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UPDATE

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The Newsletter of the Council for Accreditation in Occupational Hearing Conservation

Hearing Loss Prevention in Construction

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Director of Occupational Safety and Health Laborers' Health and Safety Fund of North America (LHSFNA).

Noise-induced hearing loss (NIHL) is a major problem among construction workers. (Schneider, et. al, 1995, Suter, 2002, Neitzel and Seixas, 2005) The National Institute for Occupational Safety and Health (NIOSH) has estimated that the average 25-year-old carpenter has the hearing of a 50-year-old with no noise exposure on the job. (Stephenson and Stephenson, 2001)

Contributing Factors

One reason that NIHL is a significant problem is because construction was exempted from the 1983 hearing conservation amendment (HCA) to the OSHA occupational noise regulation, 29 CFR 1910.95. Only Washington and Oregon require that construction companies meet the requirements of the HCA in their states. The federal OSHA regulation for noise in construction, 29 CFR 1926.52, requires only that employers in construction reduce noise levels to 90 dBA (8-hour TWA) or below and provide an "effective hearing conservation program" for those exposed above the TWA. Unlike the rules for general industry, the OSHA construction noise rule does not specifically define what employers must do to comply with the hearing conservation requirement nor does it require that construction workers exposed between 85 dBA and 90 dBA be included in program. Among 17,448 construction inspections conducted by OSHA in FY 2007, noise violations accounted for only 27 citations and $19,000 in penalties. Given OSHA's generally lax oversight of construction noise, it should come as no surprise that the use of hearing protection devices (HPDs) among construction workers is quite low (Neitzel and Seixas, 2005).

Another reason that NIHL remains a serious problem in construction is the transient nature of the workforce. A construction project can last a few days or a few years. Most are relatively short. Construction workers normally change employers and jobs frequently (one worker even had 13 W-2 forms in one year). Providing audiometric testing for workers who change employers and jobs frequently is a challenge. Many employers don't feel it's their responsibility to pay for the tests because they question whether the noise exposures on their site could have caused any hearing loss, and they want to avoid possible workers' compensation case. Even when construction companies do provide hearing tests, they often find it difficult to compare the worker's current annual hearing test with tests from previous years which were provided by one or more previous employers.

The intermittent nature of noise exposures in construction is another reason that the application of current hearing conservation standards is problematic in the industry. The noise levels on construction jobs can change from day to day as a project progresses (e.g., noise exposures will increase as a building becomes enclosed). While workers may qualify for being part of a program one day (e.g. have a TWA over 85 or 90), they may not the next. To be in compliance, a company would have to make regular (perhaps even daily) noise measurements at the job site, which is just not practical.

Finally, because of the gradual onset of noise-induced hearing loss, many employers consider noise less important than safety hazards, which kill over 1,200 construction workers a year and injure thousands more.

A New Standard Defines Best Practices

A new model has been proposed in ANSI standard A10.46-2007, Hearing Loss Prevention in Construction and Demolition Work. Unlike the OSHA approach to hearing conservation, where employers take action when noise exposures exceed defined exposure limits, the ANSI standard describes a task-based method of hearing loss prevention. Workers are required to wear hearing protection whenever they are performing tasks where exposures exceed 85 dBA, even for a short time. This means that employers can use a basic sound level meter to measure noise levels during a specific activity, instead of the more complicated and expensive method of measuring employee noise exposures over an entire work shift using dosimeters. According to A10.46, once noisy tasks have been identified, employers must post signs to warn workers where noise levels exceed 85 dBA.

Under the ANSI standard, employers must, to the

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CAOHC®

Published by the Council for Accreditation in Occupational Hearing Conservation, a not-for-profit organization dedicated to the establishment and maintenance of training standards for those who safeguard hearing in the workplace.

Articles should be submitted with a black and white photograph of the author. The UPDATE *is available to individuals not certified by CAOHC at an annual subscription rate of $30.*

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Chair's Message

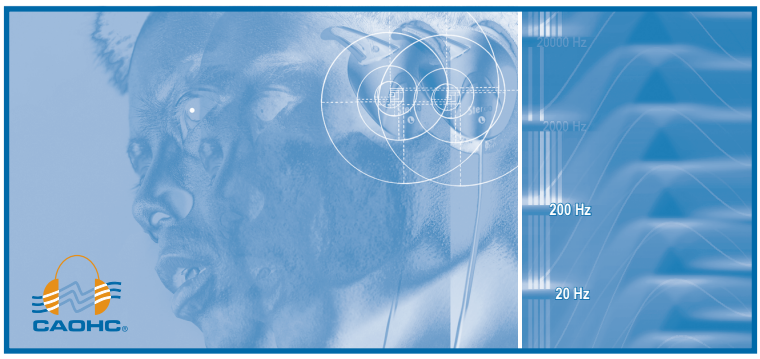
By Mary M. McDaniel, AuD CCC-A CPS/A
Pacific Hearing Conservation, Inc.
Representative of the American Speech-Language-Hearing Association

CAOHC is about raising the bar and keeping it high! From its inception, CAOHC has promoted excellence in hearing conservation. Although there is not an OSHA mandate that hearing testing be performed by a certified audiometric technician, we're proud of the fact that many companies in the US and around the world recognize the importance of quality control and strive for excellence in their hearing conservation programs (HCP). They value the training CAOHC provides and choose to employ Certified Occupational Hearing Conservationists (COHCs) to work in their programs. CAOHC continues to raise the bar, and is proud to promote the role of the Professional Supervisor (PS) of the audiometric portion of the hearing conservation program as yet another way to maintain our standard of excellence.

The Professional Supervisor has always been identified in the OSHA regulation as a role for an audiologist, otolaryngologist, or physician. The Mine Safety & Health Administration (MSHA) has the same requirement for the professional supervisor role. The role of the PS should not be confused with that of the Supervisor of the Hearing Conservation Program. The HCP supervisor may be responsible for the overall management and effectiveness of the program and my also be the direct administrative supervisor of the OHC. However, the responsibility to ensure that audiograms are being correctly performed and that appropriate follow-up and referral activities are completed belongs to the PS. Although COHCs play a crucial role in the success of hearing conservation programs, they are not qualified to supervise the audiometric testing or referral process, regardless of how well trained they may be.

In addition to ensuring valid and reliable audiometric testing and proper follow-up, the responsibilities of the PS include establishing protocols for audiogram evaluation (i.e. age adjustment and revised baselines), managing the audiometric database, and determining the work-relatedness of a hearing loss cases. These elements are what elevate a hearing conservation program from "compliant" to "effective". They are an extremely valuable part of a hearing conservation program and essential to the proper functioning of the OHC.

OHCs who complete the CAOHC curriculum are highly qualified and valuable team members who can, when working closely with their Professional Supervisor, make a significant impact on the lives of noise-exposed workers. Hearing Conservation requires a team effort. Work to build and strengthen your team, keep the bar high, and strive for excellence. CAOHC....there is no equal!

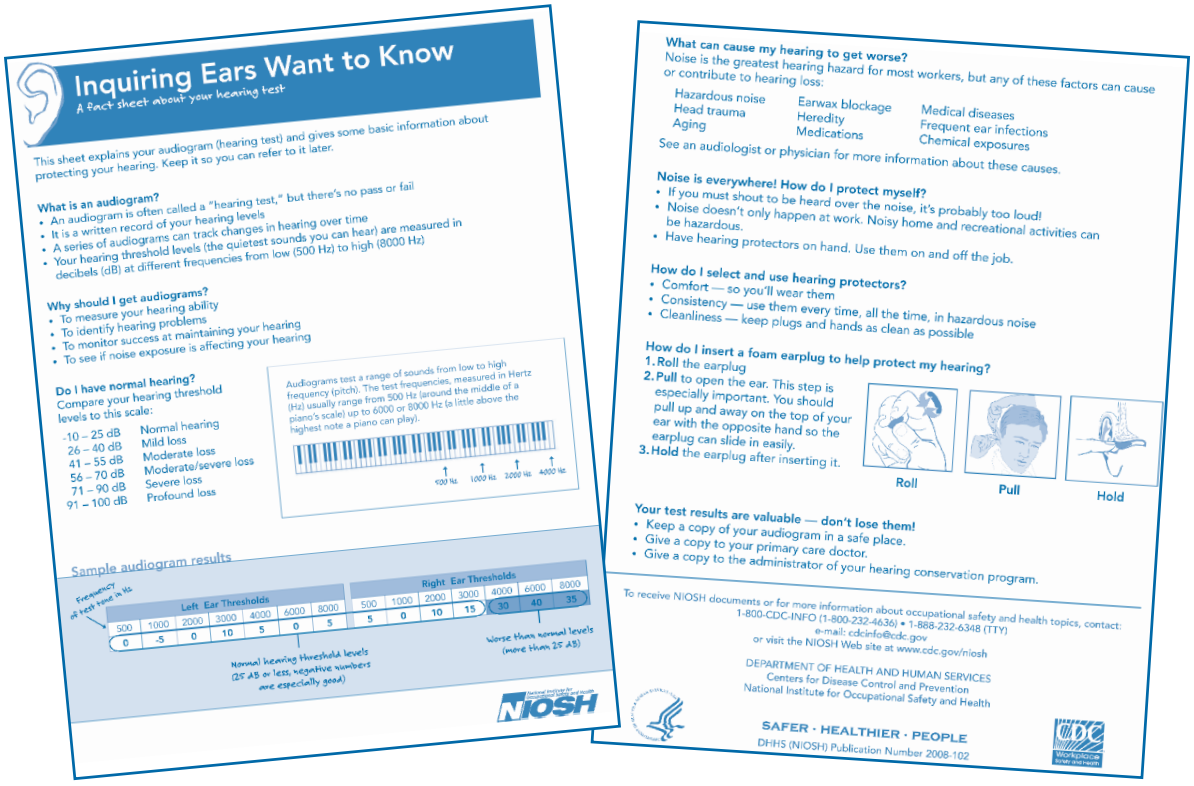


OHC Corner

NIOSH Flyer Answers Workers' Questions About Audiograms & Hearing Loss

Many workers receive an audiogram at some point, especially if they are in a hearing conservation program, but what do the results mean? The NIOSH publication titled "Inquiring Ears Want to Know" contains important answers to frequent questions workers ask about their audiograms. It is a single page (two-sided) fact sheet that addresses why workers should get regular audiograms, how to understand the results, and why the results should be saved to help evaluate and maintain the worker's hearing. It also has some basic information on the causes of hearing loss and how to prevent it.

You can download the document (NIOSH Publication number 2008-102) for free online at: http://www.cdc.gov/niosh/mining/pubs/pubreference/outputid2573.htm



Inquiring Ears Want to Know

A fact sheet about your hearing test

This sheet explains your audiogram (hearing test) and gives some basic information about protecting your hearing. Keep it so you can refer to it later.

What is an audiogram?
- An audiogram is often called a "hearing test," but there's no pass or fail
- It is a written record of your hearing levels
- A series of audiograms can track changes in hearing over time
- Your hearing threshold levels (the quietest sounds you can hear) are measured in decibels (dB) at different frequencies from low (500 Hz) to high (8000 Hz)

Why should I get audiograms?
- To measure your hearing ability
- To identify hearing problems
- To monitor success at maintaining your hearing
- To see if noise exposure is affecting your hearing

Do I have normal hearing?
Compare your hearing threshold levels to this scale:

-10 – 25 dB	Normal hearing
26 – 40 dB	Mild loss
41 – 55 dB	Moderate loss
56 – 70 dB	Moderate/severe loss
71 – 90 dB	Severe loss
91 – 100 dB	Profound loss

Audiograms test a range of sounds from low to high frequency (pitch). The test frequencies, measured in Hertz (Hz) usually range from 500 Hz (around the middle of a piano's scale) up to 6000 or 8000 Hz (a little above the highest note a piano can play).

500 Hz 1000 Hz 2000 Hz 4000 Hz

Sample audiogram results

Frequency at test tone in Hz	Left Ear Thresholds						Right Ear Thresholds					
	500	1000	2000	3000	4000	6000	8000	500	1000	2000	3000	4000	6000	8000
	0	-5	0	10	5	0	5	5	0	10	15	30	40	35

Normal hearing threshold levels (25 dB or less, negative numbers are especially good)

Worse than normal levels (more than 25 dB)

NIOSH

What can cause my hearing to get worse?
Noise is the greatest hearing hazard for most workers, but any of these factors can cause or contribute to hearing loss:

Hazardous noise	Earwax blockage	Medical diseases
Head trauma	Heredity	Frequent ear infections
Aging	Medications	Chemical exposures

See an audiologist or physician for more information about these causes.

Noise is everywhere! How do I protect myself?
- If you must shout to be heard over the noise, it's probably too loud!
- Noise doesn't only happen at work. Noisy home and recreational activities can be hazardous.
- Have hearing protectors on hand. Use them on and off the job.

How do I select and use hearing protectors?
- Comfort — so you'll wear them
- Consistency — use them every time, all the time, in hazardous noise
- Cleanliness — keep plugs and hands as clean as possible

How do I insert a foam earplug to help protect my hearing?
1. **Roll** the earplug
2. **Pull** to open the ear. This step is especially important. You should pull up and away on the top of your ear with the opposite hand so the earplug can slide in easily.
3. **Hold** the earplug after inserting it.

Roll Pull Hold

Your test results are valuable — don't lose them!
- Keep a copy of your audiogram in a safe place.
- Give a copy to your primary care doctor.
- Give a copy to the administrator of your hearing conservation program.

To receive NIOSH documents or for more information about occupational safety and health topics, contact:
1-800-CDC-INFO (1-800-232-4636) • 1-888-232-6348 (TTY)
e-mail: cdcinfo@cdc.gov
or visit the NIOSH Web site at www.cdc.gov/niosh

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

SAFER · HEALTHIER · PEOPLE

DHHS (NIOSH) Publication Number 2008-102

LT CDR David C. Byrne, MS, CCC-A

Spotlight on a CAOHC Course Director

LT CDR David C. Byrne, MS, CCC-A David received a B.A. in Physics from the University of Pittsburgh and an M.S. in Audiology from the Pennsylvania State University, with additional graduate study in acoustics. As a Captain in the U.S. Army he was Chief of the Audiology Clinic and the Hearing Conservation Officer for the 10,000 soldier hearing conservation program at Fort Sill, Oklahoma. After three years of active duty, he became a Hearing Conservation Consultant within the Bio-Acoustics Division at the U.S. Army Environmental Hygiene Agency, located at the Aberdeen Proving Ground in Maryland. David later took a position as a Senior Consultant for Associates in Acoustics, Inc., where he was responsible for conducting engineering noise control surveys, data analysis, and design of recommendations for industrial noise control.

David has been a Research Audiologist with the National Institute for Occupational Safety and Health (NIOSH) for the past 10 years. Initially, he was located at the NIOSH Pittsburgh Research Laboratory, where he worked on hearing loss prevention projects within the mining industry. David transferred his Army Reserve commission and entered Active Duty with the U.S. Public Health Service in 2006. He is currently stationed at the NIOSH Robert A. Taft Laboratories in Cincinnati, Ohio. His primary responsibilities include formulating and conducting both field and laboratory research involving the effects of exposure to noise.

In addition to his certification as a CAOHC Course Director, David holds the Certificate of Clinical Competence in Audiology (CCC-A) from the American Speech-Language-Hearing Association (ASHA), and an audiology license from the State of Pennsylvania. He also served for several years as the co-chair of the National Hearing Conservation Association (NHCA) Publications Committee and Editor of its newsletter, Spectrum.

Suggestions for a Hearing Protector Fitting Practicum

Elliott H. Berger, MS
Senior Scientist, EAR/Aearo Technologies

Quite often the business end of a hearing conservation program is the correct and consistent use of hearing protection. This requires proper training and motivation of employees. The importance of this cannot be overstated, in light of the numerous studies indicating that a very high percentage of hearing protection wearers, who are enrolled in hearing conservation programs achieve poor noise reduction performance in the workplace. However, fitting hearing protection devices (HPDs) doesn't require sophisticated technical wizardry or an advanced education. Although there is new technology to measure in-field performance, (Berger, 2007) its use is not widespread. The common-sense techniques described here can provide an adequate indication of the quality of the hearing protector fit. Teaching the fitting of hearing protectors may seem mundane, and it can be. However, it calls for commitment, experience, and sufficient time with each individual - and that's what we hope will be demonstrated and instilled in all Occupational Hearing Conservationists (OHCs) and Course Directors (CDs).

Certified OHCs need to be knowledgeable about the types and selection of HPDs and skilled in teaching the proper fitting techniques and monitoring HPD use in the workplace. In the 20-hr. OHC course, one hour is devoted to hearing protector "theory," items related to attenuation, ergonomics, and company policies etc. An additional hour is comprised of the hearing protector fitting practicum, including ear inspection. Although some hearing conservationists have objected to spending that much time teaching HPD fitting, I find that at least 2/3 of people who are nominally "experienced" hearing-protection users walk away with a valuable take home, and at least ¼ of them could not correctly insert a foam earplug prior to the training. Even if your students grasp only one or two gems, or experience a single "ah-ha" moment, the session will be well worth it. It is important that everyone involved in hearing conservation, regardless of how often he/she is involved in teaching others to fit HPDs, be as knowledgeable as possible with the one tool that in nearly all instances can prevent noise-induced hearing loss, namely a well-fitted earplug or earmuff

Students should be taught the use of 1) roll-down foam earplugs, 2) premolded earplugs, 3) semi-insert devices (canal caps), and 4) earmuffs. These cover the major categories of hearing protection (with the exception of custom earmolds that are not practical to work with in this setting. The amount of time focused on foam earplugs is due to the popularity and effectiveness of those devices and my observation over many years that much can be learned about ears and plugs by using them.

Preparation

It is best for this class to be taught with all participants standing. It promotes interaction and makes it easier for all to work with their ears and those of their classmates. Each group of no more than 8 students should be situated around a small table with the supplies they need. Cocktail rounds are ideal because of their height and small diameter. It is also helpful, if in the room, you have a slide screen and projector available to project information that you would like to share during the fitting seminar. One suggested set of slides on using foam earplugs is available at www.e-a-r.com/hearingconservation.

Recommended references on teaching how to fit hearing protectors are listed at the end of the article. The brochure, Tips and Tools for Fitting E-A-R Foam Earplugs (Aearo Company, 2001), is an excellent resource for fitting foam earplugs and also provides information on how to use the E-A-R Roll Model as a training aid.

A list of suggested supplies is located on page 9. A more extensive article is available on the CAOHC website under the Teaching Tools section
http://www.caohc.org/publications/teachingtools.php

Suggested Outline For A Practicum

1) **Otoscopic inspection for hearing protector fitting** Choose an easy eardrum for all to view. Stress importance of looking around at the entrance to canal, on the way to examining the actual canal itself. Use earlight (if available) but discuss alternative use of otoscope. Illustrate pinna pull, direction of canal, and direction to insert plug. Everyone looks in neighbor's canal with earlight. Follow by everyone using the otoscope. Stress bracing fingers against cheek with otoscope held like pencil so that canal of student is protected.
2) **Demonstrate use of foam earplugs in slide presentation format** It is helpful to first demonstrate correct use with a set of PowerPoint slides such as the one cited above.
3) **Rolling and inserting foam plugs** Roll Model practice – all students roll plugs and practice inserting into Roll Model for proper depth and no wrinkles (see Tips and Tools for Fitting Foam Earplugs) Instructor fits off-hand ear of each student and asks them to fit the other. Students should also practice fitting each other. Stress importance of pinna pull direction. It is helpful to continuously move direction of pinna pull during insertion until plug slides easily in place.

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Hearing Loss Prevention In Construction – continued from page 1

extent feasible, use engineering and administrative controls to reduce noise levels to below 85 dBA. Where such controls are not feasible or do not reduce noise levels far enough, employers must give workers a choice of hearing protectors. The hearing protectors worn by the worker must be capable of reducing noise levels to 85 dBA or below, but no lower than 70 dBA in order to reduce the risk of overprotection. In calculating how much noise reduction is provided by the hearing protectors, employers should apply a safety factor or "derating" to the Noise Reduction Rating (NRR) as a better estimate of performance of hearing protectors in the workplace. Although the specific method for derating (e.g. NIOSH or OSHA) is left to the employer, several derating schemes are listed in the appendix. A specific derating system may be recommended once changes to the NRR have been implemented by the EPA.

Audiometric Testing Issues

Who should get hearing tests, who pays for them and who will keep the records are difficult questions in construction. It may be easy to address these issues in a unionized workforce where employers are already paying into a centralized fund for health benefits. However, in a non-union setting, the solutions are more difficult. ANSI A10.46 recommends audiometric testing for workers who have more than 30 days of exposure to noise above 85 dBA during the year. Many on the A10 committee felt strongly that all construction workers need to have annual audiometric tests. However, given the difficulties with providing such services in remote locations and the very transient nature of the workforce, the committee decided, for now, to only make this a strong recommendation. The standard also suggests that employers may be able to provide hearing test services using procedures similar to those used to conduct drug tests, lead screenings or medical exams for asbestos work. Employers are encouraged to use centralized facilities (e.g., internet storage) to make it easier for workers to access their records.

It is recommended in ANSI A10.46that workers receive training annually on the hazards of noise, noisy tasks, noise control measures, the proper use and fit of hearing protectors, the purpose and procedures of audiometry and the early symptoms of hearing loss. The standard also requires that hearing conservation programs be evaluated annually. Evaluations can include measures such as the number of workers exposed to noise above 85 dBA, the number of workers with a Significant Threshold Shift (STS) and the number of workers using Hearing Protective Devices. If the evaluation is negative, employers must reevaluate their hearing conservation efforts and noise control measures.

Need for OSHA Action

While ANSI A10.46 describes how construction companies can feasibly implement hearing conservation programs for their workers, it is a voluntary standard. Until such time that employers are required by law to follow the practices in the standard, it is unlikely that many employers will do so. For the past 25 years, noise-exposed workers in general industry have had the benefit of a comprehensive hearing conservation standard, 1910.95. In the last 5 years, OSHA has acknowledged that a new hearing conservation standard for the construction industry is needed and placed the issue on its list of long term action items. The time has come for construction workers to have the same protection as workers in general industry. We must continue to press OSHA to move forward and promulgate a new hearing conservation standard for the construction industry based on the practices defined in ANSI A10.46. Unfortunately, until OSHA acts, hearing loss will continue to be a major problem in construction.

More Information

Copies of ANSI A10.46-2007 can be purchased online from ANSI, at http://webstore.ansi.org/
or from the American Society of Safety Engineers (ASSE) at www.asse.org. Much more information on construction noise and hearing loss can also be found on the Laborers' Health and Safety Fund website www.lhsfna.org under "Occupational Safety and Health" and on Rick Neitzel's webpage at the University of Washington http://staff.washington.edu/rneitzel/.

Occupational Safety and Health Laborers' Health and Safety Fund of North America (LHSFNA). The Fund is a non-profit associated with the Laborers' International Union of North America (LIUNA) which represents 500,000 primarily construction workers in the US and Canada.

References

Neitzel, R. and Seixas, N. (2005). The effectiveness of hearing protection among construction workers. J. Occ. Env. Hygiene 2, 227-238.

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Stephenson, C.M, Stephenson, M. (2001). Noise-induced hearing loss in the construction industry. Presentation at OSHA Advisory Committee for Construction Safety and Health (ACCSH), Washington, DC.

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Safe in Sound Award Update

Hearing loss is a major health and quality-of-life problem in the United States; hearing loss is the second most self reported ailment after back problems. One way to tackle this problem is to reward companies that have excellent programs for preventing hearing loss. The companies that recognize that mere compliance with regulations won't prevent hearing loss, but will only document its progression. The work places that have redirected their programs to promote best practices and strive to eliminate hearing loss from work-related noise exposures.

Toward this end, the National Institute for Occupational Safety and Health (NIOSH), in partnership with the National Hearing Conservation Association (NHCA), has established a new award to be given each year to the companies or organizations that exemplify "Excellence in Hearing Loss Prevention." This prestigious award is called "Safe in Sound" and will be first presented at the NHCA annual conference in February, 2009 in Atlanta, Georgia. One award will be given in each of the following economic sectors: manufacturing, services, and construction. An additional award will be given for innovation in hearing loss prevention, which could be anything from a new product, training program, software program or other new and effective ideas. This award will recognize an organization from any economic sector for their dedication to fostering and implementing new and unique advancements in the prevention of hearing loss that other companies or organizations may adopt.

The objectives of these awards are to nationally recognize organizations that document measurable achievements in hearing loss prevention programs, obtain information on their real-world successes, and widely disseminate information on how others can use these successful strategies or benchmark their own programs.

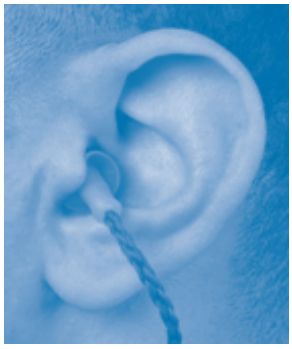
A website, www.safeinsound.us, has been established to provide more information on the award and to provide specifics on how to submit nominations/applications. If you know of any organizations with outstanding hearing loss prevention programs or innovative approaches, please encourage them to apply as nominations are now being accepted until September 1, 2008.

SAFE·IN·SOUND
EXCELLENCE IN HEARING LOSS PREVENTION AWARD

Spotlight and YOU!

If you would like to nominate yourself or another CAOHC certified individual (OHC, CPS/A, CD) to appear in our feature Spotlight section of the UPDATE, please submit a short summary of why the person should be highlighted, as well as a resume and headshot if available to info@caohc.org.

QuickFitWeb



To help you get the most from your hearing protectors, researchers at the National Institute for Occupational Safety and Health's (NIOSH) Pittsburgh Research Laboratory have developed QuickFitWeb, an online tool to check your hearing protection in a minute or less. By listening to a 1000 Hz octave band noise with the ears open and then listening with the hearing protectors in place, users can check to see if their hearing protection is providing at least 15 decibels of attenuation. You can try it yourself on the NIOSH website and even post your comments about the tool on the NIOSH blog.

http://www.cdc.gov/niosh/mining/topics/hearingloss/quickfitweb.htm

Individual Fit Testing of Hearing Protection

Hearing loss prevention consultant for Aearo Technologies (a 3M company) and Sonomax Hearing Healthcare. Representative of the American Industrial Hygiene Association

Individual fit testing of hearing protection devices (HPDs) is gaining acceptance as a useful hearing loss prevention tool. New technologies are emerging which allow employers to perform quantitative fit testing of earplugs, just as they have done for many years with respirators, as a method of verifying the noise reduction provided by hearing protectors. (Berger, 2007)

With this new technology, it may be useful to consider how hearing conservationists can use fit testing to improve the quality of their hearing conservation programs.

Fit Training

Even though a group of workers may have used particular HPDs for years, individuals within that group may not be getting an optimal fit and may be unaware of what a good fit should feel and sound like. Individual fit testing typically provides a single number, called a personal attenuation rating (PAR). The PAR describes how much attenuation a given HPD provides an individual based on how that individual has fit the device.

Showing the worker how much protection he or she is getting with the hearing protector that is currently being used can be a powerful educational and motivational tool. This is particularly true with respect to demonstrating how seemingly small changes in fitting technique can make a substantial difference in hearing protector comfort and performance. Consider the worker who finds his PAR is 12 dB when using his standard fitting technique. Showing him that he could achieve a PAR of 30 dB by changing his fitting technique could have a profound influence on how he will wear his HPD in the future.

With workers who have an unacceptably low PAR, an indication that the worker may be obtaining insufficient noise reduction from the device, fit testing may help to determine if the HPD itself is inadequate, or if their fitting technique is incorrect. When the fitting technique is faulty, personal counseling and training on HPD fitting techniques such as the pinna pull and the tug and pump tests, can help wearers obtain a better fit and help decrease their exposure to noise and other loud sounds.

Train-the-Trainer

Not only do many noise-exposed workers not understand HPD fitting, but many people who dispense HPDs have never received any training in fitting them. The ability to quantify HPD performance can help the motivated OHC to improve their skills in fitting and training hearing protectors. Being able to equate a given HPD "look" with a given amount of protection can help trainers and OHCs become better at ensuring sufficient protection every day, and can help to correct some improper assumptions regarding HPD fit.

A "passing" PAR essentially quantifies that the worker knows how to use their HPD in a manner to give them sufficient protection. A measurable outcome like PAR can be an excellent affirmation of the effectiveness of training.

HPD Selection

Despite the recommendations of a knowledgeable hearing conservationist, workers still may select an HPD that is not well suited for the situation. Although workers are wise to choose an HPD based how comfortable it seems, in some cases a "comfortable" HPD is the result of a poor fit which may leave them with inadequate protection from noise.

Earcanal size and geometry, the ergonomics of insertion and use, and other factors may affect the way the HPD performs. Individual fit testing can help a worker choose an HPD that is appropriate for the noise exposure, his ear anatomy, and personal protection needs.

HPD Assignment

There may be situations where it is important to restrict the HPD used based on extreme noise levels. Individual fit testing can help identify which protectors are appropriate when high noise reduction is needed and can "qualify" workers by demonstrating that they are obtaining sufficient attenuation for the environment using the selected HPD.

STS Follow-up

When a standard threshold shift (STS) is detected, a series of follow-up activities should be initiated. One of these activities is the evaluation of the sufficiency of the HPD worn by the worker. Individual fit testing can meet this need by quantifying the PAR achieved by the individual. Sufficiency can be determined by comparing the PAR of a worker to her noise exposure to verify that she is protected to an effective level of 85 dB TWA or less.

Answering Questions

Why is there more hearing loss in one department than in another? Are younger workers getting more hearing loss than older workers? How are the new HPDs working? An individual fit testing program can be of great benefit in answering these and many other questions. Departments where proper HPD use is not enforced can be identified for follow-up and additional training. PAR results for various demographic groups (by age, gender, length of service, etc.) can be compared to detect strengths and weaknesses in training and program administration.

Documentation

One of the difficulties in managing hearing conservation programs is how to factor in all of the noise that employees are exposed to outside of work– between motor sports venues, chainsaws, motorcycles, and MP3 players, noise is all around us. If the only hearing test a worker gets is in the workplace,

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Individual Fit Testing of Hearing Protection – continued from page 7

there may be a tendency to blame the workplace for all of his hearing loss, when in fact, there could be multiple causes including recreational and environmental noise exposure.

Quantifying HPD performance and documenting it regularly, should give the hearing conservation program manager and professional supervisor another tool to use when trying to determine whether a given hearing loss is work-related. Rather than relying on anecdotes and assumptions, they can look at the PAR achieved by the worker involved, and compare that to the worker's noise exposure. With a PAR appropriate for the noise exposure, there can be greater assurance that the worker received adequate protection from occupational noise exposure, and that other causes for hearing loss should be considered.

Individual fit testing of hearing protectors is an idea whose time has come. Fit testing can improve understanding of HPD performance, and by doing so, help prevent hearing loss.

Berger, E. H. (2007). Fit testing hearing protectors. Update 19(2).

Suggestions for a Hearing Protector Fitting Practicum – continued from page 4

4) **Checking and demonstrating the fit**
With finger, feel position of back end of earplug relative to the tragus as this is a rough guide to insertion depth. Use tweezers to remove plugs so they do not become distorted and then "read" the plugs for depth of insertion, and for wrinkles or creases. Optional (requires presentation of a constant broad band noise): Tightly cup hands over ears to listen for differences in the perceived sound (see EARLog 19).

5) **Comments re deep fitting and advantages of a better fit with foam earplugs**
Deep fitting is rarely a problem with foam earplugs, even of the cylindrical variety. Mention the solutions that include: rolling the plug into a golf tee shape for a natural stop, using plugs with attached cords, or buying some of the longer foam earplugs or flared foam earplugs that are on the market today. Advantages of deeper fits of foam plugs are generally better comfort, more noise reduction, and less occlusion effect (OE).

6) **Fitting a premolded earplug**
Once again, stress pinna pull and helping determine proper direction of pull for each individual ear. Warn re need for slow withdrawal with premolded earplugs so as not to create suction and hurt the ear. As above, fit earplug in off-hand ear of each student and have her/him match in other ear. Demo TUG test and PUMP test (see EARLog 19 for description). Optional: while in noise have students break seal and listen to difference in noise reduction Optional: while in noise perform cupped-hands over plugs "earmuff test" as noted above.

7) **Listening to and use of the occlusion effect (OE)**
Review meaning of, and listen to the OE. See EARLog 19 for discussion of this effect and how it varies for depth of insertion of foam earplugs. Listen to OE by creating it with thumb over ear while saying "boom beat." Fit one ear with premolded plug and listen to OE which will be dominant in the occluded ear. Fit other ear and now again listen to OE to perceive how it is centered in the head. OE works for earmuffs too by lifting one cup at a time, and also for foam earplugs, though with foam plugs (unlike premolded plugs), usually less OE is better because that indicates a deeper fit.

8) **Use of the Eargage**
Demonstrate use for approximate sizing for those inexperienced in fitting HPDs. Fit for minor suction and until tab is at floor of concha.

9) **Fitting earmuffs**
Easier to fit than earplugs, but still requires attention and sizing. Demonstrate: cup centered around pinna cushion sealing against skull, not against hair or over pinna/lobule proper positioning of headband directly over top of head band extension for uniform cushion compression uniform pressure around ear removal of obstructions OE test can work with earmuffs too.

References

Berger, E. H. (1988). EARLog #19 - Tips for fitting hearing protectors. Sound and Vibration 22(10), 22-25.
Web site: http://www.e-a-r.com/pdf/hearingcons/earlog19.pdf

Aearo Company (2001). Tips and tools for fitting and using E-A-R foam earplugs [Brochure]. Indianapolis IN: Berger, E. H.
Web site: http://www.e-a-r.com/pdf/hearingcons/tipstools.pdf

Berger, E. H. (2007). Fit testing hearing protectors. Update 19(2), p.5 and 7-8.

Suggested Reading

Royster, J. D. and Royster, L. H. (1994). Practical tips for fitting hearing protection. Hearing Instr. 45(2), 17-18.

Royster, L. H. and Royster, J. D. (2000). Education and motivation. In E. H. Berger, L. H. Royster, J. D. Royster, D. P. Driscoll, and M. Layne (Eds.), The Noise Manual, 5th Edition (pp 245-278). Fairfax, VA: AIHA.

Suggested Supplies for a Hearing Protector Fitting Practicum

ITEM	QUANTITY	EXAMPLE and NOTES
HPDs		
Foam earplugs	4 pr./person	
Premolded earplug	1 pr./person (if single sized) Suitable size selection if multi-sized	
Semi-insert (canal cap)	2 pr. /group	
Earmuffs	2 pr./group	
OPTIONAL TRAINING AIDS		
Roll Models	at least 1 per 2 students	available from Aearo Company*
Eargages	at least 1 per 2 students	available from Aearo Company*
EQUIPMENT		
Otoscopes	at least 2 per group	
Earlights	1 per person (optional)	penlight with a clear plastic probe on the tip
Tweezers (blunt)	3 pair	
Sound system	2 speakers for high-level noise	optional to allow listening to HPDs
SUPPLIES		
Specula	1 bag (40/bag)	**Note:**
Cotton Balls	1 bag	* Products are suggestions made by the author and are not endorsed or required by CAOHC.
Alcohol	1 bottle	
Batteries	extras for the otoscopes or earlites	

Hearing Conservation Standards and Regulations

CONGRESS SLATED TO URGE OSHA TO FOCUS ON HEARING PROTECTION

According to a May 2008 report by the International Safety Equipment Association (ISEA), the U.S. House of Representatives plans to move forward with a recommendation to OSHA that, with its FY09 funding, the Agency should focus on hearing protection regulations. The recommendation is in the form of "report language," which is not binding, but federal agencies heed it closely. The hearing protection "report language" addresses hearing protection for construction and general industry. The report language would state:

- The Committee notes that OSHA is responsible for regulation of occupational exposure to hazardous noise, but nearly thirty years after the issuance of a hearing standard for general industry, OSHA has failed to issue a similar rule to protect workers in the construction industry. Though a hearing conservation standard has been on OSHA's regulatory agenda for years, it has been downgraded to an item for long-term action.
- The Committee urges OSHA to put this rulemaking back on the active regulatory agenda and move forward to issue a regulation.
- In addition, when the Environmental Protection Agency (EPA) publishes its final rule on hearing protectors, for which EPA's Office of Air and Radiation has jurisdiction, the Committee expects OSHA shall develop a plan, with timelines for expected action, to update regulations for occupational exposure to hazardous noise based on the new EPA rule, current science, and best practices.

ISEA reports that, while the appropriations process is moving forward, there is no specific date for next action on the Labor-HHS-Education Appropriations bill, which contains funding for OSHA. If you'd like to help support these recommendations please contact ISEA Public Affairs Director Dan Glucksman for more information and suggestions for contacting members of Congress. He can be reached at 703-525-1695 ext 19 or by email dglucksman@safetyequipment.org.

Final 2008 Course Director Workshops Offering

This one-day workshop is required for certification of new and recertifying Course Directors. The Council will conduct a Course Director Workshops in the Fall of 2008.

Date: Friday, November 7, 2008
Location: Sheraton Gateway Suites, Rosemont, IL

The Course Director (CD) is the individual responsible for planning and conducting training courses for OHCs. The Director is responsible for ensuring that specific CAOHC guidelines are followed and for determining the qualifications and competence of participating faculty members. Course Director certification and recertification is granted for a five-year period.

Look for 2009 course offerings online in the Fall of 2008. For more information and to register for upcoming CD workshops, visit us online at www.caohc.org/workshop/

Final 2008 Professional Supervisor Course Offering

This one-day course is aimed at audiologists or physicians seeking instruction in the role and scope of practice of the professional supervisor of the audiometric monitoring component of hearing conservation programs. The Council will conduct a professional supervisor course in the Fall of 2008.

Date: Saturday, November 8, 2008
Location: Sheraton Gateway Suites, Rosemont, IL

The Professional Supervisor of the Audiometric Monitoring Program in a Hearing Conservation Program may be an audiologist, otolaryngologist, or other physician. This professional supervisor plays a critical role in ensuring the effectiveness of a hearing conservation program; working in conjunction with other professionals, including Occupational Hearing Conservationists (OHCs), Industrial Hygienists, Safety professionals, employers, and employees and their representatives.

Individuals seeking national certification by CAOHC as a Professional Supervisor (CPS/A) must complete an application, on-line exam and submit a case study within 30 days of the course completion.

Look for 2009 course offerings online in the Fall of 2008. For more information and to register for a PS course, visit us online at www.caohc.org/professional_supervisor/course.php

2007 Top 25 Most Active CD's

1. Timothy A. Swisher, MA CCC-A
   Hearing Safety
   Pittsburgh, PA
2. John H. Elmore, AuD MBA CCC-A
   Precision Hearing Conservation
   Helotes, TX
3. James J. Jerome, MA CCC-A
   Workplace Hearing-Midwest Inc
   Fishers, IN
4. Johnny L. Sanders, MA CCC-A
   Health Testing Solutions, LP
   Houston, TX
5. Charles E. Fankhauser, PhD
   MEDI
   Benicia, CA
6. Robert C. Rhodes, PhD
   OMI
   Hattiesburg, MS
7. Linda K. Moulin, PhD JD
   Environmental Technology Corp.
   Roswell, GA
8. Melette L. Meloy, MS CCC-A
   Sound Solutions
   Dallas, GA
9. Cheryl S. Nadeau, MEd FAAA
   Workplace Group
   Greensboro, NC
10. Georgia W. Holmes, AuD CCC-A
    UAB Deep South Center
    Montgomery, AL
11. Thomas D. Thunder, AuD FAAA INCE Bd.Ct.
    Acoustic Associates, Ltd.
    Palatine, IL
12. Kathryn M. Deppensmith, MS CCC-A
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    Nevada City, CA
13. Kirsten R. McCall, AuD CCC-A
    Center for Hearing Health
    Renton, WA
14. Thomas H. Cameron, PhD CCC-A
    Environmental Investigations, Inc.
    Morrisville, NC
15. Rodney M. Atack, PhD
    Hearing Health Care
    Portland, OR
16. Pamela J. Gordon, MS CCC-A
    Gordon Hearing Conservation, Inc
    Chester, CT
17. Roger M. Angelelli, PhD
    Audiometric Baseline Consulting
    Bethel Park, PA
18. Edward W. Korabic, PhD CCC-A
    Marquette University
    Milwaukee, WI
19. Margaret Sasscer, AuD CCC-A
    Constellation Energy
    Baltimore, MD
20. George R. Cook, Jr., AuD CCC-A
    Workplace Hearing, Inc.
    Greensboro, NC
21. Carol J. Snyderwine, CCC-A
    South Pointe Hospital
    Painesville, OH
22. Ted K. Madison, MA CCC-A
    3M Occ Health & Envir.Safety Div
    Saint Paul, MN
23. Melissa B. Lyon, MA CCC-A
    Hearing Health Associates, PC
    Marion, IN
24. Gaye Chinn, MS CCC-A
    Washington Audiology Services, Inc.
    Seattle, WA
25. Thomas W. Norris, PhD (tied)
    The Hearing Center
    Omaha, NE

    Laura Kauth, MA CCC-A (tied)
    Audiology Consultants, PC
    Davenport, IA

UPCOMING OHC CERTIFICATION AND RECERTIFICATION COURSES* 2008

*The listed dates indicate day one of the scheduled classes; certification courses are 20 hours in length; recertification classes are 8 hours.

Current as of May 2008, the list provided below is a sample of OHC Courses and is not meant to be extensive.
Please visit our website for a current and complete list at www.caohc.org.

Begin Date	State	City	Course Director	Phone
8/1/2008	OH	Dayton	Chris Pavlakos	937-436-1161
8/4/2008	OR	Portland	Rodney Atack	503-614-8465
8/4/2008	MS	Hattiesburg	Robert Rhodes	601-264-3545
8/5/2008	OR	Portland	Rodney Atack	503-614-8465
8/5/2008	MS	Hattiesburg	Robert Rhodes	601-264-3545
8/6/2008	OR	Portland	Kathryn Deppensmith	800-869-6783
8/6/2008	TX	Dallas/Ft Worth	John Elmore	800-357-5759
8/6/2008	FL	Jacksonville	Nancy Green	904-880-1710
8/6/2008	AL	Birmingham	Georgia Holmes	205-934-7178
8/6/2008	IN	Indianapolis	James Jerome	317-841-9829
8/6/2008	OH	Cincinnati	Timothy Swisher	412-367-8690
8/7/2008	OR	Portland	Kathryn Deppensmith	800-869-6783
8/7/2008	TX	Dallas/Ft Worth	John Elmore	800-357-5759
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8/7/2008	IN	Indianapolis	James Jerome	317-841-9829
8/7/2008	NC	Greensboro	Cheryl Nadeau	336-834-8775
8/7/2008	OH	Cincinnati	Timothy Swisher	412-367-8690
8/11/2008	FL	W Palm Beach	Herbert Greenberg	678-352-0312
8/12/2008	GA	Atlanta	Michele Alexander	336-834-8775
8/12/2008	MA	Auburn	Steven Fournier	508-832-8484
8/12/2008	FL	W Palm Beach	Herbert Greenberg	678-352-0312
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8/13/2008	CO	Greeley	Laurie Wells	970-593-6339
8/14/2008	MI	Detroit	Robert Rhodes	800-869-6783
8/14/2008	PA	Pittsburgh	Timothy Swisher	412-367-8690
8/15/2008	CO	Greeley	Deanna Meinke	970-351-1600
8/20/2008	NC	Morrisville	Thomas Cameron	919-459-5255
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8/20/2008	OR	Aloha	Michael Fairchild	503-259-2685
8/20/2008	TN	Nashville	Melette Meloy	678-363-9897
8/20/2008	FL	Orlando	Robert Rhodes	800-869-6783
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8/21/2008	FL	Orlando	Robert Rhodes	800-869-6783
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8/27/2008	IL	Chicago/ Schaumburg	Thomas Thunder	847-359-1068
9/2/2008	WA	Seattle	Mary McDaniel	206-706-7352
9/2/2008	WA	Seattle	Mary McDaniel	206-706-7352
9/3/2008	SC	Greenville	Michele Alexander	336-834-8775
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9/4/2008	SC	Greenville	Michele Alexander	336-834-8775
9/4/2008	KY	Louisville	James Jerome	317-841-9829
9/8/2008	GA	Atlanta	Herbert Greenberg	678-352-0312
9/9/2008	MA	Auburn	Steven Fournier	508-832-8484
9/9/2008	GA	Atlanta	Herbert Greenberg	678-352-0312
9/9/2008	CA	Fremont	Kirsten McCall	425-254-3833
9/10/2008	UT	Salt Lake City	Pamela Cronin	801-566-8304
9/10/2008	CO	Denver	John Elmore	800-357-5759
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9/10/2008	PA	Philadelphia	Timothy Swisher	412-367-8690
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9/11/2008	PA	Philadelphia	Timothy Swisher	412-367-8690
9/12/2008	PA	Pittsburgh	Roger Angelelli	412-831-0430
9/16/2008	ME	Waterville	Anne Louise Giroux	207-872-0320
9/16/2008	NH	Manchester	Pamela Gordon	860-526-8686
9/17/2008	IL	Chicago/Oak Park	Robert Beiter	708-445-7171
9/17/2008	OR	Portland	Thomas Dolan	503-725-3264
9/17/2008	NH	Manchester	Pamela Gordon	860-526-8686
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