34th Annual Hearing Conservation Conference

Conserve to Hear the Future

February 12-14, 2009
Sheraton Atlanta Hotel
Atlanta, Georgia

NATIONAL HEARING CONSERVATION ASSOCIATION
Spectrum Supplement
Dear Colleagues,

In the spirit of southern hospitality, the NHCA Executive Council and the NHCA Program Task Force extend a warm welcome to Atlanta Georgia and the 34th Annual Conference of the National Hearing Conservation Association. We would like to extend a special greeting to our student attendees, our first-time attendees, our international visitors, our commercial sponsors and the various government and organizational representatives in attendance. Your partnerships are sincerely valued and appreciated.

Our theme, “Conserve to Hear the Future” is especially apropos as we engage the world of hearing conservation in 2009. Protecting our assets, whether they are the sense of hearing, the environment or our finances, is critical to our society and its future. Conservation will occupy our time and efforts throughout the year and this conference promises to grow your knowledge and acquaint you with new people, new resources and new products which will contribute to your personal and business successes.

The opportunities to learn about hearing conservation, public health and acoustic ecology will certainly be enhanced by our invited speakers; Gordon Hempton, Beat Hohmann, Billy Martin and Pete Scheifele. Additionally, the recipients of the first-ever Safe-in-Sound Excellence in Hearing Loss Prevention will showcase their field experiences. Our workshops, podium and poster presenters will share their expertise, stimulate our curiosity and challenge our viewpoints. Many opportunities to learn about new resources and products will be found in the exhibit hall and by interacting with our generous sponsors. Your chance to celebrate will occur at the NHCA Foundation luncheon and at the Saturday awards luncheon. Opportunities to network and build partnerships will occur over coffee, at shared meals, in meetings, during golf outings and while appreciating the spectacular aquatic wildlife at the Georgia Aquarium. These are but a few of the reasons for which many of us return to this meeting year after year.

Contrary to our theme, the NHCA Program Task Force and the staff of our new management firm (IMI) have not conserved any energy in the planning and execution of this event. Their efforts are immensely appreciated.

The final ingredient for a successful conference is your individual enthusiasm and willingness to interact. Please let us know if there is anything we can do to make the conference more rewarding and enjoyable.

Deanna K. Meinke, Ph.D.
President

Deanna K. Meinke, Ph.D.
President
2009 STUDENT TRAVEL AWARDS

The NHCA Scholarship Foundation is pleased to announce the recipients of our 2009 Student Travel Award. The award is available to graduate students who are actively pursuing a degree in a discipline related to hearing conservation and who are enrolled at least half-time in an accredited educational institution. Interested students complete a one-page application and send one letter of recommendation. Applications are then evaluated by the Scholarship Foundation review committee: John Casali, Jim Jerome, James Lankford, Vern Larson, and Mary McDaniel. Recipients receive complimentary conference registration and partial reimbursement of travel expenses.

Please welcome this year’s award winners to our annual conference in Atlanta:

- **Melissa Alexander**
  Rush University, 2nd year AuD program
  Advisor: Patricia McCarthy, PhD

- **McLorn Carpenter**
  Rush University, 3rd year AuD program
  Advisor: Dianne Meyer, PhD

- **Amanda Knapp**
  Western Michigan U., 3rd year AuD program
  Advisor: Greg Flamme, PhD

- **Tony Philip**
  Salus University (formerly PCO), 4th year AuD program
  Externship Supervisor: Rick Stepkin

- **Jennifer Thomas**
  A.T. Still U. (Arizona Health Sciences),
  3rd year AuD program
  Advisor: Thomas Rigo, PhD

And as always, very special thanks go to our generous Student Travel Award sponsors for making this program possible. Our sponsors for 2009 are:

- **Gold Sponsor** (donation of $1000 or more)
  Quest Technologies, Inc.

- **Silver Sponsors** (donation of $500 or more)
  American Academy of Audiology Foundation • James D. Banach • E-A-RCal Laboratories/Aearo
  Howard Leight • James and Vera Lankford • Sensaphonics Hearing Conservation

- **Bronze Sponsors** (donation of $250 or more)
  ASI Health Services, Inc. • John Casali and Shirley Casali • Enviromed
  Deanna Meinke • Pacific Hearing Conservation, Inc. • Workplace Integra

**NHCA SCHOLARSHIP FOUNDATION AUCTIONS AND RAFFLE**

Participate in the NHCA Scholarship Foundation’s Silent Auction, Live Auction and Raffle! Proceeds from these events help bring students to the annual conference and support research scholarships. Bring your item(s) or a certificate to the conference registration desk. The auctions and raffle are being held in the exhibit hall throughout the conference and culminating on Saturday morning.
STUDENT RESEARCH AWARDS FOR 2008-2009

Cory D.F. Portnuff, AuD
University of Colorado
Research Project entitled “Teenage Use of MP3 Players: A Hazard to Hearing?”

Christopher Spankovich
Vanderbilt University
Research Project entitled “Susceptibility to type1 Diabetic Adolescents to Noise Induced Hearing Loss”

Emily Wakefield
University of Northern Colorado
Research Project entitled “Occupational Hearing Conservationists’ Receptions and Strategies Regarding the Provision of Hearing Loss Prevention Services to Spanish Speaking Workers”
### TASK FORCES & ALLIED MEETINGS

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<tr>
<th>TIME</th>
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<td>Tuesday, February 10</td>
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<tr>
<td>7:30 am – 4:30 pm</td>
<td>CAOHC</td>
<td>Savannah 1&amp;2</td>
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<td>8:00am – 5:00pm</td>
<td>ANSI/WG12 Hearing</td>
<td>Augusta</td>
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<td>8:00am – 5:00pm</td>
<td>Protector Attenuation and Performance</td>
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<td>Wednesday, February 11</td>
<td>Executive Council</td>
<td>Savannah 1&amp;2</td>
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<tr>
<td>8:00 am – 12 noon</td>
<td>Program Task Force</td>
<td>Augusta</td>
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<td>12 noon – 1pm</td>
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<tr>
<td>Thursday, February 12</td>
<td>Student Travel &amp; Research Award Luncheon</td>
<td>Georgia 13</td>
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<td>11:30 pm – 1:30 pm</td>
<td>Recreational Firearms Task Force</td>
<td>Georgia 2</td>
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<tr>
<td>4:00 pm – 5:00 pm</td>
<td>Music-Induced Hearing Loss Task Force</td>
<td>Georgia 4</td>
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<td>Friday, February 13</td>
<td>Leadership Advisory Team</td>
<td>Macon</td>
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<td>7:00 am – 8:00 am</td>
<td>Children and Noise Task Force</td>
<td>Macon</td>
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<td>5:00 pm – 6:00 pm</td>
<td>NHCA Foundation Board</td>
<td>Executive Board Room</td>
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<td>Saturday, February 14</td>
<td>Executive Council</td>
<td>Savannah 1&amp;2</td>
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<td>6:00 pm – 9:00 pm</td>
<td>Program Task Force</td>
<td>Macon</td>
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John is the John Grado Professor of Industrial and Systems Engineering and Director of the Auditory Systems Laboratory at Virginia Tech in Blacksburg, VA, a school he knows well, since John received his entire college-level education at that same university – an undergraduate degree in Psychology, and masters and doctoral degrees in Industrial Engineering with concentrations in Human Factors Engineering/Ergonomics. Not only was John an exemplary student, receiving numerous awards and scholarships, but in his 26 years on the Virginia Tech faculty he has been repeatedly honored and also has substantially grown the department and the reputation of the University. Moreover, his contributions to the department were both as a consummate research scientist and as an administrator – for seven years he served the university as Department Head, during which time he recruited 15 faculty, played a significant role in procuring over $7 million in donations and scholarships/fellowships, and enhanced the department’s quality and professional standing. Under his leadership the Industrial and Systems Engineering department was recognized as one of three exemplary departments at Virginia Tech, and also rose to become one of the top-7 nationally ranked departments by U. S. News and World Report, both for undergraduate and graduate studies.

Virginia Tech has been an apropos home for John’s work because of its strong position in the industrial and systems engineering and human factors communities. However, a discipline that was lacking in the department when he joined the faculty was acoustic studies, a serendipitous situation for the young John Casali. As he looked for an area in which to focus his creative energies, noise and its effects were prominent in his thinking since one of his summer jobs during his undergraduate years in the early 1970’s was in a deep-mined coal preparation plant. At that time, as a member of the United Mine Workers of America, he was exposed to quite a few hazardous occupational activities, but one that lingered in his memory (and ultimately influenced his career) was the high noise levels of the centrifugal hammer crusher, well over 95 dBA. Under the early throes of MSHA, he was provided hearing protection, but the roaring din of that crusher, and his difficulty in hearing coal truck backup alarms in its vicinity, left him with an abiding concern about the hazards of noise, with respect to both hearing loss and its affects on situational awareness. This experience prompted John’s interest in noise-related problems as he recalled those issues while at Virginia Tech, and thus stimulated him to promote acoustical studies within industrial and systems engineering, and to create Virginia Tech’s Auditory Systems Laboratory.

A hallmark of John’s investigations is the care and detail with which he approaches the planning and analysis of a research protocol, as well as his strong background in acoustics. When I read one of John’s reports I am always certain that the parameters will be properly selected and the variables appropriately balanced in an elegant and classic manner. Always, to the extent possible within the constraints of budget and experimental design, the protocol will be conceived in a way to assure results uncontaminated by inadvertent bias.

An impressive aspect of John’s work has been the numerous areas in which his contributions have advanced hearing conservation research. His earliest publications in this field dealt with the important aspect of user instruction sets – how should we strive to assure that wearers of hearing protection devices are properly guided in their use, and what can make a difference in their behavioral outcomes. John’s studies were thoughtful and practical, both for insert devices and earcaps/earmuffs that he studied. With respect to hearing protection he also examined comfort and wearing-time effects, and developed valuable methods, with respect to hearing protection he also examined comfort and wearing-time effects, and developed valuable methods, with respect to hearing protection he also examined comfort and wearing-time effects, and developed valuable methods, with respect to hearing protection he also examined comfort and wearing-time effects, and developed valuable methods.

John’s contributions to hearing conservation have extended well beyond hearing protector design and utilization. His research has guided us in aspects of measuring performance, such as comparing physical (microphone in real ear) vs. psychophysical procedures (real-ear attenuation at threshold), estimating the differences between field and real-world attenuation, and a unique study directly comparing attenuation measured using a directional sound field in an anechoic space to that found using a diffuse sound field in a reverberant space. He and his students have also examined setting standards for hearing requirements in commercial driver licensing for truck drivers.

Dr. John Gordon Casali

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 Dr. John Gordon Casali, for his contributions to hearing protection research and auditory signal detection.

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drivers to assure safe operations, the influence of active noise reduction in hearing protection on in-flight performance, issues relating to signal detection in noise with various forms of hearing protection, methods of measuring earcanal dimensions, ability of soldiers to perform tactical operations under amplitude-sensitive hearing protectors, and even the influence of training on a technician’s ability to compute protected noise exposures with metrics of varying complexity such as the Noise Reduction Rating (NRR) and the HML.

Beyond the types of contributions enumerated above, that have been presented in over 150 publications and at over 130 conferences, seminars, and workshops, John has shared his expertise in numerous court cases, public hearings on zoning and community noise annoyance, civil suits, and cases of patent infringement. And perhaps of equal importance in terms of its effects on the community at large, John’s stature has also fostered his emergence in the media, as he has been called upon for television and newspaper interviews, and featured on three national Cable News Network (CNN) TV shows in 1994: World News Tonight, Headline News, and Science and Technology Week.

Integral to his efforts to develop the Industrial and Systems Engineering Department, has been John’s encouragement of many a nascent student, having directed the graduate work of 45 M.S. and Ph.D. candidates who successfully completed their degree requirements. Many of them were involved in publications along with John, and others have been nominated for and received student awards at NHCA as well as other professional conferences. The quality of John’s work with those students has been recognized by the Institute of Industrial Engineers (IIE) who bestowed upon him the Alexander Holtzman Distinguished Educator Award, and by the Human Factors and Ergonomics Society (HFES) who granted him the Paul M. Fitts Award for outstanding contributions to the education and training of human factors specialists. He is also a Fellow of both of these organizations.

As one might expect from a man so inured in educational endeavors, John’s contributions have extended to professional societies as well. Since he was first invited to address NHCA at our annual conference, John has been one of the organization’s most sought after speakers because of the clarity and precision with which he enunciates his findings and summarizes his conclusions. As a result NHCA has extended to him many invitations to present at our conferences. In all but two years since he first shared his knowledge with us in 1991 he has given platform lectures. Twice he was formally recognized for the quality of his talks with NHCA’s Outstanding Lecture Award, most recently in 2008.

John has also been a valued leader professionally. For example NHCA has elected him as our Vice President in 1994 and President in 2006, and he chaired the Leadership Advisory Team and has represented NHCA at various professional meetings. He serves on ANSI working groups pertaining to hearing protector measurements, and was an invited committee member for a workshop sponsored by the National Academy of Engineering’s project on “Technology for a Quieter America.”

And so John has come full circle, from that summer job with unpleasant, hazardous, and long-remembered noise exposures, to the position of a leading hearing conservationist who promotes excellence in hearing loss prevention, guides other in so doing, and with precision and enthusiasm encourages and educates young scientists towards careers that will enlighten and protect the ears of others, and improve the ease and accuracy with which workers can function in noisy environments.

by Elliot Berger

USE US!
The Academy offers various useful tools to help you with everything audiology.

- “Find an Audiologist” Directory
- Turn It To the Left Educational Rap CD and Materials about Noise-Induced Hearing Loss
- Consumer Articles, Resources, and Fact Sheets
- And More

Bookmark www.audiology.org on your computer and USE US!
Theresa Schulz received her bachelor’s degree at the University of Texas in 1981. A true Longhorn, she stayed in Austin for her masters degree in audiology in 1983, and then began a truly remarkable career in public service.

Her 20-year career in the United States Air Force took her to Kansas, California, Texas, Maryland, and back to Texas, where she retired as a lieutenant colonel. During those years, she was named the outstanding Air Force audiologist twice – the only person ever to be so honored. In the early 1990s, our common interest in audiometric data analysis brought us together. Theresa had been sent to Ohio State by the Air Force to get a Ph.D. and I was on the faculty at the UT medical school in San Antonio. We shared some ideas, and under the mentorship of Bill Melnick she produced a really beautiful thesis on threshold shift detection that is essential reference material for anyone working in this area.

After receiving her doctorate in 1994, she was called on to serve in Air Force leadership roles in audiology research and management, and then more broadly as the tri-service executive manager for hearing conservation. It is hard enough to get the Army, Navy, and Air Force to agree on anything, but apparently Theresa did that so well that she managed to get promoted right out of the audiology field. She spent her final Air Force years managing broader areas of occupational health, human factors, and even terrorism response.

As a brand new retiree in 2004, she had still not lost her taste for federal service, and has spent most of her time since then in hearing conservation for both NIOSH and the VA. Currently she serves our field as a private consultant and as hearing conservation manager for Sperian Hearing Protection.

During her career, Theresa has published many articles – including 5 in our own Spectrum, mentored junior colleagues in academia, military, and professional societies, and given innumerable hours to teaching and committee work. She has led groups as different as CAOHC, MAA, and of course NHCA. With CAOHC she even ventured into video production.

But this award recognizes service to NHCA.

In 25 years of membership, Theresa has presented to this society almost every year, and often multiple times at the same meeting. Look at this list!

**NHCA Presentations**

- 1989 Asymmetric Hearing Loss in Industrial HCP
- 1994 - In Search of the Perfect STS Criteria
- 1995 - An Alternative Method for Evaluation of Hearing Conservation Programs
- 1996 Exchange Rate Controversy: How Best to protect Employees?
  - Forum at NHCA Conference
- 1996 Excellence Seminar – HC Program Evaluation and Management
- 1997 - Outstanding lecture Award - Industrial Hearing Conservation and Cerebellopontine Angle Tumors
- 1997 Excellence Seminar – Hot Topics in Hearing Conservation
- 1999 Hearing Conservation Referral Criteria
- 2001 Excellence Seminar – Motivation & Education
  - Follow-up and Referral of Audiometric Testing
- 2002 Excellence Seminar – Motivation & Education
- 2002 HC Metrics Workshop
- 2003 Gasaway Lecture
- 2003 Basics Workshop – Motivation & Education
- 2005 Hot Topics Forum moderator at conference
- 2007 Federal Railroad Administration Occupational Noise Exposure Regulation
- 2007 Excellence Seminar – Hearing Loss Prevention Research in the Mining Industry

Before becoming our president, Theresa did just about every job NHCA has to offer, including chairing 5 committees, and serving as both secretary and vice-president:

**NHCA Positions**

- Editorial Staff 1989
- Membership Committee 1990
- Public Relations Committee 1991-96
- Retention of Employees in Hearing Critical Jobs Committee 1993-
  - Member delegate 94-96
- Secretary 96/97
- Vice President 97/98
- Steering Committee 1996, 2008 (chair)
- Nominations Committee 1989, 2006 (chair)
- Chaired Task force on HCP Referral Criteria 1998-2004 (or forever!!)
- Director of Education 2004-2006
- Program Chair 1998 Conference
- Program Chair 2005 Conference

continued on next page
Her appetite for service – and NHCA’s appreciation of the quality of that service – has made her essential to our organization, programs and progress. Note that her memberships on both the program committee and the task force on HCP referral are listed as “forever.”

When Theresa takes on a job, she doesn’t just keep the seat warm; look at this partial list of her NHCA accomplishments:

• Joined NHCA in 1984 and presented at the 1984 Conference.
  First contribution to the newsletter was a feature article Winter 1984/85 on Speech Intelligibility in Noise with HPDs.
• 1989 Spectrum article in Associates Corner: Making workers militant about HC
• 1990 Spectrum article on Opportunities for Employee Education
• 1994 Represented NHCA in meeting with OSHA Director, Joseph
  Dear
• Operation Be Aware of Noise Generation (BANG) grew into children’s poster contests in NHCA conference hosting cities beginning in 1993
• 1994 Spectrum article on STS criteria
• NHCA Long Range Planning participant 1994 and 2004
• Legislative Committee: 1995 – Represented NHCA as a “Related Professional Organization” to ASHA meeting
• 1997 – Spectrum article: Improving Test Reliability
• Worked on Specialty Recognition for Occupational Audiologists (although not approved as an ASHA recognition group, it laid early groundwork for military audiologists to receive Professional Pay benefits and indirectly for the CAOHC Professional Supervisor certification).
• Contributed to comments of Coalition to Protect Workers Hearing on OSHA recordkeeping and recordability, FRA and other regulatory issues.
• OSHA-NHCA Alliance – helped author Hearing Protection and the Shooting Sports, editor and reviewer of OSHA e-Tools on hearing conservation.
• Led project to create e-version of past issues of Spectrum for Members Only section web access
• Led project to create e-version of past conference binders for Members Only section web access
• 2006 – Spectrum Article re: age correction of audiograms
• Led NHCA through financial challenges of 2007
• OSHA/NIOSH/NHCA Alliance – NHCA representative - coordinated signing ceremony at 2008 conference

Perhaps the people who best understand her contributions are those who have worked with her in NHCA leadership. Listen to what Deanna Meinke says:

“I would not have personally survived this presidency or change of management firms for NHCA without Theresa. She stepped forward and facilitated the transition process so I could stay focused on day-to-day NHCA business. She worked for months evaluating the NHCA management situation as part of the Leadership Advisory Team and then followed through with the transition efforts. Even now, I fall back on Theresa to help solve issues that arise that may take some time and guidance to resolve. She has never refused a request...and that has been invaluable to the Executive Council and me. Theresa can respond and get things rolling before most of us have read the original email, considered the question, or even begun to think about a solution. Theresa knows who has done what over the years; if we need to remember who helped do something or create something, she is the one to ask. She is never one to shy away from “leadership roles” and as such she never asks someone else to do something she is not willing or able to do herself.”

Truly, Theresa Shulz has enormous talent, a winning personality, a passion for hearing conservation, and a servant’s heart. As Americans, and particularly as NHCA members, we are lucky to have her, and we look forward to many years of future service…let’s just say “forever”!

by Robert Dobie, M.D.
## NHCA 2009 CONFERENCE SATURDAY BREAKFAST CHAT SESSIONS

**Coordinated by Sandra MacLean-Uberuaga**

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<td>15. Brad Witt</td>
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<td>4. James Jerome</td>
<td>Hearing Conservation Software</td>
<td>16. Laurie Wells</td>
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<td>5. Elliott Berger</td>
<td>HPD Standards &amp; Regulations</td>
<td>17. Mike Santucci / Ben Kanters</td>
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<td>7. Theresa Schulz</td>
<td>Fit Testing Hearing Protection</td>
<td>19. Thais Morata</td>
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<td>8. Open Table</td>
<td>Got Chat?</td>
<td>20. LTC Lynnette Bardolf</td>
<td>Military Hearing Conservation</td>
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<td>9. Open Table</td>
<td>Got Chat?</td>
<td>21. Tim Rink</td>
<td>Providing HCP Services</td>
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<td>12. Bob Dobie</td>
<td>Medico-Legal</td>
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**New “mini” Audiometer**

Delivers Easy, Cost-Effective OSHA Compliance For Your Hearing Conservation Program

The CCA-200mini delivers:
- Intuitive, Windows®-based user interface
- USB connection to the computer
- Built-in “Intelligent Testing” procedures

The “Plus” Package offers complete database management:
- Multiple reports and unlimited companies
- SQL Server compatibility
- Seamless integration with leading HC databases

Visit the Benson Medical booth.

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**Benson Medical Instruments**

Same size as a small stack of index cards!
FEBRUARY 12 – THURSDAY

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<th>Event Details</th>
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<td>Registration and Information Desk Open</td>
<td>Georgia Hall Pre-Function</td>
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<tr>
<td>7:30 a.m. – 8:30 a.m.</td>
<td>Continental Breakfast</td>
<td>Georgia Hall Pre-Function</td>
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<td>8:30 a.m. – 11:30 a.m.</td>
<td>Morning Workshops</td>
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<td>A.M. or P.M. 1.</td>
<td><strong>Recreational Firearm Noise Exposure</strong></td>
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<td>Greg Flamme, PhD, Western Michigan University, Kalamazoo, MI</td>
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<td>James Lankford, PhD, Northern Illinois University, Dekalb, IL</td>
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<td>Deanna Meinke, PhD, University of Northern Colorado, Greeley, CO</td>
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<td>Per Rasmussen, MS, G.R.A.S. Sound &amp; Vibration A/S, Holte, Denmark</td>
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<td>Michael Stewart, PhD, Central Michigan University, Mt. Pleasant, MI</td>
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<td>A.M. or P.M. 2.</td>
<td><strong>Tools for a Better Hearing Loss Prevention Program</strong></td>
<td>Georgia 3</td>
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<td>Robert F. Randolph – NIOSH, Pittsburgh Research Lab, Pittsburgh, PA</td>
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<td>Hearing Conservation Software: What’s Out There, What to Look For, and How to Shop Wisely</td>
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<td>James J. Jerome, MA, CCC-A, Workplace Integra, Fishers, IN</td>
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<td>A.M. or P.M. 3.</td>
<td><strong>Standards and Regulations on Hearing Protection, With Emphasis on EPA Labeling Requirements</strong></td>
<td>Georgia 4</td>
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<td>Elliott H. Berger, MS, E-A-RCAL Laboratories/Aearo Technologies, Indianapolis, IN</td>
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<td>Ted K. Madison, MA, CCC-A, 3M Occupational Health &amp; Environmental Safety Division, St. Paul, MN</td>
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<td>Lee D. Hager, Aearo Technologies and Sonomax Hearing Healthcare, Inc., Portland, MI</td>
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<td>P.M. only 4.</td>
<td><strong>PSO Member Session</strong></td>
<td>Georgia 12</td>
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<td>Moderated by: Richard Stepkin, MS, CCC-A, Enviromed Corp, Lindenwold, NJ</td>
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<td>8:30 a.m. – 4:00 p.m.</td>
<td><strong>Hearing Loss Prevention: The Basics</strong></td>
<td>Georgia 5</td>
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<td>Noise Measurement – Rick Neitzel, MS, CIH, University of Washington, Seattle, WA</td>
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<td>The Audiogram – LTC Lynnette Bardolf, US Army Aeromedical Research Laboratory, Enterprise, AL</td>
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<td>Hearing Loss Recordability – Laurie Wells, Au.D., FAAAA, Associates in Acoustics, Evergreen, CO</td>
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<td>Effective Hearing Protection – Brad K. Witt, MA, Howard Leight by Sperian, San Diego, CA</td>
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<td>Education &amp; Motivation – Laurie Wells, Au.D., FAAAA, Associates in Acoustics, Evergreen, CO</td>
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<td>Hot Topics – Dick Danielson, PhD, Audiology and Hearing Conservation at NASAs Johnson Space Center, Houston TX</td>
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<tr>
<td>8:30 a.m. – 4:00 p.m.</td>
<td><strong>All Day Seminar – Acoustics and Audiology in Forensics and Legal Practice</strong></td>
<td>Georgia 6</td>
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<td>John G. Casali, Ph.D., CPE, Virginia Tech, Blacksburg, VA</td>
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<td>Dennis P. Driscoll, PE, Associates in Acoustics, Evergreen, CO</td>
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<td>Robert Dobie, MD, University of California Davis, Davis, CA</td>
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<tr>
<td>9:45 a.m. – 10:15 a.m.</td>
<td>Workshop &amp; Seminar Break with Refreshments</td>
<td>Georgia Hall Pre-Function</td>
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<tr>
<td>11:30 a.m. – 1:00 p.m.</td>
<td>Lunch (on your own)</td>
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<tr>
<td>1:00 p.m. – 4:00 p.m.</td>
<td>Afternoon workshops – see workshops listed above</td>
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<tr>
<td>2:15 p.m. – 2:45 p.m.</td>
<td>Workshop &amp; Seminar Break with Refreshments</td>
<td>Georgia Hall Pre-Function</td>
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<td>4:00 – 4:45 p.m.</td>
<td>Committee Meetings and Networking Time</td>
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<tr>
<td>5:30 p.m. – 8:30 p.m.</td>
<td>Opening Reception</td>
<td>Georgia 7, 8, 9, 10, 11</td>
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FEBRUARY 13 – FRIDAY

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<tr>
<th>Time</th>
<th>Event Details</th>
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<tbody>
<tr>
<td>7:30 a.m. – 8:30 a.m.</td>
<td>Continental Breakfast</td>
<td>Exhibit Hall Georgia 7, 8, 9, 10, 11</td>
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<tr>
<td>7:30 a.m. – 5:30 p.m.</td>
<td>Registration and Information Desk Open</td>
<td>Georgia Hall Pre-Function</td>
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<tr>
<td>8:30 a.m. – 8:40a.m.</td>
<td>Welcome and Opening Remarks</td>
<td>Capitol South/Center</td>
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<td>Deanna Meinke, Ph.D., University of Northern Colorado, Greeley, CO NHCA President</td>
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<td>Karen Turner, Protec Hearing Inc., Winnipeg, MB, Canada</td>
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<tr>
<td>8:40 a.m. – 8:50 a.m.</td>
<td>Posters and Interactives Introductions</td>
<td>Georgia Hall Pre-Function</td>
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<td>Nancy Gallighugh, M.S., CCC-A, Constance Brown Hearing Centers, Kalamazoo, MI</td>
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<td>8:50 a.m. – 9:10 a.m.</td>
<td>Age -Related Hearing Loss in the U.S.A Since 1960: A Growing and Aging Population with Stable Age-Specific Prevalence Rates</td>
<td>Georgia Hall Pre-Function</td>
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<td>Robert Dobie, MD, University of California Davis, Davis, CA</td>
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9:10 a.m. – 9:30 a.m.  
**CDC's Update on Efforts to Improve Hearing Health Among School-Age Youth**  
Pete Hunt, Centers for Disease Control and Prevention, Chicago, IL

9:30 a.m. – 9:50 a.m.  
**Reducing Noise-Induced Hearing Loss Using Engineering Controls**  
Adam K. Smith, NIOSH - Hearing Loss Prevention Branch, Pittsburgh, PA

9:50 a.m. – 10:20 a.m.  
**Break/Posters/Exhibits**  
Georgia 7, 8, 9, 10, 11

10:20 a.m. – 11:00 a.m.  
**Keynote Speaker – Lessons Learned by the Swiss National**  
**Accident Insurance Fund: 30 Years of Hearing Conservation**  
Beat Hohmann, Dr. sc. techn. ETH, Swiss National Accident Insurance Fund Suva, Luzern, Switzerland

11:00 a.m. – 11:30 a.m.  
**NHCA Business Meeting**  
Deanna Meinke, PhD, University of Northern Colorado, Greeley, CO  
NHCA President

11:30 a.m. – 12:50 p.m.  
**Luncheon – The Sound Tracker: Conservation of Quiet**  
Gordon Hempton, The Sound Tracker, Port Angeles, WA

1:00 p.m. – 1:45 p.m.  
**CONCURRENT SESSIONS**

- **Hearing Protection Field Testing Technologies**  
  Lee D. Hager, Aearo Technologies and Sonomax Hearing Healthcare, Inc., Portland, MI  
  Theresa Schulz, PhD, Sperian Hearing Protection, Fredericktown, PA  
  Kevin Michael, PhD, Michael & Associates Inc., State College, PA

- **Decibel Debate: Recommended Noise Exposure Guidelines for Children**  
  Deanna Meinke, PhD, University of Northern Colorado, Greeley, CO  
  William Hal Martin, PhD, The Sound Tracker, Port Angeles, WA

- **HearTomorrow.org: Hearing Loss Prevention Curriculum for Music and Audio Engineering Students**  
  Benj Kanters, Columbia College Chicago, Chicago, IL

1:45 p.m. – 2:15 p.m.  
**Break/Posters/Exhibits**  
Georgia 7, 8, 9, 10, 11

2:15 p.m. – 2:30 p.m.  
**It's a Noisy Planet. Protect Their Hearing. — Turning Down the Noise for Tweens**  
Charlotte Ball, MPA, NIDCD Information Clearinghouse, Bethesda, MD

2:30 p.m. – 2:50 p.m.  
**iPoditis - Are We Measuring Levels Correctly?**  
M.E. Stergar, Aearo Technologies’ Electroacoustic Sound Lab, Indianapolis, IN

2:50 p.m. – 3:10 p.m.  
**Adolescent use of mp3 players : Increasing the Risk of Music-Induced Hearing Loss?**  
Cory D.F. Portnuff, AuD, University of Colorado, Boulder, CO  
Brian J. Fligor, ScD, Children’s Hospital Boston, Boston, MA

3:10 p.m. – 3:30 p.m.  
**Noise Exposure from Headsets - Do We Measure it Properly?**  
Alberto Behar, P.Eng., C.I.H., University of Toronto, Scarborough, Ontario  
Cheng Qian, IBBME, University of Toronto, Scarborough, Ontario  
Willy Wonog, IBBME, University of Toronto, Scarborough, Ontario

3:30 p.m. – 4:30 p.m.  
**NIOSH/NHCA Safe-In-Sound**

- **2009 Safe-in-Sound: Excellence and Innovation in Hearing Loss Prevention Awards**  
Thais Morata, PhD, National Institute for Occupational Safety and Health, Cincinnati, OH

4:30 p.m. – 4:40 p.m.  
**Friday Event Announcement – Location and Time of Shuttles, etc.**  
Brian J. Fligor, ScD, Children’s Hospital Boston, Boston, MA

4:40 p.m. – 5:00 p.m.  
**The Georgia Aquarium in collaboration with the University of Cincinnati FETCH~LAB in the Communication Sciences and Disorders Department**  
Peter M. Scheifele, Ph.D. LCDR USN (Ret.), Cincinnati, OH

5:00 p.m. – 6:30 p.m.  
**Networking Time, Committee Meetings**

7:00 p.m. – 10:00 p.m.  
**Special Event: Georgia Aquarium, Buffet Dinner**
FEBRUARY 14TH – SATURDAY

7:30 a.m. – 5:30 p.m.  Registration and Information Desk Open
NHCA Office

7:45 a.m. – 8:45 a.m. Chat Sessions with Buffet Breakfast
Capitol North
Coordinated by Sandra MacLean-Uberuaga, MA, CCC-A, F-AAA, C/PS
Alaska Occupational Audiology & Health Services, Inc., Anchorage, AK

9:00 a.m. – 9:20 a.m. Addressing Regulation of Occupational Hearing Loss at the State Level: A Contemporary Civics Lesson
Capitol South/Center
Charles Fankhauser, Medical Electronic Devices & Instrumentation, Benica, CA

9:20 a.m. – 9:40 a.m. Preventing Music Induced Hearing Loss in Schools of Music
Capitol South/Center
Kris Chesky, PhD, Texas Center for Music & Medicine, University of North Texas, Denton, TX

9:40 a.m. – 10:00 a.m. Awareness, Attitudes and Use of Hearing Protection Devices by Managerial Cadre Factory Staff in Nigeria
Capitol South/Center
E.E. Ologe, MBBS, FWACS, FMCORL, University of Ilorin, Ilorin, Kwara State, Nigeria
Akande TM, University of Ilorin, Ilorin, Nigeria
Elemukan OL, PhD, University of Ilorin Teaching Hospital, Ilorin, Nigeria.

10:00 a.m. – 11:00 a.m. Break/Posters/Exhibits
Georgia 7, 8, 9, 10, 11

11:00 a.m. – 11:20 a.m. Can Subjective Perceptions of Noise Be Used To Improve Noise Exposure Estimates?
Capitol South/Center
Rick Neitzel, MS, C.I.H., University of Washington, Seattle, WA

11:20 a.m. – 11:40 a.m. 20 years of Hearing Conservation in the Wood Products Manufacturing and Construction Industries
Capitol South/Center
Christine Harrison, BA, MSc, AuD(C), RA, Hearing Loss Prevention Program, Richmond, BC, Canada

11:40 a.m. – 12:00 p.m. Hearing Conservation North of the 55th Parallel
Capitol South Center
Patricia Tuttle –Briggs, Shepell-fgig, Thompson, MB, Canada

12:00 p.m. – 1:30 p.m. Luncheon and Awards
Capitol North

1:40 p.m. – 2:10 p.m. Gasaway Lecture
Capitol South Center
William Martin, PhD, Oregon Health & Science University, Portland, OR

2:10 p.m. – 2:40 p.m. Transitioning the Army Hearing Conservation Program to the Army Hearing Program. Providing Support in the Deployed/Combat Environment: Lessons Learned
Capitol South Center
CPT Jillyen Curry-Mathis, AuD, FAAA, Fort Jackson Army Hearing Program, Fort Jackson, SC

2:40 p.m. – 3:10 p.m. Auditory Alarm Localization (or Not): Effect of Augmented Passive and Electronic Hearing Protectors and Alarm Spectral Content
Capitol South Center
John G. Casali, PhD, CPE, Virginia Tech, Blacksburg, VA Khaled Alali, Virginia Tech, Blacksburg, VA

3:10 p.m. – 3:40 p.m. Development and Validation of a Predictive Model of Speech Intelligibility in Noise Requiring the Use of HPDs
Capitol South Center
Chantal Laroche, PhD, University of Ottawa, Ottawa, ON, Canada

3:40 p.m. – 4:00 p.m. Break

4:00 p.m. – 4:20 p.m. Impulse Noise Reduction for Hearing Protection
Capitol South Center
William J. Murphy, PhD, National Institute for Occupational Safety and Health, Cleveland, OH

4:20 p.m. – 4:40 p.m. Obstacles and Potential Solutions for Assessing the Performance of Sound Restoration Hearing Protection
Capitol South Center
Amanda Azman, AuD, National Institute for Occupational Safety and Health, Pittsburgh, PA

4:40 p.m. – 5:00 p.m. Hot Topics in Hearing Conservation

5:00 p.m. Closing Remarks
Brian J. Fligor, ScD, Children’s Hospital Boston, Boston, MA
SPONSORS AND BOOTH LOCATIONS

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<tr>
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<tr>
<td>5</td>
<td>AAA - American Academy of Audiology</td>
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<td>Howard Leight</td>
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<td>ASHA - American Speech-Language-Hearing Association (ASHA)</td>
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<td>Larson Davis</td>
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<td>Benson Medical Instruments Co.</td>
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<td>Logistic Health</td>
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<td>CAOHC - Council for Accreditation in Occupational Hearing Conservation</td>
<td>15 16</td>
<td>NIOSH/CDC National Institute for Occupational Safety &amp; Health/Centers for Disease Control and Prevention</td>
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<td>Casella USA</td>
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EXHIBIT SCHEDULE

**Thursday, February 12**
- Exhibit Set-up and Registration  
  11:00 a.m. - 4:00 p.m.
- Exhibits Open
  Reception and Silent Auction in Exhibit Hall  
  5:30 p.m. - 8:30 p.m.

**Friday, February 13**
- Continental Breakfast/Exhibits Open & Silent Auction  
  7:30 a.m. - 8:30 a.m.
- Break/Exhibits Open  
  10:00 a.m. - 10:45 a.m.
- Luncheon with Sponsor Introductions  
  12:00 noon - 1:30 p.m.
- Exhibit Hall Open  
  1:40 p.m. - 2:25 p.m.
- Break/Exhibits Open  
  2:25 p.m. - 3:10 p.m.

**Saturday, February 14**
- Exhibits Open/Break/Silent Auction  
  10:00 a.m. - 11:00 a.m.
- Exhibit Dismantling  
  12:00 noon - 4:00 p.m.
Advocating on behalf of persons with hearing, balance, speech and language disorders
Advancing communication science
Promoting effective human communication

Benson Medical Instruments Co.
Benson Medical Instruments offers Hearing Conservation Compliance Solutions. As a manufacturer of a full line of industrial audiometers and hearing conservation software, Benson Medical focuses on seamless integration. The advantages: faster test speed, quality results (with built-in "Intelligent Testing" procedures), ease of use (with an intuitive, Windows-based user interface), and superior data handling (with SQL Server compatibility and seamless integration with leading databases). Benson Medical offers "Seamless Sound Solutions" for both single-clinic and multi-station testing.

Casella USA
Offering a wide range of solutions for the Hearing Conservationist, Larson Davis is a leading supplier of Noise Dosimeters, Sound Level/Octave Band Meters, and Audiometer Calibration systems. Powerful CORTI© software drives continuous improvement of the Hearing Conservation Program by identifying at-risk workers, projecting future liability and retrospective allocation.

American Academy of Audiology (AAA)
The American Academy of Audiology, representing over 10,000 audiologists, is dedicated to providing quality hearing care services through professional development, education, research, and increased public awareness of hearing and balance disorders. To learn more about the audiology profession and how audiologists are helping the 36 million Americans who experience hearing loss, visit the Academy's Web site at www.audiology.org.

American Speech-Language-Hearing Association (ASHA)
ASHA is the professional, scientific, and credentialing association for more than 130,000 members and affiliates who are speech-language pathologists, audiologists, and speech, language, and hearing scientists in the United States and internationally. ASHA works to make effective communication accessible and achievable for all by:

Council for Accreditation in Occupational Hearing Conservation (CAOHC)
CAOHC is dedicated to the establishment and maintenance of training standards for those who safeguard hearing in the workplace. CAOHC has been a leader in providing standards for occupational hearing conservation programs since its inception in 1973. CAOHC offers national recognition by training and certification to the highest standard for: 1) the certified occupational hearing conservationist (COHC); 2) the Course Director conducting hearing conservation training courses; and 3) the Professional Supervisor of the Audiometric Portion of a Hearing Conservation Program (CSP/A). All hearing conservation team members will find the 4th Edition Hearing Conservation Manual, by Alice Suter PhD vital in the front-line defense against hearing loss in workers. More information is available about CAOHC on the worldwide web at: www.caohc.org.

G.R.A.S. Sound & Vibration
A broad range of standard measurement microphones, preamplifiers, transducers and accessories. Sound intensity microphones, outdoor monitoring microphones, artificial ears, ear & 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.

Howard Leight
From technical innovations to educational initiatives to field verification, Howard Leight® offers a suite of resources to make hearing conservation happen. One of the largest global manufacturers of hearing protectors, Howard Leight is the recognized innovator in protection and people-oriented fit. Howard Leight offers the widest variety of hearing protection devices and technologies, ranging from the highest attenuation,
styles with a more personalized fit, and convenient earplug dispensers. Our patented earmuffs raise the bar on innovative design, performance and comfort, featuring padded headbands, high-visibility styles and our patented Sound Management Technology™. Our new VeriPRO™ earplug fit verification system for hearing protectors enhances the personal Hearing Conservation experience. Visit us online at www.howardleight.com.

Larson Davis
Offering a wide range of solutions for the Hearing Conservationist, Larson Davis is a leading supplier of Noise Dosimeters, Sound Level / Octave Band Meters, and Audiometer Calibration systems. Powerful CORTI© software drives continuous improvement of the Hearing Conservation Program by identifying at-risk workers, projecting future liability and retrospective allocation.

National Institute for Occupational Safety & Health/Centers for Disease Control and Prevention (NIOSH/ CDC)
The National Institute for Occupational Safety and Health (NIOSH) is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. NIOSH is part of the Centers for Disease Control and Prevention (CDC) in the Department of Health and Human Services. NIOSH has laboratories and offices in Washington DC, Pittsburgh PA, Morgantown WV, Cincinnati OH, Denver CO, and Spokane WA.

Phonak LLC
Phonak Serenity® features consistent protection with custom E-Shells, combined with the latest in integrated electronics for full ambient awareness, enhanced hearing face to face, and easy upgrade options to communication over distance. Seven distinctive system options or types allow selection of the most appropriate protection for every job.
Every fitting is individually verified with a personal attenuation rating (PAR) in a special process measuring and documenting actual attenuation performance with mounted hearing protection (in situ).
To learn more about Phonak Earcare products visit us at Booth 13 or at www.phonak-communications.com/ Protection.

Quest Technologies
Quest Technologies, a 3M company, is a world class manufacturer and leader in the field of occupational safety, industrial hygiene and environmental instrumentation. Quest products are used in more than 80 countries worldwide. Quest has a strong reputation of rugged, reliable instrumentation and software systems that monitor and evaluate occupational and environmental health and safety hazards including noise, vibration, heat stress, indoor air quality and toxic/combustible gases. Quest monitoring instruments serve a variety of occupations and industries with clients in mining, research, enforcement, military, education, insurance and manufacturing business sectors. Visit www.questtechnologies.com for further information.

Tremetrics
Tremetrics offers an OSHA-compliant hearing conservation line of equipment including audiometers, test booths and comprehensive hearing/health data management software. We offer total hearing testing solutions for mobile testing providers as well as on-site health practitioners. www.tremetrics.com

Logistics Health
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. We design, implement, and manage occupational health and wellness programs, medical and dental readiness services, and secure data management.
ATTENTION STUDENTS

Student Social Event

Are you a student attending this conference for the first time? Are you looking for the opportunity to meet other students? Are you a returning student attendee of this conference? Are you looking for the opportunity to catch up with students you have met at previous conferences? Look no further for the opportunity to meet and hang out with other students.

If you’d like to take advantage of this opportunity, we will be meeting at Fandangles, the hotel restaurant, at 8:00pm Thursday to begin the evening. Hope to see you there! Please sign-up at the NHCA registration desk so I make sure we have sufficient seating for everyone. If you’d like to contact me, please feel free to phone me at (970) 302-2389. ~ Emily Wakefield, Student Member Delegate.

Hearing-protector Test Fixture

Type 45CA

For standardized testing of ear-muffs according to ISO 4869-3. With option for the IEC 60318 ear simulator for headset testing or the IEC 60711 coupler for headset or ear-plug testing.
Thursday, February 12

Recreational Firearm Noise Exposure
Greg Flamme, Ph.D., Western Michigan University, Kalamazoo, MI
James Lankford, Northern Illinois University, Dekalb, IL
Deanna Meinke, Ph.D., University of Northern Colorado, Greeley, CO
Per Rasmussen, G.R.A.S. Sound & Vibration A/S, Holte, Denmark
Michael Stewart, Ph.D., Central Michigan University, Mt. Pleasant, MI

Despite the popularity of recreational shooting, there are relatively few contemporary data concerning the acoustic and auditory risk characteristics of the gunfire produced during these activities. Attendees will learn about the types of recreational firearms, usage habits, gunfire measurement techniques, effects of gunfire noise on hearing, and estimates of hearing protector effectiveness in this presentation.

Tools for a Better Hearing Loss Prevention Program
Robert F. Randolph – NIOSH, Pittsburgh Research Lab, Pittsburgh, PA

This workshop session will familiarize attendees with several new hearing loss prevention tools and interventions that NIOSH has developed, including the QuickFit and QuickFitWeb HPD test systems, the DOSES noise exposure management software, and a NIOSH fact sheet about audiograms. It will also cover recent improvements to the NIOSH Hearing Loss Simulator. The presentation will include suggested real-world applications and scenarios for using the tools within the context of a comprehensive hearing loss prevention program.

Hearing Conservation Software: What's Out There, What to Look For, and How to Shop Wisely
James J. Jerome, MA, CCC-A, Workplace Integra, Fishers, IN

It has long been recognized that, especially with large employee populations, no hearing conservation program can run efficiently without the use of a hearing conservation data management application. These applications can be dedicated, stand-alone products, a module in a multi-functional product, or a web based product. Many are sold with the understanding that the distributor's audiometric review services must be used. Scenarios will be presented on how each type of application is used. Because these applications are databases, employee and statistical reports can be easily compiled and printed. Report features and tips on how to shop for the right application will be presented. The intent of this topic is to educate the prospective consumer to be a better shopper and not to promote any brand name application.

Standards and Regulations on Hearing Protection, With Emphasis on EPA Labeling Requirements
Elliott H. Berger, MS, E-A-RCAL Laboratories/Aearo Technologies, Indianapolis, IN
Ted K. Madison, MA, CCC-A, 3M Occupational Health & Environmental Safety Division, St. Paul, MN
Lee D. Hager, Aearo Technologies and Sonomax Hearing Healthcare, Inc., Portland, MI

The selection and use of hearing protection devices (HPDs) in hearing conservation programs is influenced by numerous technical standards and government regulations. The organizations and agencies involved in the creation and implementation of those standards include those in the U.S. and Canada (ANSI, ASA, EPA, OSHA, NIOSH, FDA, FRA, CSA), and in Europe and elsewhere (EU, CEN, AU/NZ, ISO). The authors will describe the plethora of interconnecting, overlapping, and sometimes contradictory rules, such as the multiple and differing HPD derating systems used throughout Europe, with an emphasis of those with the greatest impact on the membership of NHCA. These will include the pending rulemaking by EPA for a revision of the HPD labeling requirements, recent ANSI standards on measuring and computing hearing protector performance (S12.6-2008 and S12.68-2007), and the EN 352 and ISO 4869 series of standards that describe numerous complex measurements on all types of hearing protectors including electronic and level dependent devices.

PSO Member Session
Richard Stepkin, MS, CCC-A, Enviromed Corp, Lindenwold, NJ

This workshop is geared toward PSO members and prospective members. The workshop will address a number of topics of current interest and concern regarding the effectiveness of your HCPs.

All Day Seminar – Hearing Loss Prevention: The Basics
This workshop will feature experts in the field of hearing loss prevention discussing the essential elements of an effective hearing loss prevention program. The seminar is designed to provide information that is useful to the audiometric technician as well as the professional supervisor. Whether you're new to the field or have been practicing hearing conservation for years, this workshop is guaranteed to offer something of interest. The interaction that is encouraged with audience participation, between rookies and veterans, makes this exchange all the more valuable.

Noise Measurement
Rick Neitzel, MS, CIH, University of Washington, Seattle, WA

In this segment, Rick will provide an overview of the measurement 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!), and how all this relates to protecting people's hearing.
The Audiogram

LTC Lynnette Bardolf, Ph.D., United States Army Aeromedical Center, Enterprise, AL

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. I-low 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 Recordability

Susan C. Megerson, MA, CCC-A, The University of Kansas, Shawnee Mission, KS

Identification of work-related hearing loss has long been one of the most complicated and controversial areas of government-mandated injury/illness recordkeeping. 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.

Effective Hearing Protection

Brad K. Witt, MA, Howard Leight by Sperian, San Diego, CA

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. But hearing protection is not always intuitive, and the hearing conservationist who simply provides protectors without support may be sorely disappointed when hearing loss continues unabated. This presentation will focus on hearing protector function, how they are tested and rated (with particular reference to the NRR and anticipated changes to the NRR), the performance gains available from the use of dual hearing protectors, and useful tips on how to teach workers to obtain an optimal fit. The attendee will also learn about current developments such as field verification of fit.

Education & Motivation

Laurie Wells, Au.D., FAAA, Associates in Audiology, Evergreen, CO

Hot Topics

Richard Danielson, Ph.D., NSBRI/Baylor College of Medicine, NASA’s Johnson Space Center, Houston TX

This session will allow participants to assimilate today’s material into cohesive strategies for approaching their “real-life” hearing loss prevention (HLP) scenarios at home. Emphasis will be placed on how hearing conservationists can best employ practical, rather than theoretical, approaches for building successful HLP programs.

All Day Seminar – Acoustics and Audiology in Forensics and Legal Practice

John G. Casali, Ph.D., CPE, Virginia Tech, Blacksburg, VA

Dennis P. Driscoll, PE, Associates in Acoustics, Evergreen, CO

Robert Dobie, MD, University of California Davis, Davis, CA

In this workshop, you will learn how acoustics and audiology can provide important input to juries and judges within the U.S. legal system, learn the basics of serving as an expert witness in court, experience the challenge of being cross-examined, understand how to navigate (and survive) the discovery and litigation process in your capacity as an expert witness, understand the basics of writing compelling, scientific reports for submission to court, learn the basic “business” aspects of serving as an expert for court proceedings, be introduced to the fundamentals of tort law, be exposed to examples of the application of acoustics and/or audiology to cases involving: noise-induced hearing loss, warning signals as implicated in accidents, community noise annoyance, and intellectual property.

Friday, February 13

Age-related hearing loss in the USA since 1960: A growing and aging population with stable age-specific prevalence rates

Robert Dobie, MD, University of California-Davis, University of Texas-Houston, Dobie Associates

Has increasing noise exposure damaged hearing in the USA? Or have improved medical treatment, smoking cessation, and decreasing noise exposure had a beneficial effect? Newly available summaries of audiometric data from the National Health and Nutrition Examination Survey (NHANES), 1999 -2004 (Agrawal et al, 2008) permits comparison of current indices of hearing loss to data collected in 1960 – 1962 (Annex B of ISO-1999). Prevalence rates of speech-frequency loss in both surveys rise with age and male sex, but appear no different in NHANES than in Annex B. Mean high-frequency (3 – 6 kHz) loss also increases with age, but is similar in the two surveys. Our population has grown and aged, leading to much higher numbers of hearing-impaired people since 1960, but people of a specified age and sex probably hear about the same as their parents and grandparents did at the same age.

CDC’S Update on Efforts to Improve Hearing Health Among School-Age Youth

Pete Hunt, Centers for Disease Control and Prevention, Chicago, IL

Preventing noise induced hearing loss among our nation’s population necessitates action at local, state, national, and federal levels. CDC has been an active federal partner in improving hearing health for newborns and adults in occupational settings. CDC’s Division of Adolescent and School Health (DASH) has initiated efforts to help schools improve hearing health of young people in our nation’s schools. Young people spend a substantial proportion of their lives in schools and CDC recognizes the opportunity to help schools improve hearing health as part of a comprehensive approach to school health. Participants will learn about DASH’s current partnerships and activities to address noise induced hearing loss for young people.
Reducing Noise-Induced Hearing Loss Using Engineering Controls
Adam K. Smith, NIOSH - Hearing Loss Prevention Branch, Pittsburgh, PA

Noise-Induced Hearing Loss (NIHL) is one of the most common occupational illnesses nationally and internationally. The National Institute for Occupational Safety and Health (NIOSH) estimates between 5 and 30 million workers in the United States (U.S.) are exposed to noise levels at work that put them at risk of hearing loss. Estimates for other nations indicate a similar public health burden. Occupational hearing loss is a permanent illness, with no cure currently possible. Application of engineering noise controls is the most desirable approach to reducing exposure to noise in the workplace and the NIHL that often results. Engineering noise controls reduce or eliminate the noise at its source and insure that workers are not overexposed to excessive levels of noise. NIOSH is executing a planned program of research in engineering noise control technology to reduce or eliminate occupational hearing loss. The mission is to provide national and world leadership to reduce the prevalence of occupational hearing loss through a focused program on engineering noise control technology. Mine Safety and Health Administration (MSHA) coal noise sample data collected show that 65% of the equipment whose operators exceeded 100% noise dosage is comprised of seven different types of machines. The continuous mining machine is first among all the equipment with 23% and the roof bolting machine is second with 11% of the noise over exposures. NIOSH is conducting research to reduce excessive exposure for operators of continuous mining machines and roof bolting machines preventing additional cases of NIHL by developing noise controls for mining equipment. This presentation describes noise controls for reducing the noise overexposures of continuous mining machine and roof bolting machine operators. This research is providing the mining community with additional noise controls to be utilized on continuous mining machines and roof bolting machines, therefore reducing operator noise overexposure. Utilizing these newly developed noise control, along with previously proven controls for the continuous mining and roof bolting machines will provide operators of these machines an opportunity to be within the MSHA-Permissible Exposure Limit (MSHA-PEL). In addition the presentation will provide information on the facilities, equipment, and procedures used to determine noise generated by a roof bolting machine and a continuous mining machine at Pittsburgh Research Lab.

Keynote – Lessons Learned by the Swiss National Accident Insurance Fund: 30 Years of Hearing Conservation
Beat W. Hohmann, Dr. sc. techn. ETH, Swiss National Accident Insurance Fund (Suva), Luzern, Switzerland

In Switzerland, 200000 employees are exposed to potentially harmful noise exceeding a noise exposure level of 85 dB(A). The Swiss National Accident Insurance Fund (Suva) is the supervisory body for the prevention of occupational diseases for all branches, from forestry workers to orchestra musicians. Regarding NIHL, Suva wants to protect workers in (very) small enterprises without expert knowledge equally well as workers in bigger companies having a professional health and safety service. Therefore, Suva promotes simple solutions for the evaluation of the occupational noise exposure and runs a centralized hearing examination service using 5 mobile units or ‘Audiomobiles’. For 20 years, Suva’s campaign against NIHL also addresses leisure time activities such as listening to MP3 players, attending rock concerts or discotheques. The results of this hearing conservation program over the last 30 years and the future challenges will be discussed.

Luncheon – How 28 Years of Sound Tracking led to One Square Inch of Silence
Gordon Hempton, The Sound Tracker, Port Angeles, WA

Travel along with globe-trotting sound recordist Gordon Hempton, The Sound Tracker®, as he recalls a few of his most ear-opening assignments: record and interpret the excitement of pro-sports fans for life-like real time gaming by Microsoft; ride aboard the Orient Express and Flying Scotsman to record the vanishing sounds of steam engines; capture the sounds of sunrise on six continents and then produce a planetary sound portrait: the dawn chorus of songbirds circling the Earth as an endless wave. Gordon ends by describing how his passionate life’s work came to a grinding halt with the sudden onset of hearing loss and how he recovered 18 months later to lead a defense of One Square Inch of Silence at Olympic National Park (the subject of an upcoming book by Simon & Schuster, March ’09).

Hearing Protection Field Testing Technologies
Lee D. Hager, Aearo Technologies and Sonomax Hearing Healthcare, Inc., Portland, MI
Theresa Schulz, Ph.D., Sperian Hearing Protection, Fredericktown, PA
Kevin Michael, Ph.D. Michael & Associates Inc., State College, PA

Individual hearing protector field fit testing technologies have advanced significantly in recent years, with new individual hearing protector field fit testing technologies have advanced significantly in recent years, with new technologies being introduced regularly. How are these technologies being applied in real hearing conservation programs? How is fit testing data being used to protect hearing and improve hearing loss prevention efforts? This session will describe how end users have integrated HPD fit testing into their hearing conservation programs, how they select employees for participation, and how they use the data to improve the quality and integrity of their hearing conservation efforts.

Decibel Debate: Recommended Noise Exposure Guidelines for Children
Deanna Meinke, Ph.D., University of Northern Colorado, Greeley, CO
William Hal Martin, Ph.D., Oregon Health & Science University

Several organizations have developed recommended exposure guidelines...
levels for sound based upon estimated risk for noise induced hearing loss combined with economic, political and logistical constraints. The data used to make these determinations were primarily from unprotected adults working in occupational settings with prolonged daily exposure to significant sound levels over several decades. Several reports indicate that children and adolescents are currently being exposed to significant sound exposures on a daily basis yet no standards have been developed using data from young subjects. Programs and policy makers addressing noise induced hearing loss prevention for young people are challenged when deciding what criteria to use when making exposure recommendations. Despite the absence of hard data upon which recommendations can be made, there are several factors that may be helpful in establishing reasonable guidelines for protecting the hearing of young people everywhere.

This session will be a forum for interactive discussion of factors to be considered in developing exposure guidelines for children and serve as a first-step towards building a consensus recommendation to educational programs and policy makers.

**HearTomorrow.org: Hearing Loss Prevention Curriculum for Music and Audio Engineering Students**

Benjamin Kanters, Columbia College Chicago, Chicago, IL

This workshop is a new approach to promoting awareness of hearing loss and conservation. This program is specifically targeted to students in college-level music and audio engineering programs. Experience has shown that audio and music students easily understand the concepts of hearing physiology. Many of these principles and theories are the same as those in audio and acoustics. Moreover, students of audio and music are quick to understand the importance of developing their own safe listening habits, as well as being concerned for the hearing health of their clients and the music-listening public. This puts these future professionals in the unique position of being role models to the general public.

The workshop will be in the three units: An introduction to physiology, The mechanics of hearing loss, and Understanding exposure limits and protection.

**It’s A Noisy Planet. Protect Their Hearing - Turning Down the Noise for Tweens**

Charlotte Ball, MPA, NIDCD Information Clearinghouse, Bethesda, MD

In October 2008, the National Institute on Deafness and Other Communication Disorders (NIDCD) launched a new campaign to prevent noise-induced hearing loss (NIHL) in tweens (children ages 8 to 12). Called It's a Noisy Planet. Protect Their Hearing, the campaign is designed to increase awareness among parents of tweens about the causes and prevention of NIHL. The campaign also provides information directly to tweens to encourage them to adopt habits that will help them maintain lifelong hearing health. NIDCD selected tweens as its campaign focus because they are at an age during which young people are developing listening, leisure, and working habits. The campaign complements existing NIHL prevention campaigns that center primarily on the music-listening behavior of young people. The Noisy Planet Web site, at www.noisypettern.nidcd.nih.gov, is the centerpiece of the campaign, offering print-friendly tips for parents and tweens as well as for communities, partnering organizations, and the media. NIDCD's communication strategies for the campaign will be described.

**iPoditis – Are We Measuring Levels Correctly?**


M. E. Stergar, Aero Technologies’ Electroacoustic Sound Lab, Indianapolis, IN

One of the most prominent noise-exposure issues in popular culture today is that of potential noise-induced hearing loss from personal digital audio players (DAPs) of which the iPod is the most conspicuous player. Numerous posts on the Internet and articles in the popular press raise concerns and speak of impending auditory doom. How can the typical user or audiologist/hearing conservationist know of the levels to which they or their clients/employees are exposed, and assess their risk? Can they simply take an inexpensive sound level meter and hold it next to an earphone to measure the sound levels, and then compare them to the oft-cited 85-dBA criterion? Or do they simply know that something is wrong if they can hear their child’s DAP from across the room? This paper will present data on comparison of the preferred measurement approach using an acoustic manikin or simulator with an earcanal coupler [and transformation of those values using the transfer function of the open ear (TFOE)], to casual measurements using simplified manikins, or no manikin at all and no TFOE correction. Additionally, a literature review will be provided, including comments on the epidemiological evidence to date, use patterns, and what the future may hold.

**Adolescent Use of Mp3 Players: Increasing the Risk of Music-Induced Hearing Loss?**

Cory D.F. Portnuff, Au.D. University of Colorado, Boulder, CO

Brian J. Fligor, Sc.D., Children's Hospital Boston, Boston, MA

In the last two years, a plethora of popular media coverage and limited peer-reviewed research has suggested that MP3 player use may contribute to music-induced hearing loss (MIHL) in teenagers. This presentation reviews the literature on MP3 player usage, and reports on original research examining the knowledge, beliefs and behaviors of teenagers regarding the use of MP3 players. A group of teenagers with normal hearing completed a chosen listening level task using an MP3 player, where they chose their desired listening level in varying levels of background noise and with several earphones as well as a health belief questionnaire. This presentation will discuss the results of this study, compared and contrasted to the research that has established how adults use MP3 players. From this, and previous research completed by the authors, recommendations for both personal player usage and the ongoing needs for public education will be discussed.
Noise Exposure from headsets - Do we measure it properly?  
Alberto Behar, P.Eng., C.I.H., University of Toronto, Scarborough, Ontario  
Cheng Qian, IBBME, University of Toronto, Scarborough, Ontario  
Willy Wonog, IBBME, University of Toronto, Scarborough, Ontario

Measuring noise exposures from sources close to the ear present problems different from those when the source is in the far or diffuse field. The use of headsets (earphones, communication equipment, i-pods, etc) has presently increased, with call centers, fast-food outlets, in-plant communication system. Therefore this kind of measurement is becoming necessary. This paper reviews different methods of assessing occupational noise exposure for individuals using headsets or headphones in the workplace using devices such as acoustic manikins, artificial ears and real-ear procedures. An alternative calculation method is also presented, that includes other determinants of exposure, such as the background noise around the worker and the attenuation of the device.

2009 Safe-in-Sound Excellence and Innovation in Hearing Loss Prevention Awards  
Thais Morata, Ph.D., National Institute for Occupational Safety and Health, Cincinnati, OH

In 2007 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 were evaluated against key performance indicators in a rigorous systematic review process designed to capture and evaluate the successes. The first ever Safe-in-Sound Excellence and Innovation in Hearing Loss Prevention Awards™ will be presented by Dr. James Newhall, PhD., NIOSH Director of the Office of Extramural Programs. The four recipients will accept their awards and share their success stories.

Saturday, February 14

Addressing Regulation of Occupational Hearing Loss at the State Level: A Contemporary Civics Lesson  
Charles Fankhauser, Medical Electronic Devices & Instrumentation, Benica, CA

An American National Standard for background sound levels permitting threshold audiometric testing has been known since 1960 (S3.1-1960). This earlier standard was revised in 1977, 1991, and most recently, was reaffirmed without further revision in 2003. The California Occupational Safety and Health Administration (Cal/OSHA) regulation followed the lead of the Federal Regulation and adopted the very relaxed levels from Table D-2 published in 29 CFR Part 1910. These levels remained the regulatory standard in 1999, when S3.1 was revised. The enormous differences between permissible background sound levels for threshold testing published in the 1999 version of S3.1 and the Cal/OSHA regulation clearly indicated that the California regulation needed to be updated. Additionally, the 1999 version of S3.1 referenced a more recent American National Standard Specification for audiometers (S3.6-1996) that also included threshold levels for insert earphones whereas the Cal/OSHA regulation continued to reference an outdated 1969 revision of S3.6.

I petitioned Cal/OSHA for a review of these matters. Several public meetings did review this petition. The meetings discussing my petition were combined with petitioners interested in including the agriculture and construction industries under the umbrella of the Cal/OSHA hearing conservation amendment so each public forum was well-attended and discussion and dissent was vigorous. Small but desirable change did result.

Preventing Music-Induced Hearing Loss in Schools of Music  
Kris Chesky, Ph.D., Texas Center for Music & Medicine, University of North Texas, Denton, TX

Research is needed to ensure that people in school music programs are not exposed to sounds that can impair hearing. The knowledge-base is currently insufficient to understand and respond to intensity levels that are routinely generated during instructional activities. Musical events are essentially variable within and over time, yet estimates of risk are typically determined, if at all, from 1 or 2 measurement cycles. Another problem is the use of industry-based procedures for characterizing intensity and associated risk levels. Dosimeter-based risk indices do not provide enough detail for developing effective intervention strategies and often lead to misconceptions and misguided responses. This presentation will show estimates of risk from measurements of over 600 college-based instructional activities collected during the 07-08 academic year, a time-series and longitudinal approach for providing the details needed for reducing risk through reasonable changes to musical practice and pedagogy, and how this method is being used in efforts to develop a national, school accreditation-based, hearing loss prevention policy.

Awareness, attitudes and use of hearing protection devices by managerial cadre factory staff in Nigeria  
F.E. Ologe, MBBS, FWACS, FMCORL, University of Ilorin, Ilorin, Kwara State, Nigeria  
Akande TM, University of Ilorin, Ilorin, Nigeria  
Elemukan Ol Ph.D., University of Ilorin Teaching Hospital, Ilorin, Nigeria.

Following observations of poor attitudes and practice of hearing protection by factory workers; we surveyed the awareness, attitudes and use of hearing protection devices by Managerial Cadre staff in seven industries with sound level measurements in excess of 100dB. There were 59 respondents, 86.5% with tertiary education, and working experience of one to twenty years. Over 90% were aware of the risk of NIHL. About 80% were aware of noise protection, but 25% had formal training on noise hazard, 13.6% were aware of noise
measurement in the factory, 32% have ear protective devices, and 15% have checked their hearing levels. Some 40% think that management considers noise in the factory as an important problem while 28% believe protection provided is adequate. The constraints include lack of awareness, adequate supervision; treating staff welfare with levity, and cost implication. They believe concerted efforts by government and NGOs may alleviate this problem.

Can subjective perceptions of noise be used to improve noise exposure estimates?
Rick Neitzel, MS, CIH, University of Washington, Seattle, WA

This study evaluated the relationship between perceived and quantitatively measured noise exposure to assess the potential utility of subjective information for exposure assessment. Twenty subjects were recruited at each of three worksites with different noise environments (continuous, intermittent, and highly variable). Full-shift quantitative measurements were made on each subject during four worksites over two weeks. Perceived exposure information was collected via surveys on subjects’ first and last monitored shifts. The first survey focused on the first shift only, while the second survey covered the whole two week period. Job title generally did not produce statistically distinct exposure groups, and several survey items provided greater exposure contrast than job title. The precision of exposures predicted from survey items was comparable to, or slightly better than, that of job title for several survey items. Perceived exposure information appears to offer promise for improving exposure estimates, particularly for individuals with highly variable exposures.

20 years of hearing conservation in the wood products manufacturing and construction industries
Christine Harrison, B.A., M.Sc., Aud.(C), R.A., Hearing Loss Prevention Program, Richmond, BC Canada

In 2007, over 8000 workers in the wood products manufacturing industry sector (pulpmills, sawmills, etc.) had hearing tests, while 2000 workers in the construction industry also had hearing tests. Why are these 10,000 workers interesting? Because each one of them had hearing tests recorded in 1988–19 years previously. This paper will report on this 20 years’ worth of hearing testing in these two industries to shed some light on the question: has there been any difference in hearing conservation success between these two noisy industries? Why might there be a difference?

Hearing Conservation - North of the 55th Parallel
Patricia Tuttle-Briggs, Shepell•fgi, Thompson, MB, Canada

Thompson is a city of about 15,000 people, located in northern Manitoba. The city was built only 50 years ago, following the discovery of nickel by Vale Inco.
I work as an Audiometric Technician for Shepell•fgi, we are contracted by Vale Inco to provide Occupational Medicine Services to their 1500 employees. We also provide audiometric testing for other companies in Northern Manitoba. The province of Manitoba has Workplace Health and Safety Regulations that make it mandatory for any employee exposed to 85 dBA or higher to have a baseline audiometric test done within 70 days of employment and an annual test done thereafter. In June of 2008, we began fitting employees with custom fit plugs. Hopefully we will see a decrease in the number of employees affected by hearing loss.

Gasaway Lecture – Imagine that there are 40 million sheep and 4 million people. What could hearing loss prevention look like?
William Hal Martin, Ph.D., Oregon Health & Science University, Portland, OR

Stretch your mind and lay a foundation for a new way of looking at our (hearing loss prevention people) world and what direction we should be heading. For the most part, hearing conservation is reactive. We go to workplaces were problems already exist, give instructions on what needs to be done, and monitor the residual deterioration. Instead, hearing loss and tinnitus prevention should be proactive with us laying a foundation of knowledge in young people, encouraging positive attitudes and behaviors throughout their youth so that when they get into occupational, military or recreational settings they can intuitively recognize risky situations and have the knowledge and desire to implement hearing protection strategies on their own...

To achieve this plan in an interesting laboratory setting, collaboration with a hearing scientist in New Zealand has been set. Working together on the development of a long-term, comprehensive and fully integrated hearing health promotion plan for New Zealand. It is feasible there because of the size (small), semi-socialized medicine, and high value on healthiness and active lives by residents. Will something like this work in the US. Would it ever work? What are the similarities and differences between the two systems? How would NHCA play a role in this process?

Transitioning the Army Hearing Conservation Program to the Army Hearing Program. Providing Support in the Deployed/Combat Environment: Lessons Learned
CPT Jillyen Curry-Mathis, Au.D., FAAA, Fort Jackson Army Hearing Program, Fort Jackson, SC

Climbing noise exposure rates have resulted in the continued ranking of permanent hearing loss and tinnitus among the top four injuries for OIF and OEF combat veterans. A pilot hearing program, started at Fort Stewart in 2004, attempted to effectively reduce hearing loss among 3rd ID Soldiers while incorporating the unique and critical communication needs of the War Fighter. The Division’s subsequent third deployment allowed for a transition assessment of the traditional, garrison-based Hearing Conservation Program to the new Army Hearing Program, which encompasses the deployed environment. The sustained operational needs of the Soldier in combat were identified and supported, with the potential role of a forward deployed audiologist easily defined. Experiences, outcomes and recommendations for the continued successful implementation of the Army Hearing Program and the preventive medicine role of the 72C audiologist will be reviewed.
Auditory Alarm Localization (or Not): Effect of Augmented Passive and Electronic Hearing Protectors and Alarm Spectral Content
John G. Casali, Ph.D., CPE, Virginia Tech, Blacksburg, VA
Khaled Alali, Virginia Tech, Blacksburg, VA

This human factors experiment employed a hemi-anechoic sound field in which listeners were required to localize a vehicular backup alarm warning signal in 360-degrees azimuth. Measures of localization performance included: 1) the number of correct localization responses, 2) left/right localization errors, 3) front/rear localization errors, and 4) the absolute deviation in degrees from the alarm's location. In summary, the data demonstrated that normal hearing listeners did not improve in their ability to localize the backup alarm warning signal in 360-degrees azimuth when wearing augmented hearing protectors (including dichotic sound transmission earmuffs, flat attenuation earplugs, and level-dependent earplugs), as compared to when wearing conventional passive earmuffs or earplugs of the foam or flanged types. Furthermore, a diotic sound transmission earmuff resulted in the poorest localization. Localization was also degraded in 90 dBA pink noise, as compared to the relatively quiet condition of 60 dBA pink noise. An augmented backup alarm which incorporated 400 Hz and 4000 Hz components to exploit the benefits of interaural phase and intensity cues slightly improved localization compared to the standard, more narrow-bandwidth backup alarm, and these results have implications for the updating of backup alarm standards.

Development and Validation of a Predictive Model of Speech Intelligibility In Noise Requiring the Use of HPDs
Chantal Laroche1, Christian Giguère1, Véronique Vaillancourt1, Sigfrid Soli2, Joseph Thibodeau2, Alexandre Labelle2 1Hearing Research Laboratory, Noise and Communication Research Unit, University of Ottawa, 451 Smyth Road, Ottawa, ON, Canada, K1H 8M5 2Department of Human Communication Sciences and Devices, House Ear Institute, 2100 West Third Street, Los Angeles, CA 90057

A predictive model of speech intelligibility was developed and validated for use in workplace environments characterized by hazardous noise levels requiring the use of hearing protection devices. The model takes into account the characteristics of the noise field, the signal-to-noise ratio, the attenuation of the device, and the hearing status of the listener. Accurate prediction of speech intelligibility requires consideration of both the audibility (threshold) and distortion (suprathreshold) components of a hearing loss, as measured by the pure-tone audiogram and the clinical Hearing-In-Noise Test. The mean prediction error over all conditions tested is -0.1% with a standard deviation of 14.6%. The model could be used in the context of two important applications of direct relevance to the military or industrial environment: (1) the optimal selection of hearing protectors, and (2) the establishment of hearing standards for the personnel working in hearing-critical jobs. [This work is based on Defence R&D Canada Contractor Report DRDC Toronto CR-2008-178].

Impulse Noise Reduction for Hearing Protectors
William J. Murphy, Ph.D. National Institute for Occupational Safety and Health, Cleveland, OH

In 2008, the United States Environmental Protection Agency proposed a revision to the federal regulation for the labeling of hearing protection devices, 40 CFR 211 Subpart B. One of the new features of the proposed rule was the measurement of an impulse noise reduction rating for hearing protection devices. Measurement of impulsive sounds is challenging technically from an acoustics perspective. This paper will report on the performance of an acoustic shock tube used to generate impulses between 140 and 170 dB peak sound pressure level. The calibration methods for the microphones will be discussed and the measurements for a variety of hearing protectors will be presented. Typical earmuffs are capable of impulsive noise reduction ratings of between 20 and 35 dB. Earplugs provide similar range of performance. Combinations of earmuff and earplug have yielded impulse peak reductions of more than 50 dB. The reduction of the impulse peak level should provide a means to predict exposure at the ear when a hearing protector is worn in an impulsive noise environment.

Obstacles and Potential Solutions for assessing the performance of sound restoration hearing protection
Amanda S. Azman Au.D., National Institute for Occupational Safety and Health, Pittsburgh, PA

Multiple methods can efficiently and accurately determine the attenuation properties of conventional, passive hearing protection devices. However, gaps exist in standard methodology (ANSI S12.6-1997, ANSI S12.42-1995 and ISO 4869-3 2007) for measuring the potential capabilities of sound restoration hearing protectors. Because of the multiple possible electronic settings as well as non-linear performance as a function of ambient sound level, existing methodology cannot fully evaluate the performance of the devices. Furthermore, because the purpose of such devices is to provide enhanced audibility as compared to conventional HPDs, some method for assessing audibility must also be implemented. An overview of the obstacles, possible solutions as they have been implemented at NIOSH – Pittsburgh Research Laboratory, as well as attenuation and speech intelligibility results from a selection of sound restoration hearing protectors will be presented.

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WWW.QUESTTECHNOLOGIES.COM/NHCA
MP3 Generation at Risk for Permanent Hearing Loss
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Hans Verschuure, Ph.D., Department of Otolaryngology/Audiological Center, Erasmus MC, University Medical Center, Rotterdam, the Netherlands
Catharina Van Der Ploeg, Ph.D., Department of Prevention and Healthcare, TNO Quality of Life, Leiden, the Netherlands
Johannes Brug, Ph.D., Department of Prevention and Healthcare, TNO Quality of Life, Leiden, the Netherlands
Hein Raat, MD, PhD, EMGO Institute, VU University Medical Center, Amsterdam, the Netherlands

In our study 1,512 adolescents reported on their MP3-player use pattern, duration and output level, and exposure to other high-volume music sources. In total, 42.5% exceeded occupational-noise safety standards (85dB(A);3dB) – 25.7% through MP3 players alone; 9.1% exceeded a sound level equivalent to 100 dB(A). Adolescents listening to an equivalent level of ≥90 dB(A) had a greater risk for hearing tinnitus after using an MP3 player (OR 2.47; 95%CI:1.86-3.26) than those not exceeding safety standards.

Microphone Placement Effects on Noise Dose Estimate
Amanda Knapp, Western Michigan University, Kalamazoo, MI
Greg Flamme, Ph.D., Western Michigan University, Kalamazoo, MI

The shoulder is the recommended location for dosimeter microphone placement, but this location is not always feasible or convenient. The current study compares the distribution of shoulder levels (1 second dBA L<sub>eq</sub>) to observations at five alternate locations (head top, ear, shirt pocket, belt, wrist). Estimates were obtained in both occupational and recreational environments. Preliminary results indicated microphone location differences less than 3 dB, suggesting that reasonable estimates can be obtained at multiple microphone locations.

Music Educators Hearing Threshold Testing Project
Robert A. Harding, University of Northern Colorado, Greeley, CO
Douglas T. Owens, University of Southern Maine School of Music, Gorham, ME

This study investigated whether music educators may be at risk of noise-induced hearing loss due to exposure to excessive sound pressure levels over extended periods of time. Hearing threshold tests were administered to fifty-three music educators during a state music educator’s conference held in 2003. Results of the hearing threshold tests showed that sixty-eight percent of subjects (N=36) had the audiometric “notch” indicating the presence of noise-induced hearing loss in either one or both ears.
Firearm noise exposure is currently one of the leading causes of noise-induced hearing loss (NIHL) in the United States. It is critical for hearing healthcare professionals to understand what shooters know about hearing loss, noise, and hearing protection devices so appropriate hearing conservation programs can be developed and patients who use firearms properly counseled. Therefore, the present study was designed to survey recreational firearm users about hearing conservation education, HPD use, self-assessed auditory status, the loudness of firearms, and the effects of noise on hearing. Results of this study suggest many recreational firearm users do not know important information regarding the loudness of firearms, NIHL, and appropriate hearing conservation strategies. Shooters need to be made aware of the destructive and permanent effects of gunfire exposure to the auditory system and the steps they can and should take to prevent NIHL. Hearing conservationists and hearing healthcare providers need to educate this at-risk population about these topics.

Risk Factors for Noise-Induced Hearing Loss in NW American Indians and Alaska Natives

Thomas M Becker MD, Center for Healthy Communities, Public Health & Preventive Medicine at OHSU, Portland, OR
Susan Griest, MPH, Oregon Hearing Research Center at OHSU, Portland, OR
L.C. Howarth, BA, Oregon Hearing Research Center at OHSU, Portland, OR
W. Lambert, Ph.D., Center for Healthy Communities, Public Health & Preventive Medicine at OHSU, Portland, OR
William H. Martin, Ph.D., Oregon Hearing Research Center at OHSU, Portland, OR

American Indians and Alaska Natives are 2-4 times more likely to have hearing loss compared to other American populations. Hearing impairment has great cultural significance to these groups due to their reliance on oral communication. It is likely that noise damage is a significant contributor to the hearing losses present in these tribal communities. Hearing history, noise exposure history and pure tone air conduction thresholds were collected from 268 adults: 63 rural American Indians and 205 urban American Indian/Alaska Natives. Results from this study will be presented.

Development of a Joint Department of Defense-VA Hearing Loss Prevention Program

Robert L. Folmer, Ph.D., National Center for Rehabilitative Auditory Research, Portland VA Medical Center, Portland, OR
Gabrielle H. Saunders, Ph.D., National Center for Rehabilitative Auditory Research, Portland VA Medical Center, Portland, OR
Susan E. Griest, M.P.H., National Center for Rehabilitative Auditory Research, Portland VA Medical Center, Portland, OR
Marjorie R. Leek, Ph.D., National Center for Rehabilitative Auditory Research, Portland VA Medical Center, Portland, OR
Stephen A. Fausti, Ph.D., National Center for Rehabilitative Auditory Research, Portland VA Medical Center, Portland, OR

Noise-induced hearing loss and tinnitus continue to be prevalent and costly problems for military personnel and veterans. To reduce the prevalence and burden of these conditions, the Department of Defense and the Department of Veterans Affairs are working together to develop an interactive, multimedia hearing loss prevention education program that can be delivered at military installations, primary care or other medical settings. This poster will present information related to the project’s initiation and development.
Modeling of the Economic Cost of NIHL in the U.S. Military
Jennifer Tufts, University of Connecticut, Storrs, CT
Francisco Rodriguez, University of Connecticut, Storrs, CT
Paul Weatherby, University of Connecticut, Storrs, CT

Disability payments to retired military with noise-induced hearing loss (NIHL) exceeded $1B in 2005. Our team has developed a tool for estimating the sensitivity of the economic cost of NIHL to changes in noise exposure for a population of U.S. Navy sailors. This tool can be used to model the economic impact of adopting hearing conservation strategies such as improved noise control. In this presentation, we show the economic implications of several noise exposure scenarios, and generalize some of the most important factors.

Progress Toward Parameterizing a Non-Pristine Population for Age-Related Hearing Loss Predictions (ANSI S3.44-1996 Annex B)
Jennifer Tufts, University of Connecticut, Storrs, CT
Paul Weatherby, University of Connecticut, Storrs, CT
Megan Engratt, University of Connecticut, Storrs, CT

In a noise-exposed adult, age-associated hearing loss occurs concurrently with NIHL. Thus, measurement or prediction of NIHL is confounded unless a reference, non-noise-exposed population is used. One commonly used reference population (ANSI S3.44-1996, Annex A) is considered too highly screened for comparison with many noise-exposed populations. A less highly screened reference population is available (ANSI 3.44-1996, Annex B), but the data are partially tabulated, not fully parameterized. We will present our progress to-date in rigorously parameterizing this dataset for prediction of age-related hearing loss at any age and percentile. Our goal is to provide flexible access to an appropriate reference population in investigations of NIHL.

Development of a Temporary Threshold Shift (TTS) Detector for use in iPods and Other Portable Audio Devices
Chantal Laroche, Ph.D., University of Ottawa, Ottawa, ON, Canada
Christian Giguere, University of Ottawa, Ottawa, ON, Canada
Les Blomberg, Noise Pollution Clearinghouse, Montpelier, VT
Joelle Seguin, University of Ottawa, Ottawa, ON, Canada
Valerie Lizee, University of Ottawa, Ottawa, ON, Canada

Auditory temporary threshold shift (TTS) measurements are proposed as a tool to sensitize the public to the potential risk of portable audio devices. This study considered the feasibility and reliability of the projected user-administered TTS measure. The best tone frequency, mode of signal presentation and step size to use, as well as the effect of background noise on TTS measurement will be discussed. In addition, data on maximum output levels and attenuation of different type of earphones will be presented.
LTC Lynnette B. Bardolf, Ph.D.

Lynnette Bosse Bardolf earned her BS in Communication Disorders and her MS in Audiology from Florida State University (FSU) in 1989 and 1990, respectively. Also a graduate of the FSU Army Reserve Officer Training Corps (ROTC) as a Distinguished Military Graduate, she received a commission as a 2nd Lieutenant in the Army’s Medical Service Corps in 1989. Upon graduating in December 1990 with her MS in Audiology, Lynnette entered the active duty Army as a 1st Lieutenant at Ft. Sam Houston, TX in January 1991. As an Army audiologist for the past 17+ years, and currently ranked a Lieutenant Colonel (LTC), Lynnette’s past assignments took her to Colorado, Alabama, Germany, and Hawaii working as a clinical audiologist and hearing conservationist serving active duty military, military retirees, and military family members in all branches of the U.S. military. Lynnette’s career has afforded her many wonderful opportunities including a military mission to Nairobi, Kenya, in January 1999, to provide audiology services to victims of the August 1998 Embassy bombings there; and a recent coveted opportunity to pursue her Ph.D. at the University of Florida, where she graduated with a Ph.D. in Audiology in August 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.

Charlotte Ball, MPA

Charlotte Ball is a member of the NIDCD Information Clearinghouse. As clearinghouse manager, she oversees the evaluation of WISE EARS!, the NIDCD’s campaign to educate the general public about noise-induced hearing loss; the development of recommendations to reinvigorate the 7-year-old national campaign; and focus-group testing of potential new target audiences and prevention messages. Ms. Ball currently is developing health communications to reach tweens and their parents through It’s a Noisy Planet. Protect Their Hearing.

Amanda S. Azman Au.D., CCC-A, COHC

Amanda Azman is a research audiologist working for the National Institute of Occupational Safety and Health (NIOSH). She joined the Hearing Loss Prevention Branch of NIOSH at the Pittsburgh Research Laboratory in May of 2007, where she serves as the technical manager for the NVLAP accredited hearing protector testing facility. Her current research is primarily focused on investigating the efficacy of sound restoration hearing protection devices for preservation of speech intelligibility and sound localization abilities. She has also spent time analyzing the features of various hearing conservation software packages to provide a comparison document for prospective users. She earned her Au.D. from the University of Pittsburgh in 2006. Dr. Azman is currently a member of the National Hearing Conservation Association, maintains certification through the American Speech-Language-Hearing Association, and is licensed to practice audiology in Pennsylvania.

Alberto Behar, P.Eng., CIH

Alberto Behar is a Professional Engineer and Certified Industrial Hygienist (ABHI) and a full member of the Institute of Noise Control Engineering. He holds a Diploma in Acoustics from the Imperial College (London, UK) and has been the recipient of several Fellowships, including one from the Fulbright Commission (USA) and the Hugh Nelson Award of Excellence in Industrial Hygiene (OHIO, Canada). Alberto is acoustical consultant in the fields of hearing conservation and noise control. He is Research Associate with the Sensory Communication Group, IBBME, (University of Toronto) and Adjunct Assistant Professor at the Department of Public Health Sciences, University of Toronto.

Elliott H. Berger, MS

Elliott H. Berger, MS, is the Senior Scientist for Auditory Research at E+A+R/Aearo/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 a 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.

John G. Casali, Ph.D., CPE

Dr. Casali is the Grado Chaired Professor of Industrial and Systems Engineering at Virginia Tech, and a Board-Certified Professional Ergonomist (CPE) and Industrial Ergonomist (CIE). 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 has twice received NHCA’s 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. Dr. Casali holds 4 patents and has authored over 150 publications. He is on the Scientific Advisory Boards of Personics, Inc. and the Oxford Research Institute. He enjoys working with companies
and community groups on warning signal issues, hearing protection and earphone design, community noise, ergonomics, and patent/product liability litigation. Occasionally, he likes to fish offshore in the Atlantic and serve as a trial-and-error mechanic to his old sports cars.

**Kris Chesky, Ph.D.**

Kris Chesky is the Founding Director of Research and Education, Texas Center for Music & Medicine and is an Associate Professor, College of Music at the University of North Texas. Kris serves on the Board of Directors for the Performing Arts Medical Association, the Scientific Review Board for the Medical Problems of Performing Artists Journal, Editorial Review Board for International Trumpet Guild Journal, and Guest Reviewer for several international journals. Since 2003, he has served as the Executive Director of the Health Promotion in Schools of Music project (www.unt.edu/hpsm) a national project designed to promote health promotion in college music programs. As a faculty member within one of the largest college music programs, Dr. Chesky teaches both undergraduate and graduate occupational health courses for music majors at UNT. His scholarly research has been funded by the National Endowment for the Arts, Grammys, NAMM, IFMR, the Scott Foundation, and others. He has published numerous scientific research articles.

**CPT Jillyen Curry-Mathis, Au.D., FAAA**

CPT 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. 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. In 2008, CPT Curry had the opportunity to deploy with 3rd ID for an ‘insider’s perspective’ and subsequently PCS’d to Fort Jackson to work within the TRADOC environment. Her current goal is to exploit the opportunity to capture and prevent hearing loss early in the Soldier’s career.

**Richard Danielson, Ph.D.**

Richard (Dick) Danielson is the Manager for Audiology and Hearing Conservation at NASA’s Johnson Space Center, Houston TX. Working for the National Space and Biomedical Research Institute and Baylor College of Medicine, he leads a program aimed at preventing noise-induced hearing loss among astronauts and other flight-associated personnel. Dick is a retired Army audiologist and former Chair of the Council for Accreditation in Occupational Hearing Conservation (CAOHC). He is President-elect of the Texas Academy of Audiology.

**Robert Dobie, MD**

After medical school and ENT residency, a research fellowship, and faculty positions at the University of Washington and Texas, Dr. Dobie became Director of the Division of Extramural Research at NIDCD. He is the author of Medical-Legal Evaluation of Hearing Loss (2nd Edition). He has served as a member of the Council for Accreditation in Occupational Hearing Conservation, as chairman of the noise subcommittee of the AAO-HNS, and as president of the Association for Research in Otolaryngology.

**Dennis P. Driscoll, PE, MS**

Dennis Driscoll 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, a Fellow Member of the American Industrial Hygiene Association (AIHA), past Chair of the AIHA Noise Committee, and recently completed a five year term as a Council Member of the Council for Accreditation in Occupational Hearing Conservation.

**Charles Fankhauser, Ph.D.**

Charles Fankhauser is an audiologist in private practice in the San Francisco Bay Area. His position is exclusive to matters related to prevention of work-related hearing impairment. Prior employment includes positions on the Otolaryngology clinical faculties at McGill University and at the Naval Regional Medical Center in Oakland, California. He is married, has three sons, two grandchildren, one Beagle and a calico cat. Hobbies include careful attention to consumption of only the best California wines.

**Greg Flamme**

Greg Flamme is an Assistant Professor in the Department of Speech Pathology and Audiology at Western Michigan University. His research interests include the study of hearing and other health outcomes in a rural Midwestern cohort, hearing loss prevention strategies for rural adolescents, everyday exposures to risk factors for hearing impairment, and hearing aid benefit and satisfaction.

**Robert L. Folmer, Ph.D.**

Robert L. Folmer earned B.A. and M.A. degrees in biology from San Francisco State University. He received his Ph.D. in Speech and Hearing Science from the University of California, San Francisco. In 1997, he joined the Department of Otolaryngology at Oregon Health & Science University where he maintains an appointment of Associate Professor. At OHSU, Dr. Folmer was Chief of Clinical Services in the Tinnitus Clinic for ten years. In addition to these clinical and research duties at OHSU, he was also part of the team that developed the Dangerous Decibels hearing loss prevention education program. In 2007, Dr. Folmer joined the National Center for Rehabilitative Auditory Research (NCRAR) at the Portland VA Medical Center and serves as Program Manager for the joint VA/Department of Defense Hearing Loss Prevention Initiative.

**Marc-Andre Gaudreau – Poster Presenter**

Marc-André Gaudreau is a professional engineer and is currently finishing his Ph.D. at the University of Quebec (Montréal, Canada) in acoustics. He is a full time teacher in mechanical engineering with specialties in acoustics, mechanical design and materials. His works include field measurement of noise and performance of HPDs. He is also a research scientist for Musilab Inc. in Drummondville, Canada.
Susan E. Griest, M.P.H – Poster Presenter
Susan Griest is a Staff Scientist for the Oregon Hearing Research Center at Oregon Health and Science University. She also is a collaborator with the Veterans Affairs Medical Center, National Center for Rehabilitative Auditory Research in Portland, Oregon. She received her Masters in Public Health from the University of Washington (1989). For the past 26 years, Ms. Griest has been a researcher and educator in the area of tinnitus and noise-induced hearing loss. She has been a Co-Investigator for the Dangerous Decibels’ project for the past nine years. Since 1996, Ms. Griest has been a member of the National Hearing Conservation Association (NHCA) Task Force: Hearing Conservation Education for Children & Adolescents. She has also served on the NHCA Executive Council as a member delegate and has served as program chair for the 2008 NHCA conference in Portland Oregon.

Lee D. Hager
Lee brings nearly 20 years of experience to his position as Hearing Loss Prevention Consultant for Sonomax Hearing Healthcare, Inc., including consultation regarding the quality and integrity of hearing conservation programs. He has served as President of the National Hearing Conservation Association (NHCA); chair of the Noise Committee of the American Industrial Hygiene Association (AIHA); NIOSH National Occupational Research Agenda (NORA) Noise Team member; and with ANSI Working Group S12/WG11 on hearing protector evaluation and labeling issues. He presents and publishes regularly on noise and hearing topics, having received the AIHA Noise Committee Outstanding Lecture Award in 2003 and NHCA’s Threadgill Award in 2004. His PDC Noise Exposure Assessment: Sampling Strategy and Data Acquisition has been ranked as one of AIHA’s top 10 PDC’s for several years. Most of all, he cares about your ears.

Robert Harding, Ph.D. – Poster Presenter
Dr. Al Harding is an Associate Professor of Music and Head of the Music Education Area at the University of Northern Colorado. He received the Doctor of Music Education degree from the University of Northern Colorado in 1986. Additional degrees include a Master of Music in Instrumental Music Education and a Bachelor of Music Education in Instrumental Music, both from Eastern New Mexico University. His specialty areas include general music, instrumental music, low brass, computer assisted instruction in music, philosophy of music education, music advocacy, psychology of music teaching, and music curriculum development.

Christine Harrison, BA, M.Sc., Aud.(C), R.A.
Christine Harrison is the sole occupational audiologist for the province of British Columbia, Canada, and works for WorkSafeBC (formerly the Workers’ Compensation Board). She oversees hearing conservation programs for over 10,000 employers and 250,000 workers. Her particular areas of professional interest include speech and communication challenges in noisy industry, hearing conservation in the construction industry, use (and non-use) of hearing protection in different industries and age groups, as well as adult education. As the guardian of a 2 million plus audiogram database, she was particularly proud of her program’s conversion from a 30-year old paper based audiometric data input system to an electronic one—a major milestone. She’s not so proud that she was around when the paper based system was implemented! In her spare time, she is an active leader in Girl Guides of Canada/Guides du Canada and can be found hiking and camping around all parts of the world with girls from 8 to 18 years of age. She is also looking forward to being a team supervisor in the volunteer cadre for the 2010 Winter Olympics to be held in Vancouver-Whistler next year.

Gordon Hempton
Gordon Hempton is an acoustic ecologist and Emmy award-winning sound recordist. For more than 25 years he has provided professional audio services to musicians, galleries, museums, and media producers, including Microsoft, Smithsonian, National Geographic, Discovery, National Public Radio, and numerous other businesses and organizations. He has received recognition from the Charles A. Lindbergh Fund, the National Endowment for the Arts, and the Rolex Awards for Enterprise. He studied botany and plant pathology at the University of Wisconsin. His sound portraits, which record quickly vanishing natural soundscapes, have been featured in People magazine and a national PBS television documentary, Vanishing Dawn Chorus, which earned him an Emmy for Outstanding Individual Achievement. Hempton has now circled the globe three times in pursuit of environmental sound portraits. He lives in Joyce, Washington.

Beat W. Hohmann, Ph.D.
Beat Hohmann is Head of the Acoustics section at Swiss National Accident Insurance Fund Suva. Dr. Hohmann studied Electrical Engineering at the Institute of Technology (ETH) Zurich. From 1979 to 1982 he carried out a study on the risk of hearing damage caused by impulse noise (Ph.D. in 1984). He joined the Swiss National Accident Insurance Fund Suva in 1983 where he became head of the Acoustics section in 1987, a position that he still holds today. In addition, since 2003 he has headed up the physics section—which includes all physical exposures (radiation, EMF, noise and vibration, ergonomics); and from 1996 to 2007, he served as president of the Swiss Acoustical Society, he remains a member of the society.

Pete Hunt
Pete Hunt has worked at the U.S. Centers for Disease Control and Prevention (CDC) for 18 years. His entire CDC career has been in the National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), Division of Adolescent and School Health (DASH). During his tenure Pete has served as a CDC project officer to DASH-funded state and local education agencies, DASH’s program branch lead for school health programs, DASH’s research branch lead for a variety of school health priorities, including recent efforts related to noise induced hearing loss. Prior to coming to CDC, Pete served as the health education consultant for the North Carolina Department of Public Instruction; the local school health coordinator for Onslow County Schools in North Carolina; and a school health instructor in Caldwell, Idaho. Pete received his Masters in Public Health from the University of North Carolina and is his Masters and Bachelors degrees in Education from the University of Idaho.

James J. Jerome, MA, CCC-A
Jim is the President of Workplace Hearing-Midwest, Inc (formerly Hearing Safety-Midwest, Inc), in Indianapolis, Indiana and the Midwest/ Northeast representative for Workplace Group in Greensboro, North Carolina. Prior to that, he worked as an occupational audiologist for...
an industrial hygiene and safety group for four years, a US Army audiologist for 21 years, and a school audiologist for five years. As a military audiologist, Jim received the 1995 Military Audiology Association’s Founder’s Award for outstanding audiologist of the year. He has been a certified member of the American Speech-Language-Hearing Association (ASHA) since 1975, a certified course director with CAOHC since 1985, and a member of NHCA since 1999. Jim holds an undergraduate degree in Speech Pathology from the University of Wisconsin-Milwaukee and a Masters degree in Audiology from Western Illinois University.

Benjamin Kanters
Benji is the Associate Chairperson, Academic Director of Department Recording Facilities, and Director of the Audio Design & Production Program at Columbia College Chicago. He obtained both his BS in Speech and MM in Music Technology from Northwestern University. Prior to Columbia College, Benji spent 20 years in the audio and music industries, as well as 14 years as Adjunct Professor of Audio at Northwestern University. He was Partner and Sound Engineer with the Chicago-area concert club Amazingrace, and later Partner and Chief Managing Engineer of Studiomedia Recording Company in Evanston, Illinois.

Amanda Knapp – Poster Presenter
Amanda Knapp is currently a third-year Au.D candidate studying at Western Michigan University. She earned her Bachelor of Arts in Audiology and Speech Sciences from Michigan State University. In addition to hearing conservation, Amanda is also interested in treatment of balance disorders and serving in leadership positions in WMU’s audiology student organization. This is her first NHCA event.

James E. Lankford, Ph.D
James Lankford is professor emeritus from Northern Illinois University where he taught audiology for 31 years. His graduate degrees are from the University of Oklahoma. During the last 10 years at NIU he was dean of the College of Health and Human Sciences. His principle research interest has focused on preventing noise-induced hearing loss in the farming community. He is a former president of the National Hearing Conservation Association and the Illinois Academy of Audiology.

Chantal Laroche, Ph.D.
Chantal Laroche is a Full professor in the Audiology/Speech-Language Pathology Program at University of Ottawa. She obtained a Ph.D. in biomedical sciences (Audiology) from the University of Montreal in 1989. Her research projects are oriented towards the perception of warning sounds (e.g. fire alarms, reverse alarms) in noisy backgrounds; the effects of noise on hearing and health; the impact of hearing protection and hearing aids on communication; and the development of functional evaluation tools for hearing-critical jobs.

Ted K. Madison, MA, CCC-A
Ted Madison is an audiologist in Saint Paul, Minnesota, whose primary focus is hearing loss prevention. He works as a Technical Service Specialist for the 3M Occupational Health & Environmental Safety Division, providing technical support, education and training for E-A-R, Peltor, and 3M Brand hearing protection products. Ted is the Chair of the Publications Committee of the Council for Accreditation in Occupational Hearing Conservation (CAOHC), and editor of the CAOHC newsletter, Update. He is also a CAOHC-certified course director at the Midwest Center for Occupational Health and Safety at the University of Minnesota. Ted is a Past-President of the National Hearing Conservation Association (NHCA), the recipient of the 2007 Michael Beall Threadgill Award for Outstanding Leadership & Service to NHCA and the winner of the 2002 NHCA Outstanding Lecture Award. He is also a member of the AIHA Noise committee, the ANSI S3 committee on Bioacoustics, the ANSI S12 WG 11 on Hearing Protector Performance, and the Steering Committee for the American Speech-Language-Hearing Association (ASHA) Special Interest Division 8, Hearing Conservation & Occupational Audiology.

William Hal Martin, Ph.D.
Dr. Billy Martin is a professor of Otolaryngology/Head & Neck Surgery and professor of Public Health & Preventive Medicine at the Oregon Health & Science University in Portland, Oregon. He is director of the OHSU Tinnitus Clinic and Research Programs, Intraoperative Neurophysiological Monitoring Services and of the Dangerous Decibels project and the research scientist in residence at the Oregon Museum of Science and Industry. His research interests are in the neurobiology of tinnitus, auditory neurophysiology and health communication strategies applied noise-induced hearing loss and tinnitus prevention.

Deanna Meinke, Ph.D.
Dr. Deanna Meinke is an Associate Professor of Audiology and Speech-Language Sciences at the University of Northern Colorado in Greeley, CO. She is board certified in audiology by the American Board of Audiology, clinically certified by the American Speech-Language Hearing Association and is a Fellow of the American Academy of Audiology. Presently, she serves as president for the National Hearing Conservation Association and Chairs the National Institute for Occupational Safety and Health Safe-in-Sound Expert Committee. Her research interests include distortion product otoacoustic emissions and the prevention of noise-induced hearing loss across the lifespan.

Kevin Michael, Ph.D.
Dr. Michael is President of Michael & Associates, Inc, an independent audiotics laboratory in State College, PA. The Michael & Associates laboratory evaluates hearing protectors to American and Australian test standards. Since 1990, Kevin has been manufacturing FitCheck, a system for the field measurement of insert-type hearing protector attenuation. In addition, Michael & Associates has recently introduced a simple muff-type hearing protector field measurement system.
Thais Morata, Ph.D.
Thais Morata is an audiologist who has been working in the area of hearing loss prevention since 1987. A native of Brazil, she earned degrees in speech pathology and Audiology, and communication disorders from the Pontifical Catholic University of São Paulo and the University of Cincinnati. She is a Research Audiolist at the National Institute for Occupational Safety and Health (NIOSH, Cincinnati, OH) and Project Director for the Safe-in-Sound Excellence in Hearing Loss Prevention Awards”.

CAPT William J. Murphy, Ph.D.
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 FIPDs and pioneered the analysis of laboratory and field attenuation measurements of HPDs.

Rick Neitzel, MS, CIH
Rick is a Research Scientist in the University of Washington(UW) Department of Environmental and Occupational Health Sciences and a Certified Industrial Hygienist. He is also pursuing a PhD in Environmental and Occupational Hygiene at 11W. He has served as NHCA Director of Communications and Treasurer, and sits on the Noise Committee of the American Industrial Hygiene Association. His research interests include quantitative and subjective noise exposure assessment in industry and non-occupational settings and development of effective hearing conservation interventions.

F.E. Ologe, MBBS, FWACS, FMCORL
Dr. Ologe, a medical graduate of the University of Ibadan, Ibadan, Nigeria, is currently a Senior Lecturer/Consultant Otolaryngologist at the University of Ilorin/University of Ilorin Teaching Hospital, Ilorin, Nigeria. His research work is mainly in Otology/Audiological Medicine with particular interest in noise induced hearing loss.

Theresa Schulz, Ph.D.
Dr. Theresa Y. Schulz is the Hearing Conservation Manager for Sperian Hearing Protection, LLC. Dr. Schulz is the Immediate-Past-President and has been an active member of National Hearing Conservation Association (NHCA) for 24 years. She is also a past Chair of the Council for Accreditation in Occupational Hearing Conservation (CAOHC); a certified member of the American Speech-Language-Hearing Association (ASHA); a fellow in the American Academy of Audiology (AAA); and a member of the Air Force Audiology Association (AFAAA). Dr. Schulz received her BS in Communication Disorders and M.A. in Audiology in from the University of Texas at Austin, and her PhD in Hearing Science from Ohio State University. Dr. Schulz served in the United States Air Force for over 20 years as an audiologist, and was recognized as U.S. Air Force Outstanding Audiologist of the Year in 1989 and 1998. She also received the Elizabeth Guild Award for Contributions to Military Hearing Conservation in 1996. Dr. Schulz was nominated by the Air Force for the 2003 National Public Service Award and received the military’s Outstanding Volunteer Medal in 2004 for her extensive work to prevent noise-induced hearing loss both in the military and in the public sector.

Robert F. Randolph
Bob Randolph is Manager of the Hearing Interventions Team at the NIOSH Pittsburgh Research Laboratory and has an MS in Organizational Behavior and Theory from Carnegie Mellon University. He has been researching behavioral and psychological aspects of mining safety and health since 1986. His team is investigating new procedures and technologies to solve long-standing behavioral issues with effective use of noise controls and hearing protection to prevent noise-induced hearing loss.

Cory D.F. Portnuff, Au.D.
Dr. Cory Portnuff is an audiologist and Ph.D. candidate in Hearing Science at the University of Colorado at Boulder, where he completed his Au.D. He currently works at the University of Colorado Hospital and as a audiology consultant for a military health contractor. Cory’s 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.

Adam K. Smith
Adam Smith is a Research Engineer working in the Noise Control Team within the Hearing Loss and Prevention Branch at the Pittsburgh Research Laboratory. Mr. Smith received his BS and MS in Mechanical Engineering at the University of Pittsburgh. He has investigated noise generated by various pieces of underground mining equipment. Currently he is the primary investigator on a project to reduce operator noise exposure from continuous mining machines by developing and implementing engineering noise controls.
Richard Stepkin, MS, CCC-A
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 3 years. In 1977 he started Enviromed Corp and 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 PSO and participated on various PSO topics.

Ineke Vogel – Poster Presenter
Ineke Vogel received her Master degree in Psychology - Methods and Statistics at Leiden University, The Netherlands and is currently working as a junior researcher and PhD-student Determinants of Health Related Behavior at the Department of Public Health, Erasmus MC Rotterdam. The focus of her project is on determinants of adolescent behaviors and environmental factors relevant for hearing conservation.

Laurie Wells, AuD., FAAA
Laurie Wells is Manager of Audiology for Associates in Acoustics, Inc., a consulting firm specializing in hearing loss prevention services. As a consultant to companies nation-wide, she provides professional audiology review of hearing loss prevention programs including audiometric database analysis, noise exposure assessment, and employee/employer education. Laurie is an active certified course director for the Council for Accreditation in Occupational Hearing Conservation. She has also taught numerous seminars, graduate audiology courses, and given presentations at state and national conferences. Laurie is past-president of the National Hearing Conservation Association (NHCA), and served on the NHCA board from 1999 – 2007. She currently represents the American Academy of Audiology on the CAOHC Council. She is a fellow of the American Academy of Audiology and member of American Speech-Language-Hearing Association, Colorado Academy of Audiology, and National Hearing Conservation Association.

Brad K. Witt, MA
Brad Witt is the Director of Hearing Conservation at Howard Leight in San Diego. As an audiologist in Hearing Conservation for 25 years, he provided OSHA-standard services to 200 worksites. He served as President of NHCA, and in his present position, manages the Howard Leight Acoustical Lab and provides training to professional groups in all aspects of hearing conservation. His hearing conservation seminars in behalf of Sperian Hearing Protection the past three years have been presented in fifteen countries on five continents.

Michael Stergar
Mike has been an Electronic/Acoustic Technician in Aearo Technologies’ Electroacoustic Sound Lab (ESL) since 2006. He received his AAS in Electronic Engineering Technology from ITT Technician Institute Indianapolis in 1983 and a Broadcast Engineering Certificate from Cleveland Institute of Electronics in 1997. He became a Certified Occupational Hearing Conservationist and a Certified custom E-A-R™ Technician in 2007. Mike along with Elliott Berger oversaw the installation of ESL’s high sound level test chamber in 2007-08. Additionally, Mike has a FCC General Radiotelephone Operator License, a General Class FCC Amateur Radio License, and is an ISCET Certified Electronic Technician.

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Mike has been an Electronic/Acoustic Technician in Aearo Technologies’ Electroacoustic Sound Lab (ESL) since 2006. He received his AAS in Electronic Engineering Technology from ITT Technician Institute Indianapolis in 1983 and a Broadcast Engineering Certificate from Cleveland Institute of Electronics in 1997. He became a Certified Occupational Hearing Conservationist and a Certified custom E-A-R™ Technician in 2007. Mike along with Elliott Berger oversaw the installation of ESL’s high sound level test chamber in 2007-08. Additionally, Mike has a FCC General Radiotelephone Operator License, a General Class FCC Amateur Radio License, and is an ISCET Certified Electronic Technician.

Michael Stewart, Ph.D.
Dr. Stewart received his MA degree in Audiology from Western Michigan University and his Ph.D. Audiology degree 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 20 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.

Jennifer Tufts
Jennifer Tufts is an assistant professor in the Department of Communication Sciences at the University of Connecticut. Previously, she completed postdoctoral clinical and research training at Walter Reed Army Medical Center in Washington DC. Her current research areas include hearing loss prevention in diverse populations and the effects of hearing loss on music perception.
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  1.0 CEUs (conference only)
  .5 CEUs (workshops only)

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