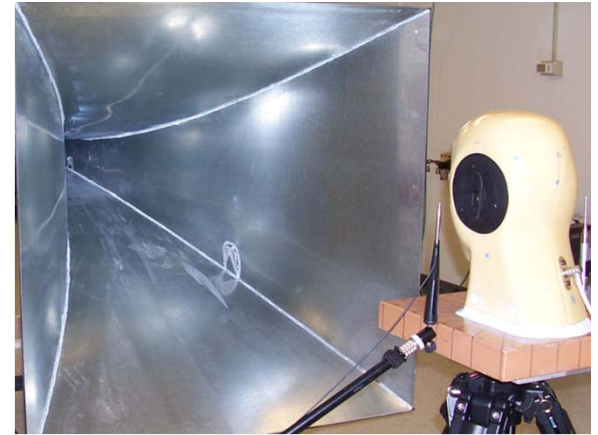


Implementation of the National Academies' Program Recommendations: **NIOSH Hearing Loss Research Program**

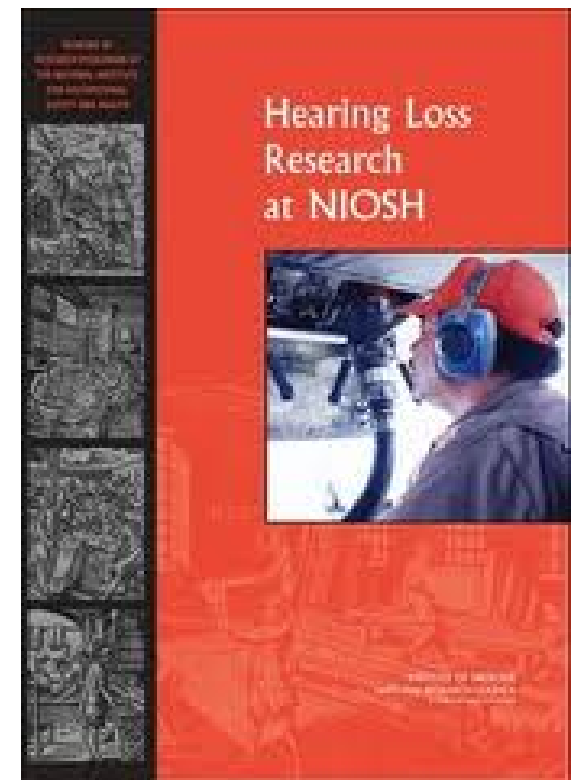
NIOSH Board of Scientific Counselors
Fifty-Ninth Meeting
June 20, 2014

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Presentation Outline

- Introduction
- Tracked Recommendations Updates
 - Modifications
 - Maintenance Efforts
 - Impacts
 - Future Plans
- Summary



Hearing Loss Research (HLR) Program Mission Statement

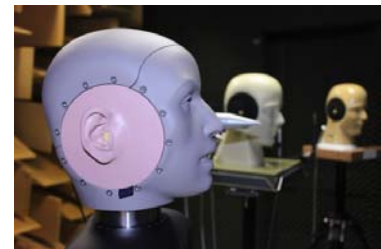
Provide national and world leadership to reduce the prevalence of occupational hearing loss through a focused program of research and prevention



An estimated 22 million workers are overexposed to noise

Introduction

- Summary of the responses to 7 of the 15 recommendations
- In 2009, “Overall, the BSC finds the NIOSH HLR Implementation Plan complete and responsive to each of the 15 recommendations ... the BSC would like to compliment the NIOSH HLRP for the development of a detailed Strategic Plan”
- A key for HLR is the definition of five strategic goals:
 1. Improve surveillance
 2. Reduce noise emission levels from equipment
 3. Develop hearing protector technology
 4. Develop evidence-based best practices for hearing loss prevention programs
 5. Identify hearing loss risk factors through epidemiologic research



Completed Responses

- Recommendation #1: Foster effective leadership
- Recommendation #4: Develop a strategic plan
- Recommendation #7: Systematize collaboration with regulatory partners
- Recommendation #8: Place greater emphasis on evaluation of the effectiveness of HLR measures
- Recommendation #13: Accredite laboratories used to conduct studies for the HLR Program

Recommendation #1: Foster effective leadership

- **Activity A:** Established Program Manager Position for the Hearing Loss Research cross-sector program
- **Activity B:** Appointed Program Coordinator and Assistant Coordinator
- **Addition of or modifications to activities since last review:**
 - We continue to use the same leadership model because it has proven effective
 - The cross-sector management team has performance elements related to their role in the Program Portfolio

Recommendation #1: Foster effective leadership

- **Impact since last review**

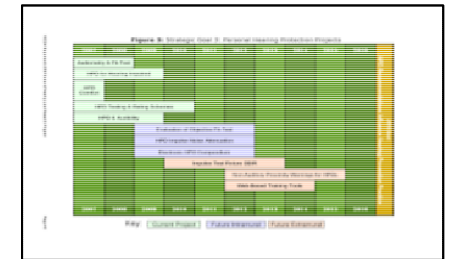
- 52 journal articles, professional publications, book chapters, and NIOSH Numbered Documents
- Adoption of new hearing loss prevention policies, practices, and standards by governmental and professional agencies and organizations
- The use of NIOSH technologies in commercialized controls to protect the nations workers continues to grow

- **Future plans**

- Continued use of a Program Manager, Cross-Sector Coordinator, Assistant Coordinator, and Steering Committee.

Recommendation #4: Develop a strategic plan

- **Activity A: Develop a strategic plan for the Hearing Loss Research Cross-Sector**
- **Impact since last review**
 - Continues to provide a specific roadmap for HLR research plans through 2016 for five NIOSH divisions.
 - Provides guidance to the extramural research community - identifying research priorities
 - Provides the framework for coordinating a wide range of activities covering many aspects of hearing loss.
 - All the other exceptional impacts discussed in this document are the result of this plan and its implementation across the organization.
 - Every HLR project funded based on the goals of the strategic plan.
- **Future plans**
 - Continue to use and update strategic plan with major update in 2016



Recommendation #7: Systematize collaboration with regulatory partners

- **Activities:** Interactions with MSHA, OSHA, & EPA
- **Impact since last review**
 - MSHA: Continues to rely upon NIOSH for publication review, rulemaking, and PIB and adopts NIOSH control technologies
 - OSHA: 2013 materials used by the OSHA Training Institute for webinars to instruct OSHA staff are based on NIOSH recommendations regarding “best practices”
 - OSHA: Technical Manual references NIOSH publications and tools such as the Hearing Loss Simulator and the Industrial Noise Control Manual
 - EPA: Final promulgation of a new regulation to label hearing protection devices awaits EPA action. NIOSH provided technical advice and conducted research which underpins the rule.
- **Future plans**
 - Continue to work with regulators to grow and improve interaction

Recommendation #8: Place greater emphasis on evaluation of the effectiveness of HLP measures

- **Activity A: Engineering control technology**
 - Incorporation of Source Path Contribution (SPC) technology for lab and field measurements
 - The development of a full suite of tools for modeling vibration and noise radiation from complex machines
 - The HLR program includes work behavior as an integral part of its approach – conducting observational studies of workers and specifically targeting worker usage.
- **Activity B: Develop HPD Fit-test technology**
 - The NIOSH HPD Well-Fit system became commercially available in 2012 & received the 2013 Bullard-Sherwood r2p Award
 - New project initiated to use HPD Well-Fit to conduct first-ever analysis of earplug attenuation stability over the course of a work shift.
- **Impact since last review**
 - NIOSH noise control technology is currently used on over 40% of the continuous mining machines in use in the US and in 3 other countries
 - The Council for Accreditation in Occupational Hearing Conservation has included a chapter in their two newly revised manuals for training that covers HPD Fit-testing methods –reaching 24,000 occupational hearing conservationists
 - MSHA uses NIOSH recommendations to rate noise controls as “technologically achievable” and require their use
- **Future plans**
 - Continue to work on controls and improve the effectiveness of hearing protection

Recommendation #13: Accredite laboratories used to conduct studies for the HLR Program

- **Activities** : Achieve or maintain NVLAP accreditation and qualify NIOSH sound test laboratories.
 - OMSHR’s large reverberation chamber was NVLAP accredited
 - OMSHR’s and DART’s hearing protector test chambers received NVLAP accreditation
 - NIOSH/University of Cincinnati anechoic chamber was NVLAP accredited
 - OMSHR hemi-anechoic test chamber procedures qualified to ISO 3745 and ISO 3744
 - NIOSH Cincinnati impulse noise laboratory just completed
- **Impact since last review**
 - NVLAP accreditation continues to provide credibility to the test results obtained in these laboratories
 - Hemi-anechoic chamber meeting ISO 3744 and ISO 3745 documents suitability for free field over a reflecting plane measurements
 - Created prototype for the first ever NVLAP certification for impulse noise
- **Future Plans**
 - Maintain NVLAP accreditation

In Progress Responses

- Recommendation #5: Use surveillance data as well as stakeholder input to identify priorities
- Recommendation #11: Develop noise control engineering approaches for non-mining sectors

Recommendation #5: Use surveillance data as well as stakeholder input to identify priorities

- **Activity A:** Establish a national repository for Occupational Hearing Loss (OHL) surveillance data
 - Increased database to almost 9 million audiograms for 2.3 million workers from 38 thousand companies
- **Activity B:** Analysis of data, dissemination of results, and solicitation of stakeholder feedback – report in January 2012
- **Activity C:** Collection of stakeholder input for use in setting program priorities
 - NHCA-OSHA-NIOSH Alliance to “help forge innovative solutions in the workplace or to provide input on safety and health issues”
 - Adoption of NIOSH controls in commercial products

Recommendation #5: Use surveillance data as well as stakeholder input to identify priorities

- **Impact since last review**

- National repository for OHL surveillance data established
- “Prevalence of Hearing Loss in the United States by Industry” was #7 of the top 20 read articles of 2012 on MDLinx.com, a physician and nurse practitioner website
- Surveillance data and stakeholder input have become an integral component of the HLR program
 - Every new project proposal must contain surveillance evidence / stakeholder input to address a high priority hazard

- **Future plans**

- Continue to work toward a national database of surveillance data
- Continue to learn from the surveillance data and disseminate the findings
- Facilitate access to the data by other researchers

Recommendation #11: Develop noise control technologies for non-mining sectors

- **Activity A: Engineering control technology**
 - Improved in-house capacity - laboratories, personnel, and methods
 - Measurement tools, procedures, and software
 - New personnel and educational achievements
 - New modeling capabilities
 - Safe-In-Sound award with national partners to highlight successes and identify role models
- **Impact since last review**
 - Safe-In-Sound Award established a national platform for recognition and highlighted at OSHA public hearings
 - In 2012, NIOSH co-authored Cochrane Systematic Reviews on the effectiveness of interventions to prevent occupational hearing loss
 - NIOSH co-sponsored a national workshop on noise control in manufacturing environments – February 2014, Washington D.C
- **Future plans**
 - Move toward greater use of predictive tools and work with manufacturers on prevention through design
 - Continue to grow and market the Safe-In-Sound Award

Recommendation #11: Develop noise control technologies for non-mining sectors

- **Activity B:** Develop an informational database of sound levels of powered hand tools
 - Developed user-friendly web-based “Buy-Quiet” program to guide users
 - Developed the Global Database of Noise Levels, modeled after NIOSH’s Powered Hand Tool Database
- **Impact**
 - The Powered Hand Tool database highly regarded by the National Academy of Engineering, NASA, New York City Department of Environmental Protection, National Parks Service, U.S. Department of Defense, General Services Administration, Noise Pollution Clearinghouse, Laborer’s Union
 - NIOSH has taken a leadership role in the movement toward “Buy-Quiet” programs
- **Future Plans**
 - Continue to provide leadership in “Buy-Quiet” programs

Summary

- The team has completely fulfilled 5 of the 7 recommendations with sustainable plans and strong stakeholder relationships
- The 2 items in progress are strong responses to the NA recommendations and have high priority for implementation
- The impact of this work has been significant including:
 - A highly effective strategic plan and management team
 - Strong partnerships with MSHA, OSHA, EPA, DOD, DOI, industry, and academia
 - Commercially available controls
 - Accredited laboratories
 - Surveillance integrated into each program with a major commitment to a national database
 - Over 50 new refereed publications and 520,000 hits on NIOSH noise web pages since 2012.
- The HLR team has made outstanding progress and continues to strive to achieve more

Suggested Questions for Discussion

- How to get greater participation and support for national surveillance database?
- How to facilitate manufactures of equipment moving to a prevention by design approach?
- The difficulty of hearing protection shortfalls and the need for better labeling?