Earplugs should feel good all the time, not just some of the time. That’s why we created Pilot, our new hybrid push-in earplug. Combining the performance of Quiet® with the superior comfort of Max®, Pilot gives you long-wearing comfort and total control over your fit.

Introducing Pilot™.
The right fit.
All the time.

- Soft, pearl-skinned Howard Leight polyurethane foam is resilient and easy to clean, delivering reliable, long-wearing performance.
- Pilot inserts easily into your ear with a simple fingertip twist of the Navigation Stem for a quick, snug and comfortable fit.
- With an NRR 26 rating, Pilot provides ideal, hearing protection in more noise environments and more consistently for more workers.

To learn more about the new Pilot earplug from Howard Leight® and receive a free sample, please visit us at www.howardleight.com/trypilot.
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NHCA Program Task Force Members:
Colleen Le Prell, Ph.D.; Erin Erickson; Thais Morata, Ph.D.;
Kristen Casto, Au.D., Ph.D.; Susan Griest, M.P.H.; James
Jerome, CCC-A, M.A.; Sandra MacLean-Uberuaga, M.A.,
F-AAA, CSP/A; Mary McDaniel, Au.D., CCC-A and Jeffrey
Goldberg.

Interactive Management, Inc.
Erin Erickson

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Form 300 Task Force: Alice Suter, Ph.D.
Program Task Force: Colleen Le Prell, Ph.D.
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Noise Task Force: Michael Stewart, Ph.D.
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Website Task Force: Laura Kauth, M.A., CCC-A
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CAOHC: Madeleine Kerr, Ph.D., R.N.
MAA: Vickie Tuten, Au.D.
NHCA Foundation: Mary McDaniel, Au.D., CCC-A
OSHA: Alice Suter, Ph.D.
Continuing Education Credit Information

36th Annual NHCA Conference
February 24-26, 2011
The Phoenix Marriott Mesa
Mesa, Arizona

The following organizations have been contacted for continuing education credits, all are pending approval:

American Academy of Audiology (AAA)
1.6 CEUs
The National Hearing Conservation Association is approved by the American Academy of Audiology to offer Academy CEUs for this activity. The program is worth a maximum of 1.6 CEUs. Academy approval of this continuing education activity does not imply endorsement of the course content, specific products, or clinical procedures.

American Board of Industrial Hygiene (ABIH)
0.5 Industrial Hygiene CM points per half day
3.0 total Industrial Hygiene CM Points

Continuing Education Board of the
American Speech-Language-Hearing Association (ASHA)
1.6 CEU (full conference and workshops)
1.0 CEUs (conference only)
.5 CEUs (workshops only)

American Association of Occupational Health Nurses (AAOHN)
17.25 CNE Contact Hours

Board of Certified Safety Professionals (BCSP)
This conference could qualify for BCSP COC points. See the BCSP COC Guide for details, available for download on the COC page: www.bcsp.org/coc.

Certificates of Completion will be emailed out to all attendees following the conference.
### Thursday, February 24 Conference Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:30 a.m. - 5:30 p.m.</td>
<td>Registration and information desk open</td>
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<tr>
<td>7:30 a.m. - 8:30 a.m.</td>
<td>Continental breakfast</td>
<td>Ballroom D</td>
</tr>
<tr>
<td>8:30 a.m. - 11:30 a.m.</td>
<td>Morning workshops</td>
<td>Rooms vary - see below</td>
</tr>
<tr>
<td>10:00 a.m. - 10:30 a.m.</td>
<td><strong>BREAK</strong></td>
<td>Ballfoyer</td>
</tr>
<tr>
<td>11:30 a.m. - 1:00 p.m.</td>
<td>Lunch (on your own) or Pre-ordered box lunches available in Ballroom D</td>
<td></td>
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<tr>
<td>1:00 p.m. - 4:00 p.m.</td>
<td>Afternoon workshops</td>
<td>Rooms vary - see below</td>
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**AM and PM workshop offerings, Registration required. See conference help desk regarding workshops if you did not pre-register for a workshop you wish to attend.**

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<tr>
<th>Time</th>
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<tr>
<td></td>
<td>Noise Measurement</td>
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<tr>
<td></td>
<td>Tom Lloyd - Associates in Acoustics, Inc.</td>
<td>USA</td>
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<tr>
<td></td>
<td>The Audiogram - How to Use it</td>
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<td></td>
<td>LTC(P) Lynnette Bardolf - US Army Aeromedical Research Laboratory</td>
<td>USA</td>
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<td></td>
<td>Hearing Loss Recordability Issues</td>
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<td></td>
<td>Cassie Ford - Examinetics, Inc.</td>
<td>USA</td>
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<td>Effective Hearing Protection</td>
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<td></td>
<td>Theresa Schulz - Sperian Hearing Protection</td>
<td>USA</td>
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<td></td>
<td>Education and Motivation</td>
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<td></td>
<td>Laura Kauth - Independent Consultant</td>
<td>USA</td>
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<td></td>
<td>Hearing Conservation Regulations and HIPPA</td>
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<td></td>
<td>Nancy Gallihugh - Kalamazoo RESA</td>
<td>USA</td>
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<tr>
<td>Full Day (A.M. and P.M.) 2.</td>
<td>Hearing Protector Fit-Testing: No Two Ears are the Same - Ballroom EF</td>
<td>Ballroom EF</td>
</tr>
<tr>
<td></td>
<td>Mobile Unit Infectious Controls and Four Audiometric Software Comparisons for PSP’s (Benson, EARS, OMI, Workplace Integra)</td>
<td>Palo Verde I</td>
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<tr>
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<td>Coordinator: Richard Stepkin - Enviromed Corporation</td>
<td>USA and</td>
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<td>A.U. Bankaitis - Oaktree Products, Inc.</td>
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<tr>
<td>P.M. Only 3(B).</td>
<td>Hearing Conservation: Innovative Teaching Strategies</td>
<td>Palo Verde I</td>
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<td></td>
<td>Coordinator: Kenneth Gerhardt - University of Florida</td>
<td>USA</td>
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<tr>
<td>A.M. Only 4(A).</td>
<td>Preservation of Hearing in the U.S. Army - Meeting the Specific Challenges of the War Fighter Using Education and Technological Innovations</td>
<td>Palo Verde II</td>
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<td>Coordinator: MAJ Jillyen Curry-Mathis - USA MEDDAC, U.S. Army</td>
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<tr>
<td>P.M. Only 4(B).</td>
<td>Tips and Tricks for Making Reliable OAE Measurements</td>
<td>Palo Verde II</td>
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<td></td>
<td>Coordinator: Laura Dreisbach - San Diego State University</td>
<td>USA</td>
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<th>Time</th>
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<td></td>
<td>Coordinator: Benj Kanters - Columbia University</td>
<td>USA</td>
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<tr>
<td>P.M. Only 5(B).</td>
<td>Emotional Intelligence Predicts Career Success</td>
<td>Palo Verde III</td>
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<td>Coordinator: Barry Blesser - Blesser Associates</td>
<td>USA</td>
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<th>Time</th>
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<tr>
<td>2:00 p.m. - 2:30 p.m.</td>
<td><strong>BREAK</strong></td>
<td>Ballfoyer</td>
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<th>Time</th>
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<tr>
<td>4:00 p.m. - 4:45 p.m.</td>
<td>Committee Meetings and Networking</td>
<td></td>
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<tr>
<td>5:30 p.m. - 8:30 p.m.</td>
<td>Exhibits Open/Exhibitor’s Reception</td>
<td>Ballroom ABCD</td>
</tr>
</tbody>
</table>
Friday, February 25 Conference Schedule

7:00 a.m. - 5:30 p.m.
Registration and information desk open

Continental breakfast | Ballroom DEFG

Welcome and opening remarks | Susan Griest and Colleen Le Prell | Palo Verde I, II, III

OSHA Introduction | Alice Suter | Palo Verde I, II, III

OSHA Update on Occupational Noise | Nancy Hauter | Palo Verde I, II, III

Thirty Years of the OSHA Hearing Conservation Amendment: An Industry Perspective | Christine Dixon-Ernst | Palo Verde I, II, III

30-Year Anniversary of OSHA’s Hearing Conservation Amendment | Tim Rink | Palo Verde I, II, III

Application Engineering Controls to Reduce Industrial Employee Noise Exposures | Robert Anderson | Palo Verde I, II, III

The OSHA HCA: A Labor Perspective | Scott Schneider | Palo Verde I, II, III

Break/Exhibits | Ballroom ABC

Keynote Lecture: “Hearing Problems: A Global Burden - How Do We Reduce It”
Adrian Davis | Palo Verde I, II, III

How Can We Improve Exposure Estimates for Workers with Highly Variable Noise Levels?
Richard Neitzel | Palo Verde I, II, III

Luncheon: “Hearing Provides a Sense of Place” | Barry Blesser | Ballroom DEFG

1:30 p.m. - 1:50 p.m.
Typical Daily Noise Exposures by Gender, Age and Occupation
Kristy Deiters

The Use of Test-Test Variability to Access the Quality of Hearing Conservation Programs: Revisiting Draft ANSI Standard
Peter Rabinowitz

Daily Exposure Monitoring of Noise to Prevent Occupational Hearing Loss
Michael McTague

1:50 p.m. - 2:10 p.m.
Habits, Preferences and Protective Behaviors Regarding Loud Sound
Keila Knobel

Lessons Learned at DOD Indoor Firing Ranges
Charles Jokel

In-Ear Dosimetry: Observations from Initial Field Study
Trym Holter

2:10 p.m. - 2:30 p.m.
Classroom Noise: National Effects
Peggy Nelson

Impulse Noise Levels Generated by a .22 Caliber Starter Pistol
Jacob Sondergaard

Wind Turbine Noise: What Noise?
Alberto Behar

2:30 p.m. - 2:50 p.m.
Earthquakes and Hearing Loss: A Possible Unique and Unconventional Idea of Educating Others on Hearing Loss and Hearing Loss Prevention
Lynnette Bardoff

Xylene-Induced Hearing Loss: Should Xylene-Exposed Workers be Included in Hearing Conservation Programs?
Adrian Fuente

Establishing Valid Sound Pressure Level Measurements in Orchestra Musicians
June Hart Romeo

2:50 p.m. - 3:10 p.m.
Type 2 Diabetes and Hearing Loss in Older Mexican Americans
Elizabeth Anne Thomas

The Boiling Frog Syndrome!...Why Noise Still Occurs
Adeline Ong

Personal Attenuation Ratings for Fit-Testing: Estimation and Application
CAPT William Murphy

3:10 p.m. - 3:55 p.m.
Break/Posters/Exhibits | Ballroom ABC

Barriers to the Implementation of Engineered Noise Controls in the Food & Beverage Industry
Hugh Davies | Palo Verde I, II, III

One Company’s Game Plan for Eliminating the Need for Hearing Conservation
Dennis Driscoll | Palo Verde I, II, III

Developing and Implementing a Corporate Buy-Quiet Strategy
Beth Cooper | Palo Verde I, II, III


5:15 p.m. - 6:00 p.m.
Break/Posters/Committee Meetings | Ballroom ABC

6:15 p.m. - 9:30 p.m.
Friday Night Off-Site Event | Rawhide

Exhibits Open 8:30 a.m. to 9:00 p.m. | Ballroom ABC

EPIDEMIOLOGY and EDUCATION
Conference Theatre

WORKPLACE and IMPULSE NOISE
Palo Verde I

HPD’s and NOISE RISK MONITORING
Palo Verde II

NHCA SPECTRUM
Saturday, February 26 Conference Schedule

7:30 a.m. - 5:30 p.m.
Registration and information desk open

7:45 a.m. - 8:45 a.m.
Chat Sessions with buffet breakfast | Ballroom DEFG

TOPIC | MODERATOR | TOPIC | MODERATOR
OSHA Developments | Alice Suter | Engineering Controls & OSHA | Dennis Driscoll
Med-Legal | Robert Dobie | Corporate Hearing Loss Prevention | Chrétien Dixon-Ernst
Associate Member Delegate | David Stern | Trends in Noise-induced Hearing Loss | SangWoo Tak
Commercial Members Business - What’s Up? | Jeffrey Goldberg | Music Induced Hearing Disorders | Brian Fligor
Professional Member Delegate | Sheryl Whiteman | Hearing Loss Prevention in Construction | Scott Schneider
Professional Service Provider Delegate | Richard Stepkin | HLP in the Music Industry | Kanters/Santucci
First Timers | Laura Kauth | Dangerous Decibels | Griest/Meinke
The New NRR | Elliott Witt | HLP Software | Carl Haaser
Field Verification of HPDs | Brad Witt | Employee Training | Laurie Wells
HPDs in the Military | Theresa Schulz | Safe-in-Sound | Pam Graydon
Challenges for HLP in DoD | Vickie Tuten | Risks Posed by Workplace Chemicals | Thais Morata
Traumatic Brain Injury | Jillyen Curry-Mathis | CAOHC | Lee Hager
Providing HCP Services | Carolyn Tolley | OSHA Noise Control | Rick Neitzel

8:55 a.m. - 9:00 a.m.
Introduction | Colleen Le Prell | Palo Verde I, II, III

9:00 a.m. - 9:20 a.m.
Otoacoustic Emissions As A Test of Noise-Induced Hearing Loss | Brenda Lonsbury-Martin | Palo Verde I, II, III

9:20 a.m. - 9:40 a.m.
DPOAE Level/Phase Mapping: Technical Achievements and Challenges | Deanna Meinke | Palo Verde I, II, III

9:40 a.m. - 10:00 a.m.
OAEs and Noise Exposure: Promising Directions | Sumitrajit Dhar | Palo Verde I, II, III

10:00 a.m. - 10:20 a.m.
Novel Multivariate DPOAE Metrics that Identify Changes in Hearing | Dawn Konrad-Martin | Palo Verde I, II, III

10:20 a.m. - 10:40 a.m.
The Taming of the OAE: Taking OAEs from Laboratories to Hearing Conservation Programs | Lynne Marshall | Palo Verde I, II, III

10:40 a.m. - 11:00 a.m.
Break/Posters | Ballroom ABC

11:10 a.m. - 11:45 a.m.
Gasaway Lecture: “From Here to There to Hear” | Laurie Wells | Palo Verde I, II, III

11:45 a.m. - 12:05 p.m.
Epidemiology of Age-Related Hearing Loss: Recent Data from the National Health and Nutrition Examination Survey | Robert Dobie | Palo Verde I, II, III

12:05 p.m. - 1:50 p.m.
Luncheon and Awards | Ballroom DEFG

2:00 p.m. - 2:20 p.m.

2:20 p.m. - 2:40 p.m.
Measurement of Impulse Peak Insertion Loss for Five Hearing Protectors | William Murphy | Palo Verde I, II, III

2:40 p.m. - 3:00 p.m.
Earmuffs and Headphone Comfort | Samir N.Y. Gerges | Palo Verde I, II, III

3:00 p.m. - 3:20 p.m.
Practical Considerations for Implementing a Hearing Protection Fit Testing Program | Carl Johnson | Palo Verde I, II, III

3:20 p.m. - 3:50 p.m.
BREAK | Ballfoyer

3:50 p.m. - 4:10 p.m.
Temporary Threshold Shifts and Otoacoustic Emission Amplitude Reductions Subsequent to Music Player Use by Young Adults | Colleen Le Prell | Palo Verde I, II, III

4:10 p.m. - 4:30 p.m.
Listening to Music on the Job: Assessing Worker’s Use of Personal Listening Devices | Cory Portnuff | Palo Verde I, II, III

4:30 p.m. - 4:50 p.m.
Noise Exposure Estimates in Urban MP3 Player Use | Brian Fligor | Palo Verde I, II, III

4:50 p.m. - Good Bye
Closing Remarks | Susan Griest | Palo Verde I, II, III
3M provides cutting edge health and safety products for many industries. Helping to protect your health with reliable, comfortable safety solutions. Workers want their safety equipment to be comfortable, convenient and functional. They also want flexibility and style. Our industry leading personal protection equipment (PPE) has long offered safety solutions designed to meet the highest industry standards of excellence. Reliable, comfortable PPE products from 3M. Visit 3M at www.3m.com/hearing where you can read articles, download hearing conservation materials, watch videos and learn about 3M™, E-A-R™ and Peltor™ hearing protection.

Howard Leight is a leading global provider of passive and intelligent hearing protection solutions, and the founder of the HearForever™ initiative (www.hearforever.org). For over 30 years, Howard Leight has pursued the prevention of occupational hearing loss through innovation in hearing protection design, technology, performance and comfort, and the promotion of progressive Hearing Conservation Programs. Leading solutions include the highest attenuating Max® single-use ear plug; patented Air Flow Control™ technology for optimal earmuff attenuation; QuietDose™ personal in-ear dosimetry; and the industry-changing VeriPRO® ear plug fit testing system. Visit: http://www.howardleight.com.

Benson Medical Instruments designs and manufactures occupational audiometers and hearing conservation software, focusing on seamless integration. The results are faster test speed, greater repeatability, unsurpassed ease of use, and powerful data transfer. We offer affordable solutions for a single clinic, as well as multi-site companies and mobile group testing.

CAOHC’s mission is to promote hearing loss prevention by enhancing the quality of occupational hearing loss prevention practices, with focus on providing oversight and support to those who train occupational hearing conservationists; the course directors, and those who supervise hearing conservationists and interpret problem audiograms; the professional supervisors.

The National Institute for Occupational Safety and Health (NIOSH) is one of the centers within the Centers for Disease Control and Prevention, CDC. NIOSH conducts Research in occupational Safety and Health and provides National and World Leadership to Prevent Workplace Illnesses and Injuries.

American Speech-Language-Hearing Association: Over 14,000 ASHA certified audiologists provide research, hearing conservation, diagnostic and rehabilitative services for individuals hearing loss and/or balance disorders.
Casella USA is one of the leading suppliers of Industrial Hygiene, Occupational Health and Environmental products. Casella provides clients with measuring instruments and other products related to the main business areas of environmental monitoring, health and safety applications and industrial hygiene topics.

Eckel Industries of Canada Limited product line includes audiometric booths, rooms for hearing evaluation and multiple room suites, featuring cam-locking panel construction.

E tymotic Research, NIOSH-NHCA 2010 Safe-in-Sound Hearing Loss Prevention Award honoree, received a 2011 Best Innovations Award from the Consumer Electronics Association for Electronic BlastPLG™ Earplugs.

G.R.A.S. Sound and Vibration: A broad range of standard measurement microphones, preamplifiers, transducers and accessories. Sound intensity microphones, outdoor monitoring microphones, artificial ears, ear and mouth simulators, CCP preamplifiers, calibrators, etc. The microphone-preamplifier combinations feature built in TEDS, microphone arrays. Microphone systems for measurement of low noise levels below the threshold of hearing.

Kimberly-Clark Professional delivers leading-edge safety solutions that provide tangible value every day. Known for innovative, quality solutions, Kimberly-Clark Professional offers a broad range of PPE.

Logistics Health provides cost-effective, innovative healthcare management to government and commercial organizations. Our experts provide healthcare solutions utilizing our national network of more than 25,000 medical and dental providers.

Phonak Communication a leader in passive and active custom hearing protection with communication and ambient awareness, all verifiable with Safety Meter. www.phonak-communications.com
Sensear: Bridging the gap between hearing protection and high noise communication, Sensear’s innovative SENS (Speech Enhancement, Noise Suppression) technology enhances speech while suppressing harmful background noise.

Tremetrics designs and manufactures a complete line of innovative hearing/health testing equipment including multimedia and microprocessor audiometers, space-saving mobile testing systems, hearing test booths and health database management software.

Mimosa Acoustics manufactures state-of-the-art auditory diagnostic systems for evaluating middle and inner-ear health. Our HearID auditory diagnostic system incorporates modules for testing both middle-ear and inner-ear characteristics.

Otodynamics Ltd. specializes in otoacoustic emissions instruments and is acknowledged as the pioneer and leader in this field. When you buy OAE instruments from Otodynamics, you can be confident of a first class innovative product and first class support.
Outstanding Hearing Conservationist Award

Established in 1990, the Award for Outstanding Contributions to the Field of Hearing Conservation is given to a person whose work is exemplary in our field. It is a pleasure to announce that this year’s recipient is Peter Rabinowitz, for his contributions to hearing protection research of noise measurements and audiometric measures.

Peter Rabinowitz:
NHCA Outstanding Hearing Conservationist 2011

By: Christine Dixon-Ernst, Alcoa

I hope you will all join me in honoring Peter Rabinowitz and recognizing his contributions to hearing conservation as the 2011 NHCA Outstanding Hearing Conservationist.

A little bit of Peter’s background will help to put his journey to this honor into perspective. As is likely the case with many of us in the audience today, few of us spent our childhood being hearing conservation advocates, and the same is true for Peter. He had a typical American misspent youth, including exposure to 22 caliber gunshots, cap guns, and loud music without any regards to all those hair cells he was killing. During his undergraduate years at Amherst College he continued his total disregard for his hearing with large doses of exposure to loud music and frat parties! Hard to believe, but those are the facts…

When you ask Peter when he finally got the hearing conservation bug his answer will definitely not be, during his time at the Medical School University of Washington, where he remembers only a single lecture about hearing loss. After medical school Peter worked in a Family Medicine residency at the University of California San Francisco system where he worked with migrant farm workers and saw occupational hazards, including the effects of noise, first hand.

After residency, Peter worked in a migrant health clinic with his wife Nelly, a Physician’s Assistant, and started a non profit organization (Novela Health Education) to produce health education programs for Latinos and other medically under served groups using “soap opera formats”- he wrote and produced these soap operas in video, radio, and print formats. Who knew….Peter and soap operas?!

Later, he did fellowships in both general preventive medicine and occupational medicine at Yale School of Medicine. It was in his occupational medicine fellowship that his connection with hearing conservation really begins (this is my favorite part of the Peter Rabinowitz journey to hearing conservationist, for reasons which will soon become obvious!)

During the same time Peter began his fellowship, Yale was beginning a unique relationship with Alcoa, to provide medical consulting services to the company worldwide. Looking for a research project, The Director of the Yale Occupational and Environmental Medicine Program, Mark Cullen, suggested that he analyze the Alcoa audiometric datasets, and introduced Peter to me, amongst other responsibilities, the Manager of the Alcoa Hearing Conservation Program. Alcoa has been collecting audiograms in a computer database since before there were computers to put them and so at the point when Yale started their work with Alcoa there were approximately half a million audiograms to analyze. In my role at Alcoa, I enjoyed teaching Peter and his Yale colleagues about the “real world” of hearing conservation, such as which way is “up” in an audiogram, what a “noise notch” looks like, what dBA and NRR can and cannot explain, and the pros and cons of age adjustment.

The group at Yale also spent time reading the classics of hearing conservation literature, learning from the Roysters, Berger, Dobie, Henderson and others, the unfamiliar language of terms like NINEP, low fence, PTA and BW percentage. The goal was to decide how to approach the large numbers of Alcoa audiograms. In addition, Alcoa has a large noise and chemical exposure database covering the past 25 years. One of the challenges of the project would be to bring together all of these noise measurements with the audiometric measures.

The strategy that Peter settled on, along with his group at Yale and the Alcoa folks was to calculate the rates of hearing loss over time, identify risk factors for this hearing loss, including the roles of noise and solvents, and explore the use of different “early flag” metrics for detection of NIHL.

One of the surprise findings in this work was that persons working in areas that had higher noise levels seemed to have lower rates of hearing loss than individuals working in a more modest noise level. This finding showed up in the analyses over and over again, until the group came to suspect that what was happening was that workers in noisier areas may use their hearing protection more effectively than others at lower noise levels.
Some additional findings using the Alcoa databases include:

- Solvent exposed workers had higher rates of hearing loss.
- Certain audiometric indicators, such as non age-corrected 10dB shifts, had good predictive ability for later recordable hearing loss cases.
- The Draft ANSI measures of hearing conservation effectiveness could be used to flag programs with problems of audiometric quality.
- Other work with Alcoa has included assisting in the worldwide implementation of hearing loss tracking and prevention efforts, dealing with work-relatedness issues, and exploring the use of daily noise exposure monitoring technology.

At Yale, Peter directs the Yale Occupational and Environmental Medicine clinic, where patients from all types of jobs and environments are seen to determine whether environmental hazards are contributing to their health problems. Other research at Yale has explored the use of an audiological test battery for early detection of solvent-induced hearing loss, genetic susceptibility to noise-induced hearing loss, the role of antioxidants in noise-induced hearing loss risk, and the hearing status of groups traditionally left out of hearing conservation efforts, from migrant farm workers to, yes, physicians.

Peter has served five years as a member of the Council for Accreditation in Occupational Hearing Conservation, representing the American College of Occupational and Environmental Medicine. He reports that one of the wonderful things about CAOHC was the way it involves professionals from many different disciplines, from noise engineering to otolaryngology, coming together to work on the common challenge of occupational hearing loss. For CAOHC he chaired the Professional Supervisor course committee that helped formalize a certification course for audiologists and physicians in the professional supervision of the audiometric component of hearing conservation programs. He greatly enjoyed taking this course “on the road” and working closely with friends and colleagues on the CAOHC council to make clinicians more aware of their unique role in NIHL prevention.

Peter lives on a small farm near New Haven, where his children, Natasha and Aaron, and his stepsons, Sasha and Eliosha, have all heard his encouragement (okay, they refer to it as a lecture) to use hearing protection and avoid noise overexposures.

Hobbies include organic gardening (no power tools used here), raising backyard chickens (in a soundproof coop), and fly-fishing. Obviously, Peter is much more careful about protecting his hearing than when he was a child.

In his hearing conservation journeys, Peter has been to numerous noise and hearing loss conferences and meetings where he was one of the only physicians in attendance. While he says he doesn’t mind being a minority, he has taken on the mission to raise awareness about hearing loss and its prevention among the medical community. He feels there is still a long way to go and a lot to do to get hearing conservation the respect it deserves. At the same time he is always grateful to return to NHCA and to be among the friends who have taught him so much about NIHL and generously shared their experiences and wisdom.

My how time flies!...The year 2011 is the time to acknowledge the five year mark for the Safe-in-Sound Excellence in Hearing Loss Prevention Award Committee. In 2006, Thais Morata, Ph.D. of the National Institute of Occupational Safety and Health (NIOSH) partnered with the NHCA to implement a long-term project designed to recognize organizations that document measurable achievements in hearing loss prevention programs, and to obtain and disseminate information on their real world successes. We continue to welcome NHCA member input into the process and are dependent upon your referrals and personal efforts to solicit award applications from your clients and colleagues.

I have been honored to chair the award committee since its inception and I would like to take this opportunity to publicly recognize the past five years of investment that the award committee has graciously committed to the work. The award program has been successful because of the leadership of Thais Morata and the expertise of the committee. Please join me in personally thanking the individual committee members for their efforts.

Deanna Meinke
Much has changed since the last conference!

First, as you may have noticed, the Scholarship Foundation has changed the name of the Student Travel Award (STA) to the Student Conference Award (SCA). This name change better defines the award: more on attending, less on traveling.

Second, we have streamlined the application process! In the past, students applied for the award by: 1. downloading a form from our website, 2. completing the form (usually hand-written), 3. adding a one-page typed letter stating their reason for attending, and, 4. scanning and emailing (or mailing) the package to the Foundation. As you can see, this process was not only inefficient, but, at times, required the review committee to look at hand writing that was not always legible. Now everything is done on-line, and it takes approximately ten minutes to complete the process.

Third, we have changed how students are monetarily awarded to attend the conference! In the past, students paid for their travel and hotel accommodations up front. They were required to maintain and submit receipts in order to receive the maximum reimbursement that was established by the Foundation. Overall, this resulted in a lot of paperwork for everyone. The Foundation decided to take a more proactive approach by giving the award up front in the form of a travel stipend. This stipend is a fixed amount (as determined by the Foundation), and given with the understanding that students are expected to attend the conference. If, for some reason, they cannot attend, students must return the stipend.

As a result of all of the above, the Foundation received thirteen applicants for the SCA. With special thanks for their work, the review panel for the 2011 SCA was composed of: Jim Jerome, James Banach, Robert Dobie, Mary McDaniel, Theresa Schulz, and Jennifer Tufts. Following are those students who were selected to attend the 2011 conference:

- Christopher Bernstein
  University of Louisville
  3rd year/Au.D. Program

- Dana Gladd
  University of Wisconsin
  4th year/Au.D. Program

- Sarah Knauf
  SUNY at Buffalo
  3rd year/Au.D. Program

- Roxanne Kohilakis
  WU-School of Medicine
  2nd year/Au.D. Program

- Sara Neumann
  Illinois State University
  2nd year/Au.D. Program

The SCA includes paid registration to the Thursday workshops, the Friday and Saturday conference sessions, and continental breakfasts, luncheons and social activities provided by the conference. Also, students will be attending a special luncheon on Thursday between the morning and afternoon workshops. The luncheon will recognize all award recipients. Also, students will have an opportunity to meet NHCA leaders, award program sponsors, and members of the Scholarship Foundation. As always, we thank our generous sponsors for making this award possible. Sponsors will be recognized during the Thursday student award luncheon and in the Spectrum following the conference.

**NHCA Scholarship Foundation Auction Information:**

Participate in the NHCA Scholarship Foundation’s Silent Auction, which will be held during the conference. The funds raised through this auction will directly support research and travel (to the conference) for graduate students focusing on applied and practical studies in hearing loss prevention. (Many of our current NHCA members were assisted by these stipends during their slim years as a grad student.) Please bring your item(s) or certificate to the NHCA Conference registration desk. The auction will be held in the exhibit hall throughout the conference and culminate on Saturday morning. The NHCA Scholarship Foundation is most appreciative of your contributions and support for this event!
The National Institute for Occupational Safety and Health (NIOSH), in cooperation with the National Hearing Conservation Association (NHCA), has developed a dedicated supplemental issue of the International Journal of Audiology (IJA), highlighting the research presented at NHCA’s 35th Annual Conference in February 2010. The studies and Safe-in-Sound Award™ winners featured in this special issue focus on expanding the traditional boundaries of hearing loss prevention and sharing knowledge on an international level.

The co-editors Thais Morata and Deanna Meinke would like to publicly extend our sincere pleasure in working with the distinguished authors and award winners featured in the IJA Supplement; Adrian Fuente and Louise Hickson, Greg Flamme and co-authors, Colleen Le Prell et al., Noah Seixas and colleagues, Kris Chesky, and Mead Killion et al. The editors of IJA Ross Roeser and Jackie Clark have been personally instrumental in guiding the publication and making the supplement a reality.

Certainly this special issue would not have been possible without the financial underwriting provided by the sponsors of this IJA supplemental issue; the Council for Accreditation in Occupational Hearing Conservation (CAOHC), Etymotic Research, Inc., G.R.A.S. Sound and Vibration, HCI Health Conservation, Inc., the National Hearing Conservation Association (NHCA) and the National Institute for Occupational Safety and Health (NIOSH). We sincerely appreciate their confidence and commitment. Please thank these organizational representatives personally for the journal copies you will receive at this conference (providing printing and shipping proceed as planned).

2010-2011 Student Research Award

Ryan Johnson | University of Cincinnati

Research Project entitled: “Psychometric findings when implementing the conservation program”

While I am new to the field of audiology, acoustics and hearing have always been major parts of my life. I have been a musician since I was a teen. I never took lessons or joined the school band; rock and pop music have always been more to my liking. I’ve been playing guitar and singing in “alternative” rock bands for years, and music will always hold a special place in my heart. When I began my journey into hearing science and hearing health, I quickly realized the close connection between audiology and music. I knew even when I was applying to Au.D. programs that I wanted to keep close ties with the music community.
2011 Safe-in-Sound Excellence in Hearing Prevention Awards™

Thais C. Marata, Ph.D. - Safe-in-Sound Award Director  
National Institute for Occupational Safety and Health - Cincinnati, OH
Deanna Meinke, Ph.D. - Safe-in-Sound Award Committee Chair  
University of Northern Colorado - Greeley, CO

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Plant WM/Fibers Division  
Shaw Industries Group, Inc.  
Dalton, GA

Fort Carson Army Hearing Program  
MEDDAC Division  
Fort Carson, CO

Award Presenter:  
John Howard, M.D. - Director of the National Institute for Occupational Safety and Health  
U.S. Department of Health and Human Services

John Howard is the Director of the National Institute for Occupational Safety and Health in the U.S. Department of Health and Human Services. Dr. Howard also serves as the Coordinator of the Department’s World Trade Center Health Programs. Dr. Howard was first appointed NIOSH Director in 2002 and served until 2008. In 2008 and 2009, Dr. Howard worked as a consultant with the U.S. Government’s Afghanistan Health Initiative. Prior to his appointment as Director of NIOSH in 2002, Dr. Howard served as Chief of the Division of Occupational Safety and Health in the California Labor and Workforce Development Agency from 1991 through 2002. Dr. Howard received a Doctor of Medicine degree from Loyola University of Chicago, a Master of Public Health degree from the Harvard School of Public Health, a Doctor of Law degree from the University of California at Los Angeles, and a Master of Law degree in Administrative Law and Economic Regulation from George Washington University in Washington, D.C. Dr. Howard is board-certified in internal medicine and occupational medicine. He is admitted to the practice of medicine and law in the State of California and in the District of Columbia. He has written numerous articles on occupational health law and policy.
NHCA Media Award

The Media Award was established to recognize the efforts of writers and/or producers of news features that serve to heighten public awareness of the hazards of noise. The NHCA Nominations Committee is pleased to announce this year’s winner of the NHCA Media Award: Hearing Loss Prevention Team, Division of Applied Research and Technology, National Institute for Occupational Safety and Health for their 2009-2010 NIOSH Science Blog. Accepting the award will be CAPT. William Murphy.

Blogging on Noise: Using New Tools for an Old Problem

We know that noise can lead to hearing loss. We also know that noise-induced hearing loss (NIHL) is preventable. The challenge we face is how to increase awareness of the key role hearing plays in our lives and how to protect it. In a continuing effort to motivate workers and others in the community to take care of their hearing, researchers at NIOSH are using the latest social media techniques to convey the risks of noise in the workplace and educate people about prevention. Since 2007, the NIOSH Science Blog has engaged the safety and health community, workers, industry, academia, worker representatives and the general public in a communication forum that allows for the exchange of ideas and information. The NIOSH Hearing Loss Prevention Program has posted six blogs on work-related hearing loss, including noise exposure at the World Cup, in stock car racing and in the music industry, with several becoming some of the most popular posts on the NIOSH Science Blog (www.cdc.gov/niosh/blog).

Nearly 25,000 individuals read the hearing-related blog posts. NIOSH has used Twitter, Facebook, e-mails, and an RSS feed to guide readers to the blog. Many thought-provoking comments have been received, often leading to rich exchanges with the NIOSH authors. The blogs have also generated mainstream media stories on the risk of hearing loss from vuvuzela and stock car noise. In at least two separate instances, the firing range blog led people to take action to correct problems at their firing ranges. In addition, the insight into the attitudes and beliefs of particular audiences provided by the received comments may be useful for future prevention campaigns.

The NIOSH Science Blog provides a mechanism for NIOSH to reach people in a format that they are increasingly comfortable using. Through the blog and the resources provided within the posts, users have accessed documents and prevention materials that they otherwise may not have been aware of. The blogs have also become a place for readers to post information of use to the NIHL community such as conference information, recent publications, practical applications, and ideas for future research. Check out the blogs and send us your idea for the next noise-related post!
## Exhibitor Booth Listings and Map

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### Ballroom Layout

- **Ballroom A**: Booths 1, 2, 3, 14
- **Ballroom B**: Booths 4, 5, 6
- **Ballroom C**: Booths 7, 8, 9, 10, 11, 12, 13

**FOOD**

**POSTERS**

**Food Locations**

1. Ballroom A
2. Ballroom B
3. Ballroom C
New “mini” Audiometer
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The CCA-200mini delivers:
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The National Institute for Occupational Safety and Health (NIOSH) tweets regularly. Please join the conversation.

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twitter.com/SafeinSoundUS

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Visit your professional home page at www.asha.org
Select “Audiologists” from the menu at the left of your screen...just click and go!

Audiology Home Page Resources
• Work setting resource guide for industrial/occupational audiologists
• Audiology FAQs
• Quality improvement for audiologists
• ASHA Audiology survey reports
• Access Audiology articles from past issues
• Patient education handouts
• Classroom acoustic resources
• ASHA policy documents

Audiology Communications
• Audiology Connection is an annual publication addressing services, resources, and activities. Mailed to all audiology members and available online.
• Access Audiology is an E-newsletter published 6 times each year. Each issue highlights a timely audiology topic. Open access to those interested in hearing/balance issues.
• Audiology e-mail list is a forum for conversing with colleagues across the profession.

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Visit us in the EXHIBIT HALL
Workshop Abstracts and Speaker Bios

Thursday, February 24, 2011

Workshop Presentations and Biographies

FULL DAY WORKSHOP #1 - (8:30 a.m. - 4:00 p.m.)

“Hearing Loss Prevention: The Basics (Noise Measurement)”
Coordinator: Tom Lloyd, B.S. - Associates in Acoustics, Inc. | USA
This segment will provide an overview of the measurement and control of noise, including an introduction to that dear friend/archenemy of hearing loss prevention (the decibel), the equipment we use to measure noise (sound level meters, dosimeters, octave band analyzers, oh my!), how we can reduce noise exposures, and how all this relates to protecting people’s hearing.

“Hearing Loss Prevention: The Basics (The Audiogram)”
Coordinator: LTC(P) Lynnette Bardolf, Ph.D. - US Army | USA
The audiometric test is essentially the report card for the hearing loss prevention program. No worker’s hearing has ever been preserved or protected because he or she took a hearing test. How we use that hearing test, how we convey the information, how we track the data becomes critical to the program. This session will go beyond just looking for standard threshold shift. It will provide the technician with information about obtaining a valid result, and will offer the professional supervisor insight into follow-up strategies.

“Hearing Loss Prevention: The Basics (HPDs)”
Coordinator: Theresa Schulz, Ph.D., CCC-A – Sperian Hearing Protection | USA
As hearing conservationists we can measure, assess, document, and counsel, but when it comes to effective intervention, our primary tool, sometimes our only tool, is a hearing protector. Therefore it behooves us to become knowledgeable about the specification of hearing protection devices and their use in hearing conservation programs. This presentation will focus on hearing protector function, how they are tested and rated (with particular reference to the NRR), the performance gains available from the use of dual hearing protection and hearing protection as a problem solver.

“Hearing Loss Prevention: The Basics (Education and Motivation)”
Coordinator: Laura Kauth, M.A., CCC-A - Independent Consultant | USA
While the ideal solution to a noisy environment is to remove the noise, in many situations, it simply isn’t possible. When this is the case, it’s not enough to rely solely on compliance with regulations to reduce risk. We need to educate employees thoroughly on the benefits of hearing conservation and the crucial steps they should take to safeguard their hearing. Employees must participate actively for hearing conservation to be successful; we need to engage and interest them in their own protection. Effective hearing conservation cannot be achieved without the combined efforts of employers, supervisors, and the employees themselves. By focusing on the reasons behind hearing conservation, and providing some different approaches, we can better reach these individuals to make them a part of the solution to preventable hearing loss.

“Hearing Loss Prevention: The Basics (Record Keeping)”
Coordinator: Cassie Ford, M.A., CCC-A - Examinetics, Inc. | USA
Identification of work-related hearing loss has long been one of the most complicated and controversial areas of government-mandated injury/illness recordkeeping. Effective in 2000, MSHA provided a new definition of “reportable” hearing loss in its revised noise standard, Part 62. OSHA also defined new criteria for recording occupational hearing loss with its recent revision to 29 CFR 1904 (effective in 2003, with a separate Form 300 column in effect January 1, 2004). This workshop presentation will focus on the basic requirements of MSHA and OSHA recordkeeping regulations, as well as implications for professional review of audiograms and determination of work-relatedness. Although compliance with recordkeeping rules is important to the ultimate goal of tracking incidence of work-related hearing loss, emphasis will also be placed on best practices for an effective hearing loss prevention program.

“Hearing Loss Prevention: The Basics (Regulations and HIPAA)”
Coordinator: Nancy Gallilugh - Kalamazoo RESA | USA
This portion of the workshop will provide attendees with an overview of the Health Insurance Portability and Accountability Act (HIPAA) as it relates to the hearing conservation provider, including recordkeeping, maintaining compliance, and available resources. Also discussed will be a summary of Hearing Conservation Regulations including recordkeeping differences between MSHA and OSHA.

FULL DAY WORKSHOP #2 - (8:30 a.m. - 4:00 p.m.)

“Hearing Protector Fit-Testing: No Two Ears are the Same”
Coordinator: William J. Murphy, Ph.D. - CDC/National Institute for Occupational Safety and Health | USA
Amanda Azman, Au.D., Ph.D. - CDC/National Institute for Occupational Safety and Health | USA
Elliott Berger, M.S., INCE.Bd.Cert. - 3M Occupational Health and Environment, Safety Division | USA
Mihaela Grigorie - Phonak | USA
Kevin Michael, Ph.D. - Michael & Associates | USA
James Jerome, CCC-A, M.A. - Workplace Integra | USA
Brad Wilf, M.A. - Sperian Hearing Protection | USA
Jérémie Voix, P. Eng., Ph.D. - Universite de Quebec (ETS) | Canada
For over 30 years, hearing conservation professionals have known that the Noise Reduction Rating is not necessarily representative of
the protection afforded to the average user of hearing protection. NIOSH developed one of the earliest fit-test systems, however, the system was far from portable. In the mid 1990’s Michael and Associates developed FitCheck for use on a laptop computer. In recent years, other companies have developed systems: VeriPro by Sperian, Sonopass by Sonomax, SafetyMeter by Phonak, MultiFit by NIOSH, IntegraFit by Workplace Integra, HPD WellFit by NIOSH, and EARFit by 3M. This workshop will present an overview of the technologies available to the hearing conservation professional. During the morning session, attendees will learn about different methods to effect fit-testing and companies will present the features of their particular systems. During the afternoon session, attendees will experience hands-on demonstrations of the various products. Different demonstration areas will be provided for systems that require quiet and for those that do not.

HALF DAY WORKSHOP #3(A) - A.M. ONLY (8:30 a.m. - 11:30 a.m.)
“Mobile Unit Infectious Controls and Four Audiometric Software Comparisons for PSP’s (Benson, EARS, OMI, Workplace Integra)”
Coordinator: Richard Stepkin, M.S., CCC-A, FAAO - Enviromed Corp | USA
A.U. Bankaitis, Ph.D., FAAO - Oaktree Products, Inc. | USA
Dr. Bankaitis will present the issues and solutions of infectious contamination, cross-contamination for both the technician and the employee in a multi-station mobile test environment. In addition, four presentations of popular audiometric software’s used in mobile testing environments. Each software representative will discuss transfer of data between Server and Mobile operations; data analysis on the mobile unit and at the server; Audiologist interactive abilities in the review process; baseline revisions of work vs. non-work related issues; STS handling of recordable and non-recordable shifts; flexibility of reporting to accommodate unique needs of the PSP and server storage of single and corporate customers.

HALF DAY WORKSHOP #3(B) - P.M. ONLY (1:00 p.m. - 4:00 p.m.)
“Hearing Conservation: Innovative Teaching Strategies”
Coordinator: Kenneth Gerhardt, Ph.D. - Senior Associate Dean for Academic Affairs, University of Florida | USA
Donald Henderson, Ph.D. - State University of New York at Buffalo, College of Arts and Science | USA
Christopher Spanovich, Au.D., Ph.D., M.P.H. - University of Florida | USA
What educator hasn’t struggled with the challenges of developing successful techniques for teaching and assessing learning outcomes? This workshop will provide tips for teaching and current information on topics typically covered in hearing conservation courses. Participants in this interactive session will be invited to discuss topics including integrating science in hearing conservation, the regulatory process, and medical-legal considerations of noise-induced hearing loss. Bring your thinking caps and leave your inhibitions at the door, this session will require participation and challenge you to get involved with your “classmates” as these topics are reviewed and discussed.

HALF DAY WORKSHOP #4(A) - A.M. ONLY (8:30 a.m. - 11:30 a.m.)
“Preservation of Hearing in the U.S. Army – Meeting the Specific Challenges of the War Fighter Using Education and Technological Innovations”
MAJ John A. Merkley, M.S., CCC-A - United States Army Public Health Command Region | Europe
CPT Kara M. Cave, Ph.D., CCC-A - United States Army Medical Activity, Fort Campbell | USA
CPT Leanne Cleveland, Au.D., CCC-A - Fort Carson Hearing Program Mgr, US Army | USA
Climbing noise exposure rates have resulted in the continued ranking of permanent hearing loss and tinnitus among the top four injuries for combat veterans of Iraq and Afghanistan. The challenges of preventing hearing loss in the War Fighter, while simultaneously preserving their communication capabilities, have required a combination of innovative technology, pre-deployment training, and comprehensive education. The Operational Hearing Services component of the Army Hearing Program has evolved into an effective effort to work “within” the Soldier’s occupationally-specific limitations and exposures to enhance his mission capabilities. Attendees will learn how to reach target audiences with effective education, the importance of training with new technology, how to complete noise abatement strategy surveys, and be introduced to several technological innovations the Army has to offer for tactical communication and preventive systems. Using the military as an example, participants will learn how to translate presented material to meet their needs for challenging, noise-exposed personnel.

HALF DAY WORKSHOP #4(B) - P.M. ONLY (1:00 p.m. - 4:00 p.m.)
“Tips and Tricks for Making Reliable OAE Measurements”
Coordinator: Laura Dreisbach, Ph.D., CCC-A - School of Speech, Language, Hearing Sciences at San Diego State University | USA
Marilyn Dille, Ph.D., CCC-A - Ntl. Center for Rehabilitative Auditory Research Portland VA Med. Center | USA
Kelly Reavis, M.P.H., CCC-A - University of California, Irvine Department of Otolaryngology | USA
After completing the didactic portion of this workshop, participants will be able to define and interpret different types of otoacoustic emissions (OAEs) obtained with conventional clinical recording techniques as well as some developing research paradigms. Participants will be able to determine sources of variability in OAE response measurements, including ways that testers, instrumentation, calibration, and patient factors impact the variability. In the applied portion of the workshop, OAE response measurements will be obtained by participants to illustrate the use of different recording paradigms as well as to facilitate the participants’ assessments of their own test-retest variability. The obtained results will be discussed and interpreted as a group with an emphasis on the application of repeated OAE measures for hearing conservation programs. An enhanced understanding of various recording paradigms and sources of variability in OAE response measurements can dramatically improve the reliability of OAE measurements and, thereby, their diagnostic accuracy.
Skills, they are not difficult to learn, and they are absolutely critical to professional success. Soft-skills never become obsolete.

Like oil in an engine, keeping precision parts (hard-skills) from seizing into a useless block of metal. In this workshop, I will describe soft-skills and demonstrate how they can be productively applied in clinical practice, academic settings, or other real-world settings. Managing emotional intelligence with a collection of soft-skills complements hard-skills. Soft-skills are evolution made us that way. Whether we like it or not, evolution made us that way. Managing emotional intelligence with a collection of soft-skills complements hard-skills. Soft-skills are like oil in an engine, keeping precision parts (hard-skills) from seizing into a useless block of metal. In this workshop, I will describe soft-skills and demonstrate how they can be productively applied in clinical practice, academic settings, or other real-world settings. Attendees are urged to contribute personal examples, which will serve as case studies. Even though universities do not teach soft-skills, they are not difficult to learn, and they are absolutely critical to professional success. Soft-skills never become obsolete.

Workshop Presenter Biographies

Amanda Azman, Au.D., Ph.D. - National Institute for Occupational Safety and Health | USA
Amanda S. Azman is a research audiologist with the National Institute for Occupational Safety and Health (NIOSH). Dr. Azman earned her Au.D. from the University of Pittsburgh in 2006. She joined the Hearing Loss Prevention branch of the NIOSH Office of Mine Safety and Health Research in 2007, where she serves as the technical manager for the NVLAP accredited hearing protector testing facility. Dr. Azman has spent time assessing hearing protector technology for maintaining audibility in mining noise. Her current research focus is on the effectiveness of various noise controls and other hearing loss intervention tools developed by NIOSH to reduce the incidence of noise-induced hearing loss in mining.

A.U. Bankaitis, Ph.D., FAAA - Oaktree Products, Inc. | USA
A.U. Bankaitis earned her masters degree in audiology from Cleveland State University in 1990 and immediately moved to Cincinnati to pursue her doctorate at the University of Cincinnati while simultaneously completing her CFY at the University of Cincinnati Medical Center. Her involvement in infection control was somewhat of an accident; she happened to be in the right place at the right time. Within the first year of her doctoral studies, a relationship was established with the Infectious Disease Center at the University of Cincinnati to study the effects of varying degrees of HIV on the auditory system. In the absence of readily accessible information, she educated herself in the area of infection control with specific application to audiology and speech-language pathology and started sharing that knowledge with her colleagues.

LTC(P) Lynnette Bardolf, Ph.D. - US Army (USAARL) | USA
Lynnette Bardolf earned her B.S. in Communication Disorders and her M.S. in Audiology from Florida State University (FSU) in 1989 and 1990, respectively. She received a commission as an Army Officer in the Army’s Medical Service Corps in 1989, and has served as a military clinical audiologist and hearing conservationist for the past 20 years. Lynnette has had many opportunities including a military mission to Nairobi, Kenya, in Jan. 1999, to provide audiology services to victims of the Aug. 1998 Embassy bombings; as well as the opportunity to pursue her Ph.D. in Audiology at the University of Florida, where she graduated in Aug. 2006. Currently, Lynnette is assigned to the United States Army Aeromedical Center/Lyster Army Health Clinic at Ft. Rucker, Alabama as Chief of Specialty Services, along with serving as a clinical and research audiologist. She is also the current Director of Membership for NHCA.

Elliott H. Berger, M.S., INCE.Bd.Cert. - 3M Occupational Health and Environment, Safety Division | USA
Elliott H. Berger, M.S., INCE.Bd.Cert., is a Division Scientist for 3M. For over 30 years he has studied hearing protection, hearing conservation, and related topics, and has presented his research in numerous lectures and publications. He chairs the ANSI working group on hearing protector attenuation, served on the National Academy of Science committee evaluating hearing loss in the military, is Past-President of the National Hearing Conservation Association, a Fellow of both the Acoustical Society of America and the American Industrial Hygiene Association, and a recipient of the National Hearing Conservation Association’s Outstanding Hearing Conservationist Award. Among his favorite sounds is his terrier, Sophie, munching on a sesame brittle treat.
that began with her dissertation using the P3 event-related potential. OAEs among Veterans undergoing chemotherapy. She is also pursuing an interest in auditory memory time to research. She is currently PI on a study investigating early identification of hearing loss using University of Washington and at the University of Arizona. She joined NCRAR in 2007 to devote more otoacoustic emissions. Dr. Dille has taught in the Department of Speech and Hearing Sciences at the Center|USA

CPT Kara M. Cave, Ph.D., CCC-A - United States Army Medical Activity, Fort Campbell | USA
CPT Cave is currently the Chief of the Hearing Program at Fort Campbell, KY. Her previous assignments include: Walter Reed Army Medical Center, Washington, D.C; Army Research Laboratory, Aberdeen Proving Ground, Maryland; 10th Combat Support Hospital, Baghdad, Iraq; and Fort Bliss, Texas. She received her B.A. from Boston College in 1999 and her Ph.D. in Audiology from James Madison University in 2005.

CPT Leanne Cleveland, Au.D., CCC-A - Fort Carson Hearing Program Mgr, US Army | USA
CPT Cleveland was born and raised in Canada. From 1991 to 1997 she worked at the Hospital for Sick Children and at the North York General Hospital in Toronto, Canada as an Audiology Technician. From 1997 to 2000 she lived in Saudi Arabia as an audiology technician for the King Fahad National Guard Hospital. Leanne was commissioned in the US Army in 2003 and completed the Audiology externship program at Walter Reed Army Medical Center in 2004. She is a graduate of the AuD program at SUNY Buffalo. CPT Cleveland is currently the senior audiologist and Hearing Program Manager at Fort Carson, Colorado. She was also stationed at Fort Hood, Texas from 2004 to 2006. CPT Cleveland was sworn in as a US citizen on April 13, 2008 at the Al Faw Palace in Baghdad, Iraq while she was deployed with the 3rd Brigade Combat Team, 4th Infantry Division.

MAJ Jillyen Curry-Mathis, Au.D., CCC-A - USA MEDDAC, Fort Jackson, SC, U.S. Army | USA
MAJ Curry-Mathis completed her Au.D. at the University of Florida and went active duty in the US Army in 2003 with an assignment to Fort Stewart, GA. She has presented on the development of an effective Army Hearing Program at multiple leadership levels and professional conferences, to include the MEDCOM Chief of Staff. MAJ Mathis had the opportunity to deploy with the 3rd Infantry Division in 2008 for an “insider’s perspective” on the challenges faced by soldiers in a combat environment. She has gained a reputation as an expert in the tactical fielding of hearing protection systems and recently authored TRADOC doctrine to establish several training standards. MAJ Mathis is currently spearheading an Army-wide program to educate basic training soldiers and their cadre for combat arms earplug use and the preservation of “operational” hearing.

Marilyn Dille, Ph.D., CCC-A - Ntl. Center for Rehabilitative Auditory Research Portland VA Med. Center | USA
After 25 years of clinical practice, Marilyn Dille returned to the University of Washington for her Ph.D. in Audiology. Her dissertation and subsequent publications and presentations have been in physiological measures of hearing including evoked potentials, cognitive measures of auditory memory and otoacoustic emissions. Dr. Dille has taught in the Department of Speech and Hearing Sciences at the University of Washington and at the University of Arizona. She joined NCRAR in 2007 to devote more time to research. She is currently PI on a study investigating early identification of hearing loss using OAEs among Veterans undergoing chemotherapy. She is also pursuing an interest in auditory memory that began with her dissertation using the P3 event-related potential.

Laura Dreisbach, Ph.D., CCC-A - San Diego State University | USA
Laura Dreisbach is a certified Audiologist and Associate Professor in the School of Speech, Language, and Hearing Sciences at the San Diego State University. She obtained a Ph.D. in Audiology and Hearing Sciences from Northwestern University, where her studies involved the objective measurement of human cochlear physiology. Prior to joining the faculty at SDSU, Dr. Dreisbach completed a Post-Doctoral Fellowship at Walter Reed Army Medical Center where her research focused on psychoacoustic measurements in normal and hearing-impaired listeners. She is the director of the Auditory Physiology and Psychoacoustics Laboratory where her research entails characterizing peripheral auditory function to ultra-high frequency stimuli using objective measures (otoacoustic emissions) in pediatric and young adult listeners. One focus of this research is to establish the reliability of varied otoacoustic emission measurements for the purpose of monitoring populations exposed to ototoxic agents (e.g. noise and medications.)
Nancy Gallighugh, M.S., CCC-A - Kalamazoo RESA | USA

Nancy Gallighugh received her Bachelor of Arts degree from Indiana University and her Master of Science degree from Western Illinois University. As a member of the staff of Constance Brown Hearing Centers for thirteen years, she supervised the industrial audiology program, provided clinical audiology services, and managed the educational audiology program. She currently administers educational audiology services to hearing impaired students through Kalamazoo Regional Educational Service Agency.

Mihaela Grigorie, Ph.D. - Phonak | Switzerland

Mihaela Grigorie is Product Manager for hearing protection products at Phonak Communications in Switzerland. She holds a Ph.D. in microelectronics from the Swiss Institute of Technology (EPFL) and an MBA from the University of Lausanne (HEC). Her experience covers integrated circuit design, project leading, marketing and communication management, as well as quality systems implementation. Her current position within Phonak spans all tasks related to the management of the company’s Serenity hearing protection devices and the definition, development and launch of innovative products such as the SafetyMeter fit-testing system.

Kenneth Gerhardt, Ph.D. - Senior Associate Dean for Academic Affairs, University of Florida | USA

Dr. Kenneth Gerhardt received his Ph.D. in Audiology and Hearing Science from The Ohio State University. For the past 32 years he has been a professor in the Speech, Language and Hearing Sciences program at the University of Florida. He is currently the Senior Associate Dean of the UF Graduate School. Dr. Gerhardt has published over 90 articles that focus on noise-induced hearing loss and fetal hearing. Prior to his appointment in the Graduate School, he studied fetal noise exposure and auditory development. His research has been funded by the NIH, U.S. Army and private foundations. Dr. Gerhardt helped develop the Doctor of Audiology program with a distance learning component that has graduated over 1000 students since 2000. He has received numerous awards for his teaching, service and research, and was selected Faculty of the Year by the Florida Blue Key for his commitment to students.

Donald Henderson, Ph.D. - State University of New York at Buffalo, College of Arts and Science | USA

Dr. Henderson is a graduate of Western Washington State College and he received his Ph.D. from the University of Texas in 1966. For the last 40 years, he has studied hearing and causes of hearing loss. He has published over 150 articles, edited ten books and has been continuously funded by federal granting agencies since 1968. His current research focus is on the role of free radicals as a factor in hearing loss from noise, drugs and aging. As a corollary, he is also developing pharmacological techniques for preventing hearing loss by using antioxidants or inhibitors of apoptosis (active hair cell death). Dr. Henderson came to UB in 1987 as the Chair of the Department of Communication Disorders and Sciences. In 1994, he and Dr. Richard Salvi formed the Center for Hearing and Deafness. The Center has fostered important interdisciplinary research into hearing and disorders associated with hearing. The Center also serves as a unique training resource for graduate students and medical residents.

James Jerome, CCC-A, M.A. - Workplace INTEGRA | USA

Jim has over thirty-eight years of experience in the field of Audiology. He retired as a Lieutenant Colonel from the U.S. Army in 1998, devoting twenty-one years to clinical audiology and hearing conservation. From 1998 to 2002, he was an Occupational Audiologist with Health & Hygiene (later U.S. HealthWorks) in Indianapolis, Indiana. From 2002 to 2006, he was President of Hearing Safety- Midwest, Inc, in Indianapolis, Indiana, a hearing conservation consulting and service firm. Currently, he is affiliated with Workplace INTEGRA in Greensboro, North Carolina, and is the head of the Indianapolis office. Jim has been a member of NHCA since 1999 and was Secretary/Treasurer of the organization from 2006 to 2007. He is currently on the board of the NHCA Scholarship Foundation. He is also an active CAOHC course director and has been recognized as one of the most active directors in the nation since 2003.
Benj Kanters, M.M. - Columbia College Chicago | USA

Benj Kanters earned his B.S. in Speech and his M.M. in Music Technology, both from Northwestern University. He has been on the faculty of Columbia College since 1993, after 20 years in the audio and music industries, including 14 years as adjunct professor of audio at Northwestern University’s School of Speech and Music. In 1970, he was partner and sound engineer with the Chicago area concert club, Amazingrace. In 2000 he developed the course Studies in Hearing to teach hearing physiology to students majoring in audio and acoustics, the only such course offered in any college program of its kind. In 2007, he founded The Hearing Conservation Workshop, visiting colleges and universities to teach hearing physiology and conservation to future audio and music industry professionals.

Laura Kauth, M.A., CCC-A - Independent Consultant | USA

Laura Kauth earned her bachelor’s degrees in English, psychology, and biology at the University of Iowa in 1994. She went on to complete her M.A. in audiology in 2000. Although initially inclined toward research, an outplacement with Dr. Myrna Stephens and a student membership in NHCA redirected her into hearing conservation. After ten years of dividing her time between clinical and occupational audiology, Laura opted to leave her clinical practice to better pursue her professional interests in hearing conservation. Laura is currently licensed to practice audiology in Iowa, Illinois, and Wisconsin, and maintains the Certificate of Clinical Competence through the American Speech-Language-Hearing Association (ASHA). She is a certified course director for the Council for Accreditation in Occupational Hearing Conservation (CAOHC). She has been an active member in NHCA since 2000, and currently serves on the Executive Council as the Director of Communications.


Dawn Konrad-Martin is a certified Audiologist and Research Investigator at the National Center for Rehabilitative Auditory Research (NCRAR) at the Portland VA Medical Center. She is also an Assistant Professor of Otolaryngology at the Oregon Health and Science University. She obtained a Ph.D. in Audiology from the University of Washington, where her studies involved developmental auditory neurobiology. Prior to joining the NCRAR, Dr. Konrad-Martin completed a Post-Doctoral Fellowship at Boys Town National Research Hospital, and was an Assistant Professor in the Department of Communication Disorders and Sciences at Rush University.

Tom Lloyd, B.S. - Associates in Acoustics, Inc. | USA

Mr. Lloyd has been a senior consultant of Associates in Acoustics, Inc. since 1998. His primary responsibilities include conducting engineering noise control surveys, data analysis, research, and design of recommendations for noise control. In addition, he conducts environmental and community noise surveys, as well as employee noise exposure assessments for both hearing conservation and regulatory compliance. He also teaches noise control and hearing conservation training seminars, which are customized to the particular needs of the client or attendees.

MAJ John A. Merkley, M.S., CCC-A - United States Army Public Health Command Region | Europe

MAJ Merkley has served over ten years with the active duty Army as a 72C Audiologist, where he specializes in hearing conservation. From Aug. 2006 to Dec. 2007 he deployed with the 28th Combat Support Hospital in support of Operation Iraqi Freedom, where his primary responsibilities included providing clinical audiology services to coalition forces, expanding hearing testing services in theater, promoting hearing readiness, teaching good hearing health, and providing consultation to the 3rd Medical Command. He is currently assigned to the Army’s Public Health Command Region – Europe (USAPHCR-Europe) in Landstuhl, Germany. Prior to this assignment he served as the Chief, Hearing Conservation in Wuerzburg, Germany, and Chief, Audiology and Hearing Conservation at Ft. Drum, NY. He received his Master of Communication Disorders with an emphasis in Audiology from Utah State University in June 1998 and is working on the Doctor of Audiology from Central Michigan University.

Kevin Michael, Ph.D., Michael & Associates | USA

Dr. Michael is President of Michael & Associates, Inc, an independent NVLAP accredited acoustics laboratory in State College, PA, USA. The Michael & Associates laboratory evaluates hearing protectors and communication systems to US, Australian and other national test standards. In addition to testing services, Kevin has developed the FitCheck systems for measuring insert- and muffle-type hearing protector performance on end-users. As a research facility, Michael & Associates developed a speech processing system for the US Army under a multi-year small-business innovation and research contract. Kevin partnered with Dr. Alton Burks in the design and development of a new system for the continuous monitoring personal noise exposure. In 2002, this technology was awarded US Patent, number 6456199. The QuietDose system is now a Howard Leight product and Kevin is supporting further development and sales of the product line.
Christopher Spankovich, Au.D., Ph.D., M.P.H. - University of Florida | USA

Christopher Spankovich is a Research Assistant Professor at the University of Florida. He received his masters of public health degree (M.P.H.) from Emory University, doctor of audiology (Au.D.) from Rush University, and his Ph.D. in hearing sciences from Vanderbilt University. His primary research and clinical interests include identifying early signs of auditory pathology, prevention of acquired forms of hearing loss, and epidemiology/public health in audiology.

Richard Stepkin, M.S., CCC-A - Enviromed Corp | USA

Richard L. Stepkin is a Graduate of Florida State University in 1972. He has been a full time Occupational Audiologist ever since. He was a Military Audiologist for three years. In 1977, he started Enviromed Corp and it has been growing ever since. Enviromed provides services in mobile audiometry, noise surveys and education training in hearing conservation nationwide. Richard is one of the original members of NHCA and was Program Chair in 1981. He served on the CAOHC Executive Board 2001-2004. He has been a long-time member of the PSP and participated on various PSP topics.

Theresa Schulz, Ph.D., CCC-A - Sperian Hearing Protection | USA

Theresa Schulz received her B.S. (1981) and M.A. (1983) degrees from the University of Texas at Austin and her Ph.D. (1994) from Ohio State University. She was recognized as the US Air Force Outstanding Audiologist of the Year in 1989 and 1998, and received the Elizabeth Guild Award for Contributions to Military Hearing Conservation in 1996. She was nominated by the Air Force for the 2003 National Public Service Award and received the military’s Outstanding Volunteer Medal in 2004 and NHCA’s Michael Beall Threadgill award in 2009 for her extensive work to prevent noise-induced hearing loss both in the military and in the public sector. Theresa is a die-hard NHCAer having served the association in many roles, she is currently serving on the NHCA Foundation. Dr. Schulz provides consultation in hearing loss prevention issues and hearing conservation programs and is a frequently requested, enthusiastic speaker on hearing conservation.

Kelly Reavis, M.P.H., CCC-A - University of California, Irvine Department of Otolaryngology | USA

Kelly Reavis is a clinically certified Audiologist with strong interests in assessment and treatment of tinnitus, extended-high-frequency auditory function and identification of auditory dysfunction through distortion-product and stimulus-frequency otoacoustic emissions. She has worked in both clinical and research settings, and has been actively involved in the dissemination of clinically relevant research outcomes through presentations and publications both at the local, state, and national levels. Prior to a recent move, she was a research audiologist at the VA National Center for Rehabilitative Auditory Research in Portland, Oregon for seven years. She received a M.P.H. degree emphasizing biostatistics and epidemiology from Oregon Health and Science University in 2009 and received a M.S. in Speech and Hearing Science from Portland State University in 2002. Currently, Ms. Reavis is a research audiologist at the UC Irvine Hearing and Speech Laboratory under the direction of Dr. Fan-Gang Zeng.

CAPT. William Murphy, Ph.D. - National Institute for Occupational Safety and Health | USA

Captain Murphy (USPHS) is co-leader of the NIOSH Hearing Loss Prevention Team in the Division of Applied Research and Technology in Cincinnati, OH. His primary interests are fundamental acoustics, hearing loss, hearing protection devices (HPDs) and noise control engineering. He has researched the impulse response of both nonlinear and linear hearing protectors and has developed software to measure the attenuation of HPDs and pioneered the analysis of laboratory and field attenuation measurements of HPDs.

Richard Stepkin, M.S., CCC-A, FAAA - Enviromed Corp | USA

Richard L. Stepkin is a Graduate of Florida State University in 1972. He has been a full time Occupational Audiologist ever since. He was a Military Audiologist for three years. In 1977, he started Enviromed Corp and it has been growing ever since. Enviromed provides services in mobile audiometry, noise surveys and education training in hearing conservation nationwide. Richard is one of the original members of NHCA and was Program Chair in 1981. He served on the CAOHC Executive Board 2001-2004. He has been a long-time member of the PSP and participated on various PSP topics.

Jérémie Voix, P.Eng., M.Sc.A., Ph.D. - École de technologie supérieure, Mechanical Engineering Department | Canada

Jérémie Voix is an Acoustics Engineer with field experience in industrial noise reduction projects. He holds a Bachelor’s degree in Fundamental Physics from Université des Sciences et Technologies de Lille (France), a Master’s degree in Applied Sciences in Acoustics from Université de Sherbrooke and a Ph.D. Doctorate -awarded a Doctorate, with great distinction- from the École de Technologie Supérieure (ETS). Jérémie Voix has been the CTO and VP of Scientific Research at Sonomax Hearing Healthcare Inc where he worked on the development of a “smart earplug”. Recently (April 2010) appointed as an Associate Professor in the Mechanical Engineering department, one of Jérémie’s research areas is to merge hearing protection, hearing aid and communication features inside a unique in-ear device, dubbed « bionic ear ».
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NHCA Membership Information:

2011 Membership Dues Renewals:

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• To request an invoice please email nhcaoffice@hearingconservation.org

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• Join online at www.hearingconservation.org with a Visa/MC/AMEX
• Receive member benefits such as: reduced rates to the Annual Conference, access to member’s only section on the website which includes archived issues of the Spectrum Supplement, Conference Proceedings for past conferences, discussion boards, etc.
Friday Conference Abstracts

Friday, February 25, 2011
Platform Presentation Descriptions

7:00 a.m. - 5:30 p.m.
Registration and Information Desk Open

7:00 a.m. - 8:00 a.m.
Continental Breakfast

GENERAL SESSION - MORNING

8:00 a.m. - 8:10 a.m.
Welcome and Opening Remarks

8:10 a.m. - 8:20 a.m.
“Introduction to OSHA”
  Presenter: Alice Suter, Ph.D. - Alice Suter and Associates | USA (Moderator)

8:20 a.m. - 8:40 a.m.
“OSHA Update on Occupational Noise”
  Presenter: Nancy Hauter - Occupational Safety and Health Administration | USA
This informative session will provide an update of the Occupational Safety and Health Administration’s (OSHA’s) enforcement activity regarding Occupational Noise Exposure and the 1983 Hearing Conservation Amendment.

8:40 a.m. - 9:00 a.m.
“Thirty Years of the OSHA Hearing Conservation Amendment: An Industry Perspective”
  Presenter: Christine Dixon-Ernst, M.S., Hyg., C.I.H., M.A., CCC-A - Alcoa | USA
The 1981 OSHA Hearing Conservation Amendment is a landmark occupational health standard. Whether one agreed with its contents, it provided basic program elements and specifics for establishing and managing an industrial hearing conservation program. While some organizations and industrial groups spent time trying to overturn the amendment to the Noise Standard, Alcoa made a strategic decision thirty years ago to use the standard as a springboard to strengthen its efforts to protect employee hearing and create a model hearing conservation program, with the ultimate goal of preventing noise-induced hearing loss. A description and perspective of that journey along with the progress Alcoa continues to make toward the goal of eliminating all workplace noise-induced hearing loss will be summarized in this presentation.

9:00 a.m. - 9:20 a.m.
“Podium Session Honoring the 30-year Anniversary of OSHA’s Hearing Conservation Amendment”
  Presenter: Timothy L. Rink, Ph.D.,CCC-A CEO - HTI, Inc. | USA
The mandate for biological monitoring (annual audiometric testing) dictated in The Hearing Conservation Amendment to the OSHA Noise Standard created an industry specializing in the delivery of these services via mobile, on-site audiometric testing providers (the genesis of the NHCA). As an early participant in this “cottage industry”, I have enjoyed a front porch seat to many intriguing innovations as computer assisted testing and information management have changed the testing, reporting and record keeping landscape. My presentation will take a look at interesting age and gender statistics gathered over the past eight years since OSHA revised the criteria for recording hearing loss cases.

9:20 a.m. - 9:40 a.m.
“Application of Engineering Controls to Reduce Industrial Employee Noise Exposures”
  Presenter: Robert Anderson, B.S., INCE - Anderson Consulting Associates | USA
The Federal Occupational Noise Exposure Regulation 29CFR 1910.95 specifies the use of feasible administrative or engineering controls as the primary means to control employees noise exposure to within prescribed limits. To what extent and under what circumstances have engineering controls been implemented within industry? This presentation will examine how engineering controls have been used from the perspective of several large industrial companies, process equipment manufacturers and the suppliers of noise control materials.

9:40 a.m. - 10:00 a.m.
“The OSHA HCA: A Labor Perspective”
  Presenter: Scott Schneider - Director of Occupational Safety and Health | USA
Close to 30 years ago, OSHA recognized the inadequacy of its noise standard by promulgating the Hearing Conservation Amendment. From the start it was an inadequate response. First, it excluded construction workers from coverage. Construction workers exposed between 85 and 90 dBA have no required protection. The result is an epidemic of hearing loss in construction. Second, it codified the use of hearing protection instead of engineering controls above 85 dBA turning the hierarchy of control on its head. Third, it did nothing about the inadequacy of the OSHA 90 dBA PEL or the 5 dBA doubling rate, which are widely considered unsafe. While OSHA regulates toxic substances to reduce risk below 1 in 1,000, the risk of hearing loss at these levels is more like 1 in 4! What can or should we do now to rectify this serious gap in protection?
In the USA and Europe, there are 26% of adults with a bilateral hearing problem that impairs their ability to hear in noisy situations substantially and a further 2% who have substantial unilateral hearing problems, impacting substantially on their ability to locate a sound (e.g., car, bus, voice). The prevalence is highly related to age. There is no remission. There is a similar prevalence in Asia on an age adjusted basis. Of the 26% in the UK, only 3-4% have consulted a doctor about their hearing problem and currently receive support from the NHS. About half, 13%, have really substantial hearing problems (with substantial co-morbidity in tinnitus and balance problems) and would receive huge benefits from amplification if provided and accepted (around £1-2k per QALY gained, Davis et al 2007). A small but substantial number of people acquire hearing loss as a complication of cancer treatment and there is no evidence that their hearing problems are diagnosed earlier. We can reduce the impact that noise and toxins have on the cochlea and on the auditory cortex, but age is still by far the biggest problem we have to tackle! In terms of noise there are three main sources – background noise, social noise, and occupational noise. How do we tackle all of these? Which are the most important messages for individuals, communities and governments? Increased accidents and falls are associated with undiagnosed and untreated hearing loss, with excess mortality of 10-20% over 20 years (not necessarily associated with hearing loss). Estimates of morbidity and cost to the nation have been derived by RNID; improving the timeliness of intervention by 8 – 9 years would result in a net benefit of £1.8bn including cost efficiencies in services, and impact on cost of other areas of people’s healthcare. So how do we tackle late diagnosis, as there is an average 10-15 years between onset of symptoms and reporting of symptoms to GP making late recognition, referral and diagnosis a real problem (Davis et al, 2007). Screening could be an option at age 60-65 years, a time at which other national screening programmes are looking at older people for aortic aneurisms, diabetic retinopathy or cancer. A second line of screening might be Hearing Health promotion for those 60 – 79 years of age. Delays in primary care could be tackled by having more appropriate models of diagnostics (and ‘treatment support’) in the community. Examples will be given around how the NHS is tackling some of these issues which are illustrated on http://www.improvement.nhs.uk/audiology/.

**How Can We Improve Exposure Estimates for Workers with Highly Variable Noise Levels?**

**Presenter:** Richard Neitzel, Ph.D., C.I.H. - University of Washington | USA

Exposure assessment is challenging, and particularly so for workers with variable noise levels. We evaluated exposure estimates created using three different techniques: trade-mean (TM), task-based (TB), and subjective rating (SR). We created TM, TB, and SR estimates for a cohort of construction workers (n=68 workers) using information collected on three workshifts over four months. Subjects full-shift exposures were measured on each of the three workshifts. We also created hybrid estimates through various combinations of the TM, SR, and TB estimates, and compared these hybrid estimates to subjects measured exposures and to the single TM, TB, and SR estimates. Hybrid estimates generally performed better than estimates from single techniques, and resulted in substantial improvements compared to single techniques. A regression-based hybrid approach had the best performance, but two much simpler hybrid techniques did nearly as well. Adding TM information did not improve hybrid estimates. These results suggest that a hybrid regression technique combining TB and SR estimates may produce the most accurate estimates of exposure for construction workers.

**Hearing Provides a Sense of Place**

**LUNCHEON LECTURE: Barry Blesser, Ph.D. - Blesser Associates | USA**

Over millennia, mammalian hearing evolved to make us aware of dynamic events taking place in the physical and social environments. We become aware of those external events when they convert mechanical energy into propagating sound waves, which are then processed by the auditory system. Sound transports events into consciousness. Consider the examples of crying babies, racing cars, bouncing balls, ringing bells, hissing snakes, ticking clocks, or chatting colleagues. Indeed, because detecting such events in ancient times was so critical for survival, the auditory cortex evolved as a 24/7 always-on system without the equivalent of “earlids” or spatial focus. Auditory event detection then steers the visual system to the salient event. However, in modern society, the eventscape has become a political and commercial battleground for capturing head-space of the inhabitants. In order to regain control over their sensory location, many people now use loud music or headphones as a means of transporting themselves to a new sensory location. This lecture will examine the idea that these synthetic eventscapes, which have the potential to be damagingly loud, are a manifestation of space travel to virtual locations.

**EPIDEMIOLOGY and EDUCATION**

**Typical Daily Noise Exposures by Gender, Age, and Occupation**

**Presenter:** Kristy Deiters, B.A., Au.D. Candidate - Western Michigan University | USA

Although noise exposure is considered a major cause of permanent hearing impairment relatively little is known about current typical noise exposures in the general population. In this study, participants wore a personal noise dosimeter (Etymotic ER200D) during waking hours for a period of one to three weeks. Cumulative sound exposures were logged 16 times per hour, downloaded periodically, and
evaluated with respect to average sound level (dBA Leq) and dose (65 dBA threshold; 85 dBA criterion; 3 dB exchange rate). Data from the first 100 male participants (26 100-person hours) revealed median 8-hour equivalent levels (LeqA8) of 76 dBA (90% range: 67 to 90), corresponding to a median noise dose of 12% (90% range: 2 to 315%). Trends by gender, age, time, education, and occupation will be presented. Study supported by CDC/NIOSH Contract #211-2009-31218

1:50 p.m. - 2:10 p.m.
“Habits, Preferences and Protective Behaviors Regarding Loud Sound”
Presenter: Keila A.B. Knobel, Ph.D. - Universidade de Campinas | Brazil
Maria Cecilia Marcondes Pinheiro - Lima Universidade de Campinas R. Taruã | Brazil
The aim of this study was to understand mediators for noise-induced-hearing-loss, risk and protective behaviors among Brazilian children and their parents’ impressions of the children’s auditory complaints, knowledge and beliefs about the effects of noise exposure in children. 263 children (51.7% female, mean age 8.29, SD 0.17) were randomly selected from public and private schools in a Brazilian town, interviewed at school time with questions about demographic and background information, self-reported hearing complaints, habits, preferences and protective behaviors regarding loud sound exposures and their parents answered a similar questionnaire about their children at home. Besides discussing the prevalence of auditory complaints and previous exposures to loud sounds, we discuss children and parents auditory habits, preferences and beliefs comparing gender, public and private schools and parents’ educational level. Results will be used to create or to make cultural adjustments of an existing hearing conservation program for children.

2:10 p.m. - 2:30 p.m.
“Classroom Noise: National Effects”
Presenter: Peggy Nelson, Ph.D., CCC-A - University of Minnesota | USA
Classroom acoustics standards have been developed over a 15-year process, but remain voluntary and too often ignored. A substantial body of research shows that children require lower noise levels than adults for learning. For example, adults can understand the majority of speech when the audibility of the speech is reduced to 40% or 20%, but young children need 80% or 60% audibility for the same level of understanding. While adults experience a release from masking when signals and background noise arise from different locations in a room, children don’t gain the same benefits; in fact children may experience masking from background noise coming from any direction. Auricularations will be presented that demonstrate these differences between children and adults. Next steps in the efforts to reduce classroom noise will be discussed.

2:30 p.m. - 2:50 p.m.
“Earthquakes and Hearing Loss: A Possible Unique and Unconventional Idea of Educating Others on Hearing Loss and Hearing Loss Prevention”
Presenter: LTC(P) Lynnette Bardolf, Ph.D. - US Army (USAARL) | USA
This presentation explores an out of the box approach of possibly using earthquakes and tsunamis—natural occurrences that many people are familiar with, to understand and relate to for their devastating effects—to educate others on hearing loss and hearing loss prevention. Over 20 commonly-used earthquake and audiology terms (ie. amplitude, intensity, magnitude, etc.) will be discussed comparing/contrasting similarities and differences between the two, how to possibly integrate this information into hearing health education briefings, and hopefully leaving a more indelible impact in the receivers minds of the devastating effects of continuous and impulse/traumatic noise exposure on hearing and the anatomical structures of the hearing mechanisms.

2:50 p.m. - 3:10 p.m.
“Type 2 Diabetes and Hearing Loss in Older Mexican Americans”
Presenter: Elizabeth Anne Thomas, Ph.D., R.N., ANP-BC, COHN-S, C.N.L. - University of California Los Angeles School of Nursing | USA
The association between diabetes and hearing loss among various populations has been reported in the literature. Mexican Americans have a high prevalence of type 2 diabetes. Among the elderly, hearing loss is also common. Understanding the co-occurrence of these conditions is important for planning screening, intervention and support for a vulnerable population. This presentation will report findings on the relationship between hearing loss and type 2 diabetes in a sample of Mexican Americans (n=990) from a longitudinal cohort study in the greater Sacramento area of California. High frequency hearing loss in the worse ear was significantly more prevalent in those with diabetes. Logistic regression modeling revealed that diabetes, along with age and gender, was a significant predictor of hearing loss in the worse ear. Implications and future research directions will be discussed.

WORKPLACE and IMPULSE NOISE
1:30 p.m. - 1:50 p.m.
Presenter: Peter Rabinowitz, M.D., M.P.H., Associate Professor of Medicine - Yale School of Medicine | USA
Christine Dixon-Ernst, M.S., CCC-A - Alcoa, Inc. | USA
The Draft ANSI standard S12.13-1991 proposed using test-test variability to assess the “effectiveness” of hearing conservation programs. While measuring hearing conservation effectiveness remains a worthy goal, the methods described in the draft ANSI standard are rarely employed. We report on the use of modified “better-worse” test-test variability statistics based on the draft ANSI standard to assess hearing conservation programs across a multinational corporation. Based on our experience to date, we believe that test-test variability can detect problems with audiometric testing procedures and should be used routinely for hearing conservation quality control. The presentation will include case examples.

1:50 p.m. - 2:10 p.m.
“Lessons Learned at DOD Indoor Firing Ranges”
Presenter: Charles Jokel, Noise Control Engineer - U.S. Army | USA
Recent investigations concerning noise exposures at several DOD firing ranges have led to a number of observations and generalizations
One of the challenges of hearing conservation is that the effectiveness of hearing protection varies greatly and it is difficult to know if an individual worker is adequately protected. A new technology allows for daily monitoring of noise exposures inside of hearing protection, thereby solving this problem. We report on an intervention research study in which volunteers monitor their noise exposures if an individual worker is adequately protected. A new technology allows for daily monitoring of noise exposures inside of hearing protection, thereby solving this problem. We report on an intervention research study in which volunteers monitor their noise exposures.

A .22 caliber starter pistol is commonly used in athletic events to generate a loud impulse signaling participants that the event (i.e. race) has started. The impulses generated from a typical .22 starter pistol (Italian Model 314) firing blanks were compared to impulses generated from a .22 revolver (Smith & Wesson K-22 Masterpiece) firing both black powder blanks and standard velocity projectiles. The results indicate that the starter pistol generates higher peak sound pressure levels at the shooter’s left ear than the standard .22 caliber revolver for all types of ammunition evaluated. Hence, a typical starter pistol is not inherently less hazardous to hearing than a traditional firearm and alternative lower-level signaling devices should be considered for sporting events. The use of hearing protection devices (HPDs) by event personnel when firing a starter pistol is recommended.

Findings from animal studies have identified xylene (an organic solvent) as an ototoxic agent. The aim of the present research was to study the association between xylene exposure and auditory dysfunction. A group of 30 laboratory workers exposed to xylene (study group) and a group of 30 non-exposed workers (control group) were selected. Both groups of subjects were not exposed to noise levels above 85 dBA TWA. The audiologic test battery comprised; pure-tone audiometry, tympanometry, transient evoked otoacoustic emissions, distortion product otoacoustic emissions, auditory brainstem response, hearing-in-noise test, masking level difference, dichotic digits, and adaptive tests of temporal resolution. Xylene-exposed workers presented with worse results in comparison to non-exposed workers for most of the tests results. A discussion of the possible mechanisms involved in the auditory dysfunction induced by xylene is presented. Also, the importance of including xylene-exposed workers in hearing conservation programs regardless of their noise exposure is discussed.

Research was conducted to understand the reasons why occupational noise-induced hearing loss occurs, including the barriers to the prevention of hearing loss. The research focused on the perceptions of managers and workers within five at-risk industries. While attitudes and understanding of the impact of excessive workplace noise is generally positive, there is still scope to improve education in the workplace. We find that the "Boiling Frog Syndrome", where gradual impacts of occupational noise can result in undesirable consequences unknowingly, is often overlooked as a cause for hearing loss. There is a need to raise awareness of why protectors should be worn at all times, regardless of duration or loudness and to have effective noise controls in place. Currently, only 54% of workers use hearing protectors consistently despite working in high risk industries, and 41% of businesses have made recent investments in noise controls. Safe workplace practices should be stimulated by management by encouraging managers to get their own hearing checked. If managers are personally aware of how long-term noise exposure has impacted them, this could encourage them to be more proactive with their approaches.

HPD's and NOISE RISK MONITORING

One of the challenges of hearing conservation is that the effectiveness of hearing protection varies greatly and it is difficult to know if an individual worker is adequately protected. A new technology allows for daily monitoring of noise exposures inside of hearing protection, thereby solving this problem. We report on an intervention research study in which volunteers monitor their noise exposures inside of hearing protection on a daily basis.
Traditional approaches to noise exposure estimation combine infrequent ambient noise surveys and/or exposure measurements with often inaccurate assumptions about individual hearing protection device (HPD) attenuation. In-ear dosimetry represents a different paradigm in that no such assumptions must be made, and with its integration into an intelligent HPD, safety professionals now have an immediate method of preventing occupational hearing loss. Intelligent protection systems afford wearers with automatic sealing control to verify sufficient passive attenuation, hear-through listening (within safe limits), instantaneous impulse compression, and digital Active Noise Reduction. Through inclusion of in-ear dosimetry an additional barrier towards noise-induced hearing loss is introduced, because the user can be warned if he/she is approaching over-exposure from noise. This talk will present field research on such integrated in-ear dosimetry and intelligent hearing protection technologies performed by Statoil, SINTEF, and Nacre. Data from field studies conducted on oil and gas installations will be presented, illustrating for example how radio communications may significantly affect the user’s total noise exposure.

2:10 p.m. - 2:30 p.m.
“Wind Turbine Noise: What Noise?”
Presenter: Alberto Behar, P.Eng., C.I.H., INCE.Bd.Cert. - University of Toronto | Canada
Willy Wong, Professor - University of Toronto | Canada

Wind turbine noise is a highly controversial issue. Does the noise only irritate or does it cause health problems as well? There are as many publications which point to one direction as the other. The assessment of the effect of noise is not without controversy. At the same time governments all over the world are pushing towards the use of clean and renewable resources. With the number of turbines ever increasing, both on land and in water, this presentation will touch the pressing issues and discuss the nature, issues and effect of wind noise generation.

2:30 p.m. - 2:50 p.m.
“Establishing Valid Sound Pressure Level Measurements in Orchestra Musicians”
Presenter: June Hart Romeo, Ph.D., NP-C - Center for Performing Arts Health & Research, Baldwin-Wallace College | USA
Peter Landgren, B.Mus. - Director, Conservatory of Music Baldwin-Wallace College | USA
D. Martin Raymond, R.N., Ph.D. - Eastern Michigan University School of Nursing | USA

In this device trial, the accurate measurement of sound exposure levels in musicians was obtained by measuring the exposure at the level of the ear of individual musicians using a custom-designed behind the ear dosimeter in addition to standard industrial wired dosimeters during performance. This allowed data to be recorded for an individual musician, yet provided accuracy in the determination of the instruments surrounding each individual musician. The dosimeter utilizes four separate digital processing cores and a new technology for miniaturization. The device fits in a small box approximately the size of a standard behind-the-ear hearing aid. The microphone is located immediately in front of the auditory canal, and the unit is powered by a standard hearing aid battery. The unit is programmed to determine sound pressure levels in three decibel increments from 85 to 137 decibels. Data demonstrated significant variation of allowable dose among musicians, and between right and left ears. Results demonstrate the need to expand this research to a larger group and the need to educate orchestra musicians, as well as music students and educators.

2:50 p.m. - 3:10 p.m.
“Personal Attenuation Ratings for Fit-Testing: Estimation and Application”
Presenter: CAPT. William Murphy, Ph.D. - National Institute for Occupational Safety and Health | USA

The Noise Reduction Rating for Hearing Protection Devices are determined by assessing the attenuation at seven frequencies with a panel of 10 or 20 persons. For fit-testing systems, attenuation can be measured by a variety of methods: Microphone in Real Ear, Real Ear Attenuation at Threshold (REAT) under headphone, Loudness Balance or in-situ dosimetry. Presently, commercial fit-test solutions evaluate attenuation using between one and seven frequencies to calculate a personal attenuation rating (PAR). The ratings have slight differences that may lead to conflicting answers with regard to performance and accuracy. Laboratory REAT attenuation data for four hearing protectors was collected and will be applied to the problem of estimating a PAR for the subjects. Evaluation of more frequencies increases the accuracy of the estimated attenuation from an error of three to six dB for a single frequency to about 0.5 to one dB when three or more frequencies are tested.

GENERAL SESSION - AFTERNOON

3:10 p.m. - 3:55 p.m.
Break/Posters/Exhibits

4:00 p.m. - 4:15 p.m.
“Barriers to the Implementation of Engineered Noise Controls in the Food and Beverage Industry”
Presenter: Hugh Davies, Ph.D., C.I.H., Associate Professor - University of British Columbia | Canada

While many jurisdictions have implemented regulations to reduce NIHL, the most effective intervention – reducing noise – is rarely implemented. We investigated barriers to the implementation of engineered noise controls through in-depth interviews conducted with 55 individuals and HCP audits at eight worksites. Constant comparative analysis of accounts were used to identify human
interactions and organizational processes acting as barriers. None of the participating companies had fully implemented HCP’s. We identified several apparent barriers to implementation of engineered noise control: 1) noise was both expected and accepted; 2) over-reliance on HPD; 3) weak understanding of engineered noise controls; 4) engineered noise controls not thought to be “practicable”; 5) low risk perception to noise; 6) poor knowledge of regulatory requirements; 7) employers over-emphasized individual responsibility; 8) limitations in employee-management communication. We concluded that the current “hearing conservation program” paradigm could be more successful if systematic implementation of the entire program is attained.

4:15 p.m. - 4:30 p.m.
“One Company’s Game Plan for Eliminating the Need for Hearing Conservation”
So how much does a hearing conservation program (HCP) cost on an annual basis? How expensive are noise controls? Can the cost of noise controls be justified against the annual cost of the HCP? What is the return on investment in noise controls? The answers determined by one company, as part of their five-year plan to eliminate the need for the HCP, are revealed in this presentation. Compounding the challenge is the fact the subject company follows a best-practice approach, using a permissible exposure level of 85 dBA and three dBA exchange rate.

4:30 p.m. - 4:45 p.m.
“Developing and Implementing a Corporate Buy-Quiet Strategy”
Presenter: Beth Cooper, P.E., INCE.Bd.Cert., M.S., Fellow INCE/USA - NASA Glenn Research Center | USA
Engineered controls are an integral and important element of a hearing conservation program because they reduce environmental noise levels, leading to a reduction in employee noise exposure. Although retrofit controls are important, they must be complemented by an active commitment to purchasing and designing new equipment for which noise emissions are minimized. This presentation will discuss the steps in developing and implementing a corporate Buy-Quiet strategy, which includes a formalized and documented process for determining and issuing noise emission specifications, conducting product research, evaluating options, and making purchase decisions. Participants will be able to initiate efforts at their place of employment to develop a customized strategy using the templates, tools, and other materials presented.

4:45 p.m. - 5:15 p.m.
“2011 Safe-in-Sound Excellence in Hearing Loss Prevention Awards”
Presenter: Thais C. Morata, Ph.D. - National Institute for Occupational Safety and Health | USA
Deanna Meinke, Ph.D., CCC-A, FAAA - University of Northern Colorado | USA
In 2006 the National Institute for Occupational Safety and Health (NIOSH) partnered with the National Hearing Conservation Association (NHCA) to create the Safe-in-Sound Award” for Excellence and Innovation in Hearing Loss Prevention (www.safeinsound.us). The objectives of this initiative are to recognize organizations that document measurable achievements and to share leading edge information to a broader community. Hearing health practices are evaluated against key performance indicators in a rigorous review process designed to capture and evaluate the successes. The 2011 Safe-in-Sound Excellence in Hearing Loss Prevention Awards” will be presented. Each of the award recipients will accept their awards and briefly present their success stories.

5:15 p.m. - 6:00 p.m.
Break, Posters and Committee Meetings

6:15 p.m. - 9:30 p.m.
Friday Night Off-Site Event: Rawhide
6:15 p.m. - Shuttle will depart hotel
6:30 p.m. - Rawhide/dinner/entertainment
9:00 p.m. - Shuttle will depart Rawhide
9:30 p.m. - Shuttle will arrive at hotel
Saturday Conference Abstracts
Saturday, February 26, 2011
Platform Presentation Descriptions

7:30 a.m. - 5:30 p.m.
Registration and Information Desk Open

7:45 a.m. - 8:45 a.m.
Chat Sessions with Buffet Breakfast (see page 7 for topics)

GENERAL SESSION - MORNING

8:55 a.m. - 9:00 a.m.
Introduction
Moderator: Colleen Le Prell, Ph.D., 2011 NHCA Program Chair

9:00 a.m. - 9:20 a.m.
“Otoacoustic Emissions As A Test of Noise-Induced Hearing Loss”
Presenter: Brenda Lonsbury-Martin, Ph.D. - Loma Linda University Medical Center | USA
Not long after their discovery in 1978, it was soon realized that otoacoustic emissions (OAEs) provide a noninvasive measure of the healthiness of outer hair cell activity. This realization quickly led to the expectation that OAEs would provide a unique and sensitive indicator of the damaging effects of excessive sounds on the cochlea, i.e., of the consequences of noise-induced hearing loss (NIHL) on hearing. However, this simple anticipation has not proven to be easily demonstrated, likely because of the complex factors that can influence both the measurement and interpretation of OAEs. The overall purpose of this presentation is to review the history of using OAEs to detect and diagnose NIHL based on both experimental analyses and practical investigations in the workplace. For certain, uncovering more specific particulars about the basic processes underlying the generation of OAEs promises to make them more useful for the early detection of NIHL.

9:20 a.m. - 9:40 a.m.
“DPOAE Level/Phase Mapping: Technical Achievements and Challenges”
Presenter: Deanna Meinke, Ph.D., CCC-A, FAAA - University of Northern Colorado | USA
Distortion product otoacoustic emission (DPOAE) testing shows promise for detecting noise-induced hearing loss early and monitoring cochlear status. However, DPOAE measurement technology must advance before DPOAE testing will be used in mainstream auditory assessments. Through a collaborative research effort, new hardware and software are currently being developed for research purposes. Specifically, recent achievements have focused on the development of DPOAE level/phase (L/P) mapping capabilities by combining advanced instrumentation and algorithms. The presentation will provide an overview of DPOAE L/P maps and will highlight the technological approach being utilized. Finally, the potential use of such maps in hearing loss prevention efforts will be described. Ultimately, this research will support the development of a “field-deployable” auditory assessment system. Work supported by ONR Grant N00014-09-1-0859.

9:40 a.m. - 10:00 a.m.
“OAEs and Noise Exposure: Promising Directions”
Presenter: Sumitrajit Dhar, Ph.D. - Northwestern University | USA
It has long been acknowledged that the outer hair cells bear the initial brunt of noise-induced damage to the auditory system. Otoacoustic emissions (OAE) are a direct probe of the health of outer hair cells and have been utilized extensively in research to document and monitor noise-induced changes to cochlear structures. However, these attempts and the resulting knowledge is yet to lead to a universal OAE-based measure of hearing loss induced by noise. Recent developments in calibration procedures promise dramatic improvements in control of signal levels and hence in test-retest reliability. Research groups are also beginning to explore other features of OAE recordings that may be more sensitive to changes in cochlear physiology than the traditionally used measure of OAE level. These recent developments in technology and the possibility of using novel measures of OAE characteristics will be discussed in this presentation.

10:00 a.m. - 10:20 a.m.
“Novel Multivariate DPOAE Metrics That Identify Changes in Hearing”
Marilyn Dille, Ph.D., CCC-A - Nhl Center for Rehabilitative Auditory Research Portland VA Med. Center | USA
Garnett P. McMillan, Ph.D. - Nhl Center for Rehabilitative Auditory Research Portland VA Med. Center | USA
Kelly Reavis, M.P.H., CCC-A - University of California, Irvine Department of Otolaryngology | USA
Stephen A. Fausti, Ph.D. - Nhl Center for Rehabilitative Auditory Research Portland VA Med. Center | USA
Alterations in DPOAE level can be used clinically to identify changes in conventional and high-frequency hearing thresholds. We developed a multivariate risk assessment tool for identifying drug-induced hearing changes at bedside, and propose extension of this approach to monitoring for NIHL. The best DPOAE stimulus parameters and response features, as well as DPOAE cutoff criteria, may
impaired individuals had poorer localization performance than normal hearers in both conditions. The results point to the need for turning the head to aid in localization. There were no significant differences between the two noise conditions; however, hearing-rear confusions, attesting to the importance of interaural time and interaural level difference cues in localization, as well as the need for left-right errors, and percent front-rear errors. On most measures and across the two noise conditions, both of the BlastPlg™ earplugs exhibited localization performance that was close in line with the Combat Arms earplug. In all cases, the open ear condition ranked best. On all measures, the Peltor Com-Tac II earmuff ranked lowest in localization performance. Across all HPEDs and the open ear, there were very few left-right confusions of origin of the gunshots. In all cases, left-right confusions were substantially fewer than front-right confusions, attesting to the importance of interaural time and interaural level difference cues in localization, as well as the need for turning the head to aid in localization. There were no significant differences between the two noise conditions; however, hearing-impaired individuals had poorer localization performance than normal hearers in both conditions. The results point to the need for further development of HPEDs which closely mimic, or restore, the open ear’s response in localization.

10:20 a.m.- 10:40 a.m.
“The Taming of the OAE: Taking OAEs from Laboratories to Hearing-Conservation Programs”
Presenter: Lynne Marshall, Ph.D. - Naval Submarine Medical Research Laboratory | USA

Otoacoustic emissions (OAEs) can be used to monitor noise-induced hearing loss (NIHL) in groups and individuals. Although OAEs are not yet commonly used in hearing-conservation programs (HCPs), the results from many field and laboratory studies show how OAEs could be applied to HCPs right now or in the very near future. Applications include (a) monitoring for group changes in OAEs, (b) establishing HCP effectiveness, (c) detecting susceptible individuals with low-level OAEs, (d) detecting susceptible individuals with low medial olivocochlear reflex strength, and (e) detecting changes in OAEs in individual ears, which may be a precursor to NIHL. The strength of the evidence underlying each application will be examined and practical advice given.

10:40 a.m.- 11:10 a.m.
Break and Posters

11:10 a.m.- 11:45 a.m.
GASAWAY LECTURE: “From Here to There to Hear”
Presenter: Laurie Wells, Au.D., AAAA, PS/A - Associates In Acoustics, Inc. | USA

Putting headpones on correctly, measuring noise levels, recording thresholds, completing forms, calibrating equipment, reading articles, and studying trends: all important tasks in hearing conservation programs. But, how to move someone from here to there to hear? In honor of Don Gasaway, Laurie shares her personal experiences in her efforts to ignite enthusiasm about hearing.

11:45 a.m.- 12:05 p.m.
“Epidemiology of Age-Related Hearing Loss: Recent Data from the National Health and Nutrition Examination Survey”
Presenter: Robert Dobie, M.D. - University of Texas Health Science Center | USA

Americans aged 25 to 65 hear as well or better now (1999-2004) as in the early 1960s. Age is – as always – the most important predictor of adult hearing thresholds. At any age, men hear worse than women. There is increasing evidence of the importance of several other independent risk factors: 1.) cardiovascular risk factors, especially smoking and diabetes; 2.) lower socioeconomic status; 3.) white race; 4.) non-occupational noise, especially gunfire; and 5.) occupational noise exposure. These risk factors are not randomly distributed; in the USA, people with occupational noise exposure are more likely than others to be less-well-educated white men, to have non-occupational noise exposure, and to have cardiovascular risk factors. Populations screened to exclude people who have had occupational noise exposure (such as Annex C in ANSI S3.44) will hear better than unscreened populations; the differences are attributable not only to removing the effects of occupational noise, but also to the disproportionate removal of the effects of multiple other risk factors.

12:05 p.m.- 1:50 p.m.
Luncheon and Awards

GENERAL SESSION - AFTERNOON

2:00 p.m.- 2:20 p.m.
“Military Hearing Protection-Enhancement Devices: Protective, but Can the Soldier Locate the Shooter?”
Presenter: John Casali, Ph.D., C.P.E., C.I.E., M.S. - Virginia Tech | USA
John P. Keedy, Ph.D., J.D., M.B.A. - Innovation R&D Labs LLC | USA
Mead C. Killion, Ph.D., Sc.D. (hon) - Etymotic Research, Inc. | USA

A realistic in-field, situational awareness experiment was conducted to ascertain listeners’ auditory performance in locating the 360-degree azimuthal direction of gunshots (using blanks) aimed in their direction while wearing hearing protection-enhancement devices (HPEDs). Nine subjects had normal hearing (< 25 dBHL bilaterally) and 4 were moderately hearing-impaired. The 5 listening conditions were: 1) open-ear, 2) 3rd generation, rocker switch version of the AEARO/3M Combat Arms™ earplug in its level-dependent setting, 3) Peltor Com-Tac II™ sound transmission earmuff at full gain, 4 & 5) Etymotic Research electronic BlastPlg™ EB-1 and EB-15 earplugs on low-gain settings. Background noise comprised a rural ambient of 45-50 dBA and 82 dBA military truck noise. Each gunshot was 100-104 dBZ at the ear. Dependent measures included percent correct response, absolute value degrees of deviation, percent right-left errors, and percent front-rear errors. On most measures and across the two noise conditions, both of the BlastPlg™ earplugs exhibited localization performance that was close in line with the Combat Arms earplug. In all cases, the open ear condition ranked best. On all measures, the Peltor Com-Tac II earmuff ranked lowest in localization performance. Across all HPEDs and the open ear, there were very few left-right confusions of origin of the gunshots. In all cases, left-right confusions were substantially fewer than front-right confusions, attesting to the importance of interaural time and interaural level difference cues in localization, as well as the need for turning the head to aid in localization. There were no significant differences between the two noise conditions; however, hearing-impaired individuals had poorer localization performance than normal hearers in both conditions. The results point to the need for further development of HPEDs which closely mimic, or restore, the open ear’s response in localization.
In this study, effects of digital music player use on hearing were measured in 32 college students with normal hearing sensitivity. For 4-hr exposures, 93-dBA in-ear music did not affect hearing thresholds (0.25 to 18 kHz) or distortion product otoacoustic emission (DPOAE) amplitudes (F2 = 2 to 12 kHz; F1=65 to 25 dB SPL, F1-F2=10 dB). Exposure to 98-dBA in-ear music resulted in small threshold shifts at 4 kHz (~6 dB). For some protectors, significant differences were observed across protector examples of the same model, and across insertions. Relationships between the continuous noise NRR, the impulse NRR, and the increase in allowable impulse exposures due to the protector will also be presented.
induced threshold shifts. Funded by NIH/NIDCD U01 DC008423.

4:10 p.m. - 4:30 p.m.
“Listening to Music on the Job: Assessing Worker’s Use of Personal Listening Devices”
Presenter: Cory D.F. Portnuff, Au.D. - University of Colorado at Boulder | USA
Brian Fligor, Sc.D. - Children’s Hospital Boston and Harvard Medical School | USA
The field of hearing conservation has yet to develop best practices for guiding workers using personal listening devices (PLDs), such as music players. Recent research, though, has provided a strong body of knowledge to help anticipate how a worker’s chosen listening level of the PLD is influenced by noise in their environment. This presentation will examine the literature about PLD use and assess the potential addition of PLD use to occupational noise exposure. Additionally, the positive effects of PLD use on worker productivity and workplace morale will be reviewed. Overall, this presentation will provide the hearing conservationist with guidelines for considering PLD use as a part of a worker’s individual noise exposure.

4:30 p.m. - 4:50 p.m.
“Noise Exposure Estimates in Urban MP3 Player Uses”
Presenter: Brian Fligor, Sc.D. - Children’s Hospital Boston and Harvard Medical School | USA
Sound exposure from using personal listening devices (PLDs) was estimated in 189 college students in NYC, aged 18-53 years. Free-field equivalent sound levels from PLD headphones were measured on a calibrated Jolene mannequin (The Jolene Cookbook) as participants walked onto the college campus, adjacent to the subway station. Participants reported demographic information, whether or not they came off the subway, the type of PLD and earphones used, and duration per day and days per week of use of their PLDs. Based on measured free-field equivalent sound levels from PLD headphones and the reported PLD use, per day 58.2% of subjects exceeded 85 dBA LAeq, and per week 51.9% exceeded 85 dBA LAwkn. Analyses of the demographics of these subjects and mode of transportation to campus failed to indicate any particular gender differences in PLD use or in mode of transportation influencing sound exposure.

4:50 p.m. - Good Bye!
Closing Remarks

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2011 Conference Proceedings

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An email notification will be sent out to all attendees providing them the direct link to the proceedings page on the NHCA website.
Friday and Saturday Podium Presenter Bios

February 25-26, 2011

Platform Presenter Biographies

Robert Anderson, B.S., INCE - Anderson Consulting Associates | USA
Robert Anderson is Principal and Co-Founder of Anderson Consulting Associates, a noise control consulting firm in Lansing, Michigan. He has been actively involved in the field of noise control for 30 years, supervising and participating in projects related to control of occupational and community noise in industry. His experience includes noise control within the agricultural implement, appliance, automotive, brewing, chemical, material handling, petroleum, pharmaceutical, plastics, primary metals (aluminum processing and iron casting/forging) and rubber manufacturing industries. He is currently involved in awareness into corporate and labor cultures.

LTC(P) Lynnette Bardolf, Ph.D. - US Army (USAARL) | USA
LTC(P) Lynnette Bardolf graduated with her B.S. in Communication Disorders in 1989 and with her Master’s degree in Audiology in Dec. 1990 both from the Florida State University. As a Distinguished Military Graduate from the FSU ROTC program, LTC(P) Bardolf’s past assignments took her to Colorado, Alabama, Germany, Hawaii and Florida (where the Army sent her to the University of Florida to earn her Ph.D. in Audiology in 2006). She has worked mostly in the clinical and hearing conservations realm, and a little as an audiology researcher. Currently, LTC(P) Bardolf is assigned at the United States Army Aeromedical Center/Lyster Army Health Clinic at Ft. Rucker, AL. She has been married for 19 years to LTC M. Keith Bardolf (U.S. Army) and has three daughters: Shauna, age 25 (a former US Marine); Michaela, age 10; and Rainey, age 8. LTC(P) Bardolf plans to retire from the Army in October 2011 to have flexibility to spend more time with her young daughters.

Alberto Behar, P.Eng., C.I.H., INCE.Bd.Cert. - University of Toronto | Canada
Alberto Behar is a Professional Engineer, Certified Industrial Hygienist and INCE board certified member. He is the principal of the consulting company Noise Control. He is Research Associate and Professor Adjoint at the University of Toronto. A well-known Canadian acoustician he has written over 50 papers published in peer reviewed international journals and also articles in safety magazines. He is also the author of the book Noise and its Control (in Spanish) and Noise Control - a Primer (in collaboration with two other authors).

John Casali, Ph.D., C.P.E., C.I.E., M.S. - Virginia Tech | USA
Dr. Casali is the Grado Chaired Professor of Industrial and Systems Engineering at Virginia Tech, and a Board-Certified Professional Ergonomist (C.P.E.) and Industrial Ergonomist (C.I.E.). After receiving his Ph.D. in Human Factors Engineering, he developed the Auditory Systems Laboratory, a versatile acoustics research facility at Virginia Tech. He is a Fellow of the Human Factors and Ergonomics Society and the Institute of Industrial Engineers, and was the 2007 President of the National Hearing Conservation Association. He was the recipient of the NHCA’s Outstanding Hearing Conservationist Award in 2009, and has twice received NHCAs Outstanding Lecture Award as well as the Media Award. His research at Virginia Tech has been sponsored by various government agencies and corporations to a total of over $7.5 million.

Barry Blesser, Ph.D. - Blesser Associates | USA
Barry Blesser has been a technical and management consultant for the last 40 years in a wide variety of industries that includes spatial acoustics, sound recording, and auditory perception. In addition, he is an independent researcher focusing on the phenomenology of sound. MIT Press published his book, Spaces Speak, Are You Listening? Experiencing Aural Architecture in 2006. Recently, he has given numerous keynote lectures and seminars on his two passions: the experience of sound in space and using soft-skills to advance careers. Dr. Blesser received his Ph.D. from MIT in 1969 where he specialized in communications and perception. For the following 9 years, he was an Assoc. Professor at MIT and a senior scientist in their Cognitive Information Processing Group. He had been president of the Audio Engineering Society, received many of their awards, and continues as their consulting technical editor.
Hugh Davies, Ph.D., C.I.H., Associate Professor - University of British Columbia | Canada

Dr. Davies is an Associate Professor of Occupational Health at the University of British Columbia in Vancouver BC. In addition to his research on hearing conservation programs, he has interests in occupational health and engineering communities to help them meet NASA’s hearing conservation program requirements. She also manages the development, promotion, and public distribution of unique multimedia training resources for hearing conservationists and noise control professionals. Ms. Cooper is a registered professional engineer, a Fellow of the Institute of Noise Control Engineering, and is Board-Certified in noise control engineering. She holds a B.S. in mechanical engineering from the University of Hartford and a M.S. in acoustics from the Pennsylvania State University and has more than 25 years of professional experience in the field of acoustics, noise control, and hearing conservation.

Beth Cooper, P.E., INCE.Bd.Cert., M.S., Fellow INCE/USA - NASA Glenn Research Center | USA

Beth Cooper is an acoustical engineer and Director of the Auditory Demonstration Laboratory at the NASA John H. Glenn Research Center. As an internal NASA hearing conservation consultant to NASA’s Office of the Chief Health and Medical Officer, Ms. Cooper provides specialized support for the agency’s occupational health and engineering communities to help them meet NASA’s hearing conservation program requirements. She also manages the development, promotion, and public distribution of unique multimedia training resources for hearing conservationists and noise control professionals. Ms. Cooper is a registered professional engineer, a Fellow of the Institute of Noise Control Engineering, and is Board-Certified in noise control engineering. She holds a B.S. in mechanical engineering from the University of Hartford and a M.S. in acoustics from the Pennsylvania State University and has more than 25 years of professional experience in the field of acoustics, noise control, and hearing conservation.

Kristy Deiters, B.A., Au.D. Candidate - Western Michigan University | USA

Kristy Deiters is a doctoral candidate in the Audiology program at Western Michigan University. Currently in the 4th year of her program, she is interning at Hearing Services and Systems in Portage, MI. Her interests include aural rehabilitation with a predominantly adult population, and hearing loss prevention.

Adrian Davis, Ph.D. - Royal Free Hampstead NHS Trust | USA

Adrian Davis is the leading epidemiologist of hearing impairment in children and adults who has worked with the UK MRC in Nottingham and in Manchester Universities on a variety of research projects concerning hearing, deafness and diagnostic tests over the last 25 – 30 years. Since April 2010 he has been based at the Royal Free Hospital in London and the University College London. The vision that he champions through his current appointments is for all people to communicate to the best of their potential. He has been a principal investigator in numerous national and international studies concerned with hearing and communication. He has also been a major investigator researching tinnitus, balance and rhinology in both adults and children.

Sumitrajit Dhar, Ph.D. - Northwestern University | USA

Sumitrajit Dhar was trained in Audiology and Hearing Science at the University of Mumbai, Utah State University, and Purdue University. He is currently on the faculty of the Roxelyn & Richard Pepper Department of Communication Sciences and Disorders. Work in his laboratory focuses on the science and applications of otoacoustic emissions.

Christine Dixon-Ernst, M.S., Hyg., C.I.H., M.A. CCC-A - Alcoa | USA

Christine Dixon-Ernst is Technical Manager, Occupational Health. Christine holds a B.S. degree from Chatham College and masters degrees from the University of Pittsburgh in Industrial Hygiene and Audiology. In her current position with Alcoa she manages various occupational health issues including hearing conservation. She has served on the AIHA Noise Committee and various ANSI committees in the areas hearing conservation. She has recent publications in the areas of hearing conservation and hearing loss criteria.
Dennis has both a Bachelor of Science and Master of Science degrees from North Carolina State University. Since 1980, his specialties in acoustics include measurement of equipment noise levels and employee noise exposures, the design of engineering controls, and environmental surveys. From 1980-1988 he managed Amoco Corporation’s hearing conservation program, and has been an acoustical consultant to industry since 1988. Toward professional certification, he is a registered Professional Engineer and a Board Certified Noise Control Engineer. He is a Past President of the National Hearing Conservation Association (NHCA), a Fellow Member of the American Industrial Hygiene Association (AIHA), and past Chair of the AIHA Noise Committee. Finally, Dennis is one of the Editors and participating author of The Noise Manual, 5th Edition, by AIHA.

Robert Dobie, Ph.D., M.D. - University of Texas Health Science Center | USA
Bob Dobie is a clinical professor of otolaryngology at both UC-Davis and UT-San Antonio, and a partner with Dobie Associates, offering consultation in hearing, balance, and ear disorders (www.dobieassociates.net). He has a clinical practice in otology and research interests that include age-related and noise-induced hearing loss, tinnitus, and hearing conservation. A member of several editorial boards, he is the author of Medical-Legal Evaluation of Hearing Loss (2nd edition, 2001), and over 175 other publications.

Brian Fligor, Sc.D. - Children’s Hospital Boston and Harvard Medical School | USA
Brian Fligor, Sc.D., is the Director of Diagnostic Audiology at Children’s Hospital Boston and Instructor in the Department of Otology and Laryngology at Harvard Medical School. His primary research interests are investigating causes of acquired hearing loss from ototoxicity and noise, particularly in the pediatric population.

Adrian Fuente, Ph.D. - The University of Queensland | Australia
Adrian received his Ph.D. in 2008 from the University of Hong Kong. He is currently a Postdoctoral Research Fellow in the Communication Disability Centre, University of Queensland, Australia. His research interests include the study of the ototoxicity induced by solvent exposure, noise-induced hearing loss in developing countries, and the variables affecting the success of hearing aid fitting in older adults.

Samir N.Y. Gerges, Ph.D. - Federal University of Santa Catarina | Brazil
Born in Egypt in 1941, obtained his Bachelor’s degree in Mechanical/Aeronautical Engineering from Cairo University in 1964 and his Masters in 1970. Obtained his Ph.D. from ISVR, Southampton University, UK, in 1974. Professor of noise and vibration since 1978 at the Federal University of Santa Catarina (UFSC), Mechanical Engineering Department, Laboratory of Acoustics and Vibration, Brazil, where he teaches the fundamentals of acoustics, noise control, signal processing, environmental noise and instrumentation for noise and vibration measurements and analysis, to undergraduate and postgraduate students. His current interests include industrial and construction noise, hearing protectors, environmental noise, experimental and numerical vibro-acoustics analysis for industrial and vehicle applications and general room acoustics.

Susan Griest, M.P.H. - Oregon Hearing Research Center (OHSU) | USA
Susan Griest, M.P.H. is a Research Scientist for the Veterans Administration (VA), National Center for Rehabilitative Auditory Research and the Oregon Hearing Research Center at Oregon Health & Science University in Portland, Oregon. She received her Masters in Public Health from the University of Washington in 1989. For the past 28 years, Ms. Griest has been a researcher and educator in the area of tinnitus and noise-induced hearing loss. For the past 10 years, she has been involved with the development and evaluation of the Dangerous Decibels program and the VA Hearing Loss Prevention Program (HLPP). Ms. Griest has been a member of the NHCA since 1996. During that time she has served on the executive council as an associate and member delegate, and is currently serving as president. She has been a member of the task force, Hearing Conservation Education for Children & Adolescents, and was Program Chair for the 33rd NHCA conference held in Portland, Oregon (2008).
Charles Jokel, Noise Control Engineer - US Army Public Health Command | USA
Chuck is a noise control engineer working for the Army Hearing Program at the PHC(P). He has worked in industry as a noise control consultant since completing his undergraduate degree in Biology at Brooklyn College, his Master’s degree in Teaching at Colgate University, and his Master of Science degree at the University of Texas. He has been working in his current capacity since 2004 performing noise Health Hazard Assessments of materiel being brought into the Army inventory and as a Subject Matter Expert in Noise and its Control.

Carl Johnson - Pace Analytical Services | USA
Carl Johnson is an industrial hygiene consultant to the 3M Company. His primary research interests are in the areas of hearing conservation, industrial noise controls, and chemical exposure assessment. He is currently completing a Masters Degree at the University of Minnesota and serves as the secretary to the AIHA Noise Committee.

Trym Holter, Ph.D. - Nacre AS \ Norway
Trym Holter is the project director in Nacre AS, leading the main R&D efforts in the company. He has been with Nacre since 2008, and prior to this he was a senior research scientist at the Department of Acoustics at SINTEF, the fourth-largest independent research organization in Europe, and the largest in Scandinavia. He has also been with Motorola Labs as a senior research engineer in 2001-2003. He received his Ph.D. in Speech Technology from the Norwegian University of Science and Technology in 1998, and has been working in the areas of speech technology, acoustics, and hearing protection technology since then.

Keila A.B. Knobel, Ph.D. - Universidade de Campinas | Brazil

Dawn Konrad-Martin is a certified Audiologist and Research Investigator at the National Center for Rehabilitative Auditory Research (NCRAR) at the Portland VA Medical Center. She is also an Assistant Professor of Otolaryngology at the Oregon Health and Science University. She obtained a Ph.D. in Audiology from the University of Washington, where her studies involved developmental auditory neurobiology. Prior to joining the NCRAR, Dr. Konrad-Martin completed a Post-Doctoral Fellowship at Boys Town National Research Hospital, and was an Assistant Professor in the Department of Communication Disorders and Sciences at Rush University.

Nancy Hauter - Occupational Safety and Health Administration | USA
Nancy Hauter is currently the Director of Health Enforcement for OSHA in Washington DC. She has been with OSHA for over 23 years. Her OSHA career spans being a Compliance Safety and Health Officer, an Industrial Hygiene Training Instructor at OSHA’s National Training Institute and a Compliance Assistance Specialist. She holds a bachelors of Science degree in biology from Purdue University.
Brenda Lonsbury-Martin, Ph.D. - Loma Linda University Medical Center | USA

Brenda L. Lonsbury-Martin, Ph.D. is a professor in the Department of Otolaryngology--Head and Neck Surgery at Loma Linda University Medical Center and senior research scientist in the VA Loma Linda Healthcare System. Dr. Lonsbury-Martin has been developing special-purpose protocols using otoacoustic emissions to evaluate, screen, and monitor the functional status of the hearing portion of the inner ear over the past 25 years. Dr. Lonsbury-Martin is an Associate Editor for the Journal of the ASA and is on the editorial board of Hearing Research. Dr. Lonsbury-Martin received her Ph.D. in medical psychology from Oregon Health & Science University, and completed postdoctoral-fellowship training in psychobiology and auditory physiology and biophysics at the University of California/Irvine and the University of Washington, respectively.

Lynne Marshall, Ph.D. - Naval Submarine Medical Research Laboratory | USA

Dr. Marshall is a Senior Research Audiologist at the Naval Submarine Medical Research Laboratory in Groton, Connecticut. She also is a Jayhawker from the University of Kansas, where she obtained master’s degrees in Speech Pathology and in Audiology, and a Ph.D. in Speech and Hearing Science. Following a clinical fellowship year in audiology at the Upstate Medical Center in Syracuse, New York, she spent several years in Omaha, Nebraska, where she was Clinical Coordinator of Audiology at the University of Nebraska Medical Center, a faculty member at the University of Nebraska, and also did postdoctoral work at Boys Town National Research Hospital.

Deanna Meinke, Ph.D., CCC-A, FAAA - University of Northern Colorado | USA

Dr. Deanna Meinke is currently an Associate Professor of Audiology at the University of Northern Colorado. She is a past president of the National Hearing Conservation Association (NHCA) and the Colorado Academy of Audiology. Presently, she chairs the National Institute for Occupational Safety and Health (NIOSH) “Safe-in-Sound Expert Committee” and is the 2010 recipient of the NHCA’s Threadgill Award. Her research interests include the prevention of noise-induced hearing loss, recreational firearm sound levels and the use of distortion product otoacoustic emissions for the early detection and monitoring of noise-induced hearing loss. Her passion for hearing loss prevention targeting children is highlighted by her collaborations with colleagues from the Oregon Health & Science University in the delivery of Dangerous Decibels educator training workshops in the U.S. and Canada and chairing the NHCA Task Force on Children and Noise.

Thais C. Morata, Ph.D. - National Institute for Occupational Safety and Health | USA

Thais Morata has worked on hearing loss prevention since 1987, when she consulted for the Brazilian Union of Chemical Workers. She did post-doctoral work at the National Institute for Occupational Safety and Health, USA, where she now works. She was a guest researcher at the National Institute for Working Life, Sweden. Dr. Morata taught graduate courses in Brazil, and she mentors and collaborates with researchers across the globe. She directs the Safe-in-Sound Excellence in Hearing Loss Prevention Awards™. Her pioneering work in noise interactions influenced national and international occupational health policies. In 2008 she received the National Hearing Conservation Association Outstanding Hearing Conservationist Award for her contributions.
Peggy Nelson, Ph.D., CCC-A - University of Minnesota | USA
Peggy Nelson has been an audiologist since 1982 and received her Ph.D. from the University of Kansas in 1991. She has been on the faculty of the University of Minnesota since 2000. Her research focuses on understanding speech in noise by varying populations, including users of hearing aids and cochlear implants. She has served on the ASA/ANSI working group for classroom acoustics, and is currently studying speech perception in complex background noise.

Richard Neitzel, Ph.D., C.I.H. - University of Washington | USA
Rick is a Research Scientist in the University of Washington (UW) Department of Environmental and Occupational Health Sciences. He received a Ph.D. in Environmental and Occupational Hygiene from UW in 2009. He has been conducting research on noise and hearing loss in the construction industry since 1997. His research interests include quantitative and subjective exposure assessment in occupational and non-occupational settings and development and evaluation of effective occupational health interventions and controls.

Adeline Ong, Ph.D. - Sweeney Research | Australia
Adeline has worked on various workplace safety projects in collaboration with Safe Work Australia, including the current study on hazardous occupational noise. At Sweeney Research, Adeline’s expertise spans across numerous industries, particularly in Government, education, and social research. Some of her key clients include Safe Work Australia, the Australian Taxation Office, Housing NSW, and the Department of Justice. Adeline completed her honours degree in marketing at Monash University Australia and a Ph.D. in consumer behavior at RMIT University Australia. She has presented and published her work in a number of leading academic journals and conferences, including the Association of Consumer Research, INFORMS, and at various industry conferences. Her areas of academic interest include the influence of the environment on behavioral patterns and decision making processes.

Cory D.F. Portnuff, Au.D. - University of Colorado of Boulder | USA
Dr. Cory Portnuff is a clinical audiologist in Denver and a Ph.D. candidate in Hearing Science at the University of Colorado at Boulder. His research focuses on noise-induced hearing loss in children, with a particular emphasis in understanding music-induced hearing loss and MP3 players using health belief modeling. Dr. Portnuff is also the President of the H.E.A.R. Project, a Colorado non-profit organization that provides support for families of children with hearing loss. In his free time, he enjoys hiking, biking and long walks on Colorado beaches.

Peter Rabinowitz, M.D., M.P.H., Associate Professor of Medicine - Yale School of Medicine | USA
Dr. Rabinowitz is Associate Professor of Medicine and Director of Clinical Services at the Yale Occupational and Environmental Medicine Program. He is actively engaged in research and clinical activities related to noise-induced hearing loss, and also serves as a medical consultant to Alcoa Inc.

CAPT William J. Murphy, Ph.D. - CDC/NIOSH | USA
CAPT William Murphy is co-leader for the Hearing Loss Prevention Team in the Division of Applied Research and Technology, National Institute for Occupational Safety and Health in Cincinnati. A graduate of Iowa State University (B.S. and M.S.), he completed a Ph.D. in physics at Purdue University and joined NIOSH in 1992. He was commissioned as a scientist officer in 1993 and holds the rank of Captain in the U.S. Public Health Service. Currently he is developing ratings for the performance of passive and active hearing protection devices. He is an active member of the National Hearing Conservation Association and the Acoustical Society of America. He serves on ASA’s Technical Committee for Noise and is the chair of the ASA’s Accredited Standards Committee for noise, ANSI S12, to develop national and international acoustic standards on noise. Outside of work, Bill arranges music, plays trombone, guitar and piano, leads worship at church, and teaches high-school physics to home-schooled students.
June Hart Romeo, Ph.D., NP-C - Center for Performing Arts Health & Research, Baldwin-Wallace College | USA

June Hart Romeo has a Doctorate in sociology, is a nationally certified nurse practitioner with clinical experience in performing arts medicine, has extensive experience in performing arts medicine education. Her performing arts medicine research has been presented at NIOSH/NORA conference, PAMA, ACOEM, and AANP conferences. June’s current research and presentations have been in NIHL risk in orchestral musicians. June created a unique research dosimeter for the purpose of establishing NIHL risk in orchestra musicians.

Scott Schneider - Occupational Safety and Health | USA

Scott P. Schneider is the Director of Occupational Safety and Health for the 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 about 500,000 primarily construction workers in the US and Canada. He has been with the Fund for twelve years. He has a B.S. Degree from the State University of New York at Stony Brook, a Masters Degree in Zoology from the University of Michigan and a Masters Degree in Industrial Hygiene from the University of Pittsburgh. He is also a Certified Industrial Hygienist (CIH). For the past 30 years, Scott has been doing occupational safety and health work for the Labor Movement, including five years as Ergonomics Program Director for the Building Trade’s Center to Protect Workers’ Rights (CPWR).

Elizabeth Anne Thomas, Ph.D., R.N., ANP-BC, COHN-S, C.N.L. - University of California Los Angeles School of Nursing | USA

Dr. Thomas is Assistant Professor of Nursing at the UCLA School of Nursing in Occupational and Environmental Health. She has 25 years of clinical experience in Occupational Health. Dr. Thomas received her M.S.N. degree from the University of California San Francisco in 1989 and her Ph.D. in Nursing in 2009. She is nationally certified as an Adult Nurse Practitioner, as an Occupational Health Nurse, Specialist and as a Clinical Nurse Leader. Her research interests are in the areas of diabetes and work, including hearing loss and the effects of work-related exposures.

Laurie Wells, Au.D. FAAA, PS/A - Associates In Acoustics, Inc. | USA

Laurie Wells is the manager of audiology for Associates In Acoustics, Inc. and consults nationwide on hearing loss prevention efforts. Her forte is teaching and she has been presenting on hearing conservation topics to employees, employers, and fellow professional for over a dozen years. Laurie teaches hearing loss prevention seminars and offers certification courses for the Council for Accreditation in Occupational Hearing Conservation (CAOHC) in the U.S. and internationally. She served on the board of NHCA as secretary, program chair, and president as well as being active on several task forces. She currently represents the American Academy of Audiology on the CAOHC council.
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"A Performance Comparison of Three Generations of the Combat Arms Earplug"

Presenter: Mary Binseel - U.S. Army Research Laboratory | USA

The Combat Arms Earplug (CAE) is currently the U.S. Army’s earplug of choice. It offers two protection modes: linear and nonlinear (level-dependent). Three generations of the earplug exist, with differing methods for switching between linear and nonlinear modes. Two performance measures—real ear attenuation at threshold and impulse peak reduction—for both the linear and nonlinear modes of all three earplug generations will be presented.

"The Prevalence of Noise-Induced Threshold Shift in Elementary and Junior High Schools of Taiwan"

Presenter: Hsiao-Chuan Chen, Ph.D. - National Kaohsiung Normal University | Taiwan
Tzong-Shiann Lee, Ph.D. - National Kaohsiung Normal University | Taiwan
Ming-Yang Lee, Ph.D. - National Kaohsiung Normal University | Taiwan
Ting-Fang Hseich - National Kaohsiung Normal University | Taiwan
Ya-Ting Huang - National Kaohsiung Normal University | Taiwan
Sin-Heui Wang - National Kaohsiung Normal University | Taiwan

Subjects are twelve-hundred students of elementary and junior high schools. Their hearing thresholds between 250 and 8K Hz and the history of noise exposure will be investigated. The percentage of noise-induced threshold shift (NITS); the percentages of frequency-dip at 3kHz, 4kHz and 6kHz; and the effect of gender and grade upon the prevalence of NITS will be explored. The study is in data-collecting process and will be finished before January 10th 2011.

"Development of the Hearing Conservation Knowledge, Attitudes, and Behaviors (KAB) Questionnaire"

Presenter: Serena Dann, Au.D. - National Center for Rehabilitative Auditory Research | USA
Gabrielle Saunders, Ph.D. - National Center for Rehabilitative Auditory Research | USA
Susan Griest, M.P.H. - National Center for Rehabilitative Auditory Research | USA
Gino Galvez, M.S. - National Center for Rehabilitative Auditory Research | USA
Jeffrey Shannon, Au.D. - Hudson Valley Audiology Center | USA

Standardized questionnaires related to hearing conservation are few and far between. Based on the Dangerous Decibels® Questionnaire (Griest et al., 2007) and constructs from the Health Belief Model (Rosenstock, 1966), we developed the Knowledge, Attitudes and Behaviors (KAB) Questionnaire. The KAB assesses a person’s knowledge and attitudes about hearing loss prevention and reported behaviors regarding exposure to noise and hearing protection. Factor analyses indicated a structure of six distinct factors with good internal consistency.

"From Old to New: Application of Novel Dosimeter in Noise Surveys"

Presenter: Shawna Dell, Au.D., B.A. - University of Florida | USA

Output levels of MP3 players and exposures to environmental noises have been measured, but no study has ever measured the two simultaneously. This study will be using a prototype dosimeter to record sound pressure levels from an external sound device, and a personal dosimeter to record environmental sounds that adolescents are exposed to on a daily basis. We expect our dosimeter can show differences between environmental noise levels, and noise levels from external sound devices.

"An Updated Compendium and Selection Tool for Hearing Protection Devices"

Presenter: Pamela Graydon, M.S. - NIOSH | USA

The NIOSH Hearing Protection Device Compendium is being updated to reflect the expected changes in hearing protection ratings as required by the EPA. In August 2009, EPA formally proposed new test methods and labels not only for passive earplugs, earmuffs and banded hearing protectors, but also Active Noise Reduction hearing protection devices (HPDs) and Impulsive Noise Reduction HPDs. See the changes and suggest modifications to make it the most user-friendly version yet.

"Noise-induced Hearing Loss in Agriculture: Creating Partnerships to Promote Prevention"

Presenter: Pamela Graydon, M.S. - NIOSH | USA

This poster describes how NIOSH created partnerships to promote hearing conservation for young farmers 14-35 and their families. Partnerships included organizations and individuals who were trusted sources of information for the target population and who had linkages in rural communities. NIOSH conducted 11 exhibits and 18 train-the-trainer workshops at state or national conventions. People attending the workshops were provided information on noise-induced hearing loss and information on free or low-cost resources participants could use.

"Vibrotactile Device for Noise Exposure Reduction"

Presenter: Glenn E. Green, M.D. - Assoc. Prof Otolaryngology, University of Michigan | USA
Brittany Mash - University of Toledo | USA

Desire for auditory communication frequently results in excess noise exposure in a noise-intense workplace, particularly when visual communication is not possible. To address this problem, we have developed a vibrotactile communication device to enhance nonauditory communication. The device translates either auditory or written inputs into a signal that is communicated via a tactor. This enables fast, accurate nonvisual, nonauditory communication suitable for a variety of environments.
related hearing loss in persons with and without type-1 diabetes. Identification and recognition of early indices of cochlear pathology may allow intervention and prevention of noise exposure. In addition, we demonstrated the utility of low-level stimulus evoked otoacoustic emissions in revealing reduced cochlear function in participants with higher reported noise exposure and type-1 diabetes despite otherwise normal auditory function.

This study compared auditory function in a group of young adults (18-28 years of age) with type-1 diabetes compared to age-matched controls. The prevalence of hearing loss among noise-exposed factory workers was nearly 40%; however, 80% of workers reported their hearing ability as excellent or good, demonstrating the need for evaluation of hearing conservation programs and increased attention to the national goal of reducing adult hearing loss.

The ultimate goal of this research project is to develop a customizable, practical and effective dosimetric hearing protection device (HPD) while increasing awareness, encouraging and participating in leading research on occupational (as well as recreational) noise and safety management. The poster will present some of the Scientific, and Technological challenges associated with the development of such an HPD. The physical platform is an expandable custom earplug developed by Sonomax Technologies (Montreal, Canada). The current stage is development and integration of programmable electro-acoustical components required to implement and test solutions to many current and well known HPD challenges, including: adequate protection levels, maximizing communication and perception of warning signals and tracking noise exposure under HPD.

This study examined the effects of otoacoustic emissions screenings and hearing conservation programs on the attitudes of drum and bugle corps percussionists, who are at high risk for music-induced hearing loss. Pre and post surveys assessed knowledge base and attitudes towards hearing and use of hearing protection. Preliminary results suggested changes in attitudes and behavior, including an increased belief that hearing conservation programs should be established in marching bands and drum corps.

A worker enrolled in a hearing conservation program showed a significant thresholds shift at 4 kHz in the left ear. Probe microphone measures of attenuation provided by his custom made protection devices showed an average of approximately 10 dB less attenuation in the left ear compared to that in the right ear. These results will be discussed in the context of the new rule proposed by the Environmental Protection Agency (2008) for Noise Reduction Ratings.

This study compared auditory function in a group of young adults (18-28 years of age) with type-1 diabetes compared to age-sex-matched controls. Our data presented here focuses on cochlear function as measured with standard otoacoustic emissions and distortion product otoacoustic emission fine structure; and the influence of covariates such as diabetes control, sex, and noise exposure. The findings suggested early signs of cochlear pathology in the type-1 diabetes group related to sex and reported history of noise exposure. In addition, we demonstrated the utility of low-level stimulus evoked otoacoustic emissions in revealing reduced cochlear function in participants with higher reported noise exposure and type-1 diabetes despite otherwise normal auditory function outcomes. Identification and recognition of early indices of cochlear pathology may allow intervention and prevention of noise related hearing loss in persons with and without type-1 diabetes.
“Firearm Noise in a Hunting Blind”
Presenter: Michael Stewart, Ph.D. - Central Michigan University | USA
Gregory A. Flamme, Ph.D. - Department of Speech Pathology and Audiology Western Michigan University | USA
Deanna K. Meinke, Ph.D., CCC-A, FAAA - University of Northern Colorado | USA
James E. Lankford, Ph.D. - Northern Illinois University | USA
Jacob Sondergaard, M.Sc., B.Eng. - Field Application Engineer G.R.A.S. Sound & Vibration | USA
Donald S. Finan, Ph.D. - Audiology and Speech-Language Sciences | USA
William J. Murphy, Ph.D. - CDC/NIOSH | USA
Amir Khan - CDC/NIOSH | USA
Mark E. Lehman, Ph.D. - Central Michigan University | USA

Firearm noise measurements were obtained in a small hunting blind using a large-caliber game rifle and a high-powered revolver. Shots were fired with the muzzle inside and outside the blind. Recordings were obtained with KEMAR and the ISL head, with and without hearing protection (Combat Arms Earplug). Peaks in the field ranged between 161 and 175 dBSPL (LeqA range: 83-102 dBSPL). Peak reductions afforded by hearing protection ranged between 26 and 33 dB.

“Acoustic Characteristics of Referee Whistles and Surveillance Noise Exposures and Self-Reported Hearing Status for Sports Officials”
Presenter: Nathan Williams, B.A. - Western Michigan University | USA
Greg Flamme, Ph.D. - Western Michigan University | USA

We conducted (1) a survey of sports officials (N=321) regarding exposure to whistles and symptoms of hearing loss and tinnitus, and (2) an assessment of the acoustic characteristics of a selection of commercially available whistles. Sports officials report more hearing and tinnitus symptoms than the general US population. Additionally, the output characteristics of whistles produce potentially hazardous sound levels (range: 104-116 dB SPL) between 2000-5000 Hz. Study supported by Etymotic Research.

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**Poster Presenter Bios**

**Mary Binseel - U.S. Army Research Laboratory | USA**
Mary S. Binseel is leader of the U. S. Army Research Laboratory’s Auditory Research Team. She holds a B.S. in Industrial Engineering from Rensselaer Polytechnic Institute, an M.B.A. from Worcester Polytechnic Institute, and an M.S. in Operations Research from The George Washington University. Her primary research interest is the effect of Soldier headgear on auditory situation awareness.

**Hsiao-Chuan Chen, Ph.D. - National Kaohsiung Normal University | Taiwan**
Hsiao-Chuan Chen is a professor of the Graduate Institute of Audiology and Speech therapy in National Kaohsiung Normal University in Kaohsiung, Taiwan. Her research interests include hearing conservation, auditory processing and speech perception of hearing impaired children and program.

**Serena Dann, Au.D. - National Center for Rehabilitative Auditory Research | USA**
Serena received her Au.D. from Northwestern University. In 2007 she joined the NCRAR where she works as a research audiologist with a focus on hearing conservation related projects.

**Shawna Dell, Au.D., B.A. - University of Florida, USA**
Shawna Dell is currently a Ph.D. student at the University of Florida. She has chosen to continue her education after receiving her clinical doctorate in 2008. Her research interests are in hearing conservation, adolescent populations, and means of merging audiology with public health/health promotion.

**Pamela Graydon, M.S. - NIOSH | USA**
Pam Graydon is an Electronics Engineer with an M.S. in Science in Technology who has worked at NIOSH since 1990. She joined the Hearing Loss Prevention Team during 1999.
Glenn E. Green, M.D. - Assoc. Professor Otolaryngology, University of Michigan | USA

Marjorie McCullagh, Ph.D., R.N. - University of Michigan | USA
Marjorie McCullagh is a registered nurse and holds a Ph.D. from the University of Michigan in Ann Arbor. She currently serves as the Director of Occupational Health Nursing there. Her research interest is focused on noise exposure, hearing, and hearing protection of agricultural workers.

Thea LaBere - University of Northern Colorado | USA
Thea LaBere is a 4th year Au.D. student at the University of Northern Colorado. She will be graduating in May 2011. She graduated with an undergraduate degree in audiology/speech language sciences in May 2007. She is currently an audiology intern at Rocky Mountain ENT in Highlands Ranch, CO.

Kuba Mazur B.Sc.EE., M.Sc. A Student, Universite du Quebec (ETS) | Canada
Kuba is an avid music lover, DJ and researcher always willing to discuss, share and collaborate. He completed his bachelor’s degree in Electrical Engineering at Michigan State University while passionately involved in the development of the student organization ‘Audio Enthusiasts and Engineers’. He has recently found a new home in Montreal, Canada where his mission is the prevention of noise-induced hearing loss at École de technologie supérieure (Université du Québec). His main research areas of interest include Digital Signal Processing and Acoustics.

Sara Neumann, B.S. - Illinois State University | USA
Sara Neumann is a 2nd year Au.D. student at Illinois State University, Normal, IL. Prior to pursuing her Au.D., she was a teacher of the deaf/hard of hearing for 6 years serving in self-contained and itinerant settings. She also works as an early intervention provider for deaf and hard of hearing children, 0-3 years in the state of Illinois. She is interested in pediatric audiology and aural rehabilitation, auditory-verbal therapy, educational audiology, and the prevention of music induced hearing loss in children and young adults.

Vishakha Rawool, Ph.D. - West Virginia University | USA
Vishakha Rawool obtained her Ph.D. from Purdue University and completed a post-doctoral fellowship at Johns Hopkins University. She is currently a Professor in the Department of Speech Pathology & Audiology at West Virginia University and teaches several courses including a course titled ‘Industrial Audiology’. She has several publications to her credit and has extensive clinical experience in providing comprehensive audiological services to all populations including infants and older adults.
Christopher Spankovich, Au.D., Ph.D., M.P.H. - University of Florida | USA
Christopher Spankovich is a Research Assistant Professor at the University of Florida. He received his master's of public health degree (M.P.H.) from Emory University, doctor of audiology (Au.D.) from Rush University, and his Ph.D. in hearing sciences from Vanderbilt University. His primary research and clinical interests include identifying early signs of auditory pathology, prevention of acquired forms of hearing loss, and epidemiology/public health in audiology.

Michael Stewart, Ph.D. - Central Michigan University | USA
Michael Stewart received his M.A. degree in audiology from Western Michigan University and his Ph.D. degree in audiology from Michigan State University. He has owned and operated a private practice in audiology specializing in hearing conservation services and audiological rehabilitation of the hearing-impaired for the past twenty years. He is also a professor in the Department of Communication Disorders at Central Michigan University where he teaches doctoral-level classes in audiology and conducts research in various aspects of recreational and industrial hearing conservation.

Nathan Williams, B.A. - Western Michigan University | USA
Nathan Williams is currently a 4th-year audiology graduate student at Western Michigan University. He is completing his 4th-year externship at Boys Town National Research Hospital in Omaha, NE.

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