

What are our priorities?

The National Institute for Occupational Safety and Health (NIOSH) Hearing Loss Prevention Program works with partners in industry, labor, trade associations, professional organizations, and academia. The program focuses on eliminating new cases of occupational noise-induced hearing loss.

What do we do?

- Develop noise controls to reduce the noise emitted by the machinery and equipment that produce hazardous noise levels.
- Reduce noise-induced hearing loss through interventions targeting hearing protection devices. Although engineering and administrative controls are more effective, and should be the first steps taken to reduce noise exposure, personal protection devices are increasingly relied upon as a means to reduce noise exposures for workers (see hierarchy of controls graphic).
- Develop evidence-based best practices for hearing loss prevention by developing NIOSH “best practices” guidelines and NIOSH Criteria documents.
- Identify, quantify and reduce risk factors associated with hearing loss due to exposures. Continuous noise risks are well understood, but much less is known about other intermittent and impulsive noise exposures.

What have we accomplished?

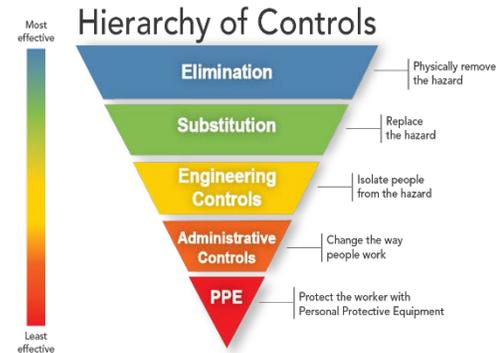
- Commercialized noise controls in mining. For example, the dual sprocket conveyor chain for the continuous mining machine and a drill bit isolator for a roof bolting machine are both commercially available and used in the field.
- Developed the NIOSH web resources for Buy Quiet, an initiative that encourages manufacturers to design quieter equipment, and encourage companies to purchase or rent quieter machinery.
- Updated the NIOSH Engineering Noise Control topic web page with new resources.
- Demonstrated the ability to predict noise emissions from machinery using a NIOSH-developed numerical modeling methodology and field validation.
- Developed a webinar and hosted three seminars to promote the use of fit-testing for more than 200 hearing conservation and safety professionals
- Developed methods for testing and rating hearing protector performance and assessing exposure risk that were included in the Department of Defense MIL STD 1474E noise limit criteria acquisition standard promulgated in April 2015.
- Examined the adequacy of different exchange rates, 3 versus 5 decibels (dB), to assess the risk of noise-induced hearing loss for noise-exposed workers.
- Published surveillance data on trends for hearing loss over 3 decades and on the prevalence of hearing loss by sectors.

What's next?

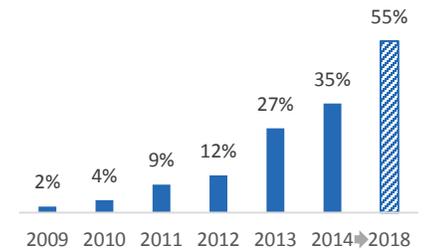
- Create a NIOSH topic web page for Hearing Protector Fit-Testing to provide the information about evidence-based best practices to integrate fit-testing into hearing loss prevention programs.
- Play a key leadership role in revising the American National Standard for Estimating Risk of incurring Occupational Hearing Loss, ANSI S3.44. The update will include recent NIOSH-derived reference data for persons as a function of age and gender.
- Publish the results of a multi-laboratory study that compared three hearing protector fit-test systems.
- Complete a meta-analysis of studies comparing the use of 3-dB and 5-dB exchange rates.
- Publish a paper on the prevalence of hearing loss in healthcare.
- Develop and demonstrate a retrofit package to reduce underground haul truck noise by 3-5 dB(A) and more than double allowable exposure time.
- Complete the smartphone noise measurement app comparison study to demonstrate the feasibility of smartphones as noise measurement devices when equipped with an adequate microphone sensor.

At-A-Glance

The Hearing Loss Prevention Program provides leadership to reduce the prevalence of occupational hearing loss. This snapshot shows recent accomplishments and upcoming work.



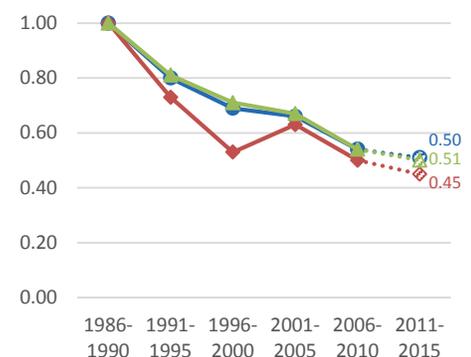
Adoption of NIOSH Controls: Percentage of continuous mining machines with dual-sprocket conveyor chain, 2009-2014



Source: NIOSH Program Records

Risk of Incidence of Hearing Loss Relative to 1986-1990 Period for:

All Industries ●, Construction ♦ & Manufacturing ▲



Source: Adapted from Masterson et al., Am J Ind Med 2015 Apr; 58(4):392-401