: Dept of Veterans Affairs
The Charge

- Congress passed Public Law 107-330 in 2002
- The law required the Department of Veterans Affairs to contract with the National Academies to
  - Evaluate the scientific evidence on noise-induced hearing loss and tinnitus in U. S. military personnel from World War II through 2002
- The task was assigned to the Medical Follow-up Agency of the Institute of Medicine
The full Report includes the committees’ requirements for standards of evidence, as well as findings, recommendations, and research suggestions, beyond those covered in the presentation today.

http://www.iom.edu/CMS/3795/20024/29957.aspx
Comparison of Pure Age-Effects and Noise-Effects on Hearing Levels

ISO-1999, A, males
Effects of Age and Noise Over 30-year Time Span
Can the effects of noise exposure be of delayed onset?

- Not sufficient evidence from longitudinal studies in laboratory animals or humans to determine whether permanent NIHL can develop much later in life, long after cessation of noise exposure.

- However, evidence from lab-based human and animal studies is sufficient to conclude that the most pronounced effects occur immediately following exposure, and recovery to stable thresholds occurs within ~ 30 days.

- The available anatomical and physiological evidence suggests that delayed post-exposure NIHL is not likely.
U. S. Military: NIHL and Acoustic Trauma

- Many studies of varying quality; few, if any, met the standards of evidence established by the committee.
- Hearing loss in 62% of 414 Iraq-war personnel treated by audiology at Walter Reed Army Medical Center from 2003 - 2005 (56% had blast injuries).
Army Infantry
(Walden et al., 1975)
Conclusions regarding NIHL among U. S. military personnel

- The evidence is sufficient to conclude that *certain* military personnel from World War II to the present have exhibited shifts typical of NIHL.
- However, the evidence is not sufficient to reach conclusions regarding the number or proportion of service members who have experienced NIHL while in the military.
- The evidence is also not sufficient to determine the probability of acquiring NIHL with service in the military.
- Without audiograms at the beginning and end of military service, it is difficult or impossible to determine with certainty how much of an individual’s hearing loss was acquired during military service.
Timeline of Major Conflicts and Milestones in Military Hearing Conservation

- **1950**: Intro of pure-tone audiometry
- **1956**: Air Force starts first services' HCP
- **1971**: OSHA Noise Regulation
- **1980**: First comprehensive Army HCP
- **2004**: Services adopt OSHA STS

**WWII** | **Korean War** | **Vietnam War** | **Gulf War** | **War on Terrorism**
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- **1948**: Air Force issues first regulation re hazardous noise
- **1970**: First Navy comprehensive HCP
- **1978**: DoD instruction re HCPs
- **1983**: OSHA Final Noise Reg
Has hearing protection been adequate?

There is limited or suggestive evidence that use of HPDs and the level of real-world protection that they provide, have been and remain not adequate in military hearing conservation programs.
When were the military service’s hearing conservation measures adequate?

- Based on data analyzed, HCPs dating from late 1970s cannot be considered to have been adequate to protect hearing of service members
- Prior activities from World War II to the 1970s would have been even less adequate
  - Mandatory HC measures not in place
  - Early HPDs were of limited effectiveness
Recommendations for Immediate Action

- Achieve more consistent and extensive use of HPDs by military personnel
- Capture data on presence and severity of tinnitus during military service
- Enforce requirements for entrance, exit, annual, and follow-up audiograms
- Include 8 kHz in audiometric testing to increase ability to detect a noise notch
- Improve the data acquisition and reporting capabilities of DOEHRS-HC, and the ability of VA to access those data