



## Hearing Conservation: Going from Compliance to Effectiveness



*Jim Banach, MBA  
Quest Technologies Inc., a 3M Company*

Hearing conservation continues to be an interesting challenge. The fact is, noise-induced hearing loss is totally within our means to eliminate. It is as simple as not allowing any hazardous noise to reach the ear of the worker. While that is easy to say, the activities of the workplace, the behaviors of workers, and the economic realities all make this an oversimplification. As of now, we do not have a quick fix for the elimination of hazardous exposures to the worker, and a medical intervention is not practical, either. So we must face the reality that the hearing conservation efforts are interdisciplinary, integrated, and in need of leadership that executes a detailed and appropriate plan.

The traditional basic parts of an “effective hearing conservation program” are well known. Various regulations and standards around the world gravitate toward the same components. Typically, they include noise measurement, audiometric testing, hearing protection, education and training, and documentation or recordkeeping. The earliest proponents of hearing conservation included noise control in this list and considered it to be the starting point of a hearing conservation program. All too often, the appropriate application of noise controls is overlooked as being too expensive or complicated. In reality, this is often due to the involvement of a so-called expert who really isn’t one.

While all of these parts may be in place to at least some degree, it is inappropriate to assume an “effective” program is the result. Rather than lead to solutions, the five or six elements may do nothing more than provide the documentation to prove the hearing conservation program is not working.

There are an additional five strategic fundamentals that need to be present and active for the five or six traditional tactics to achieve results. These include leadership, integration, evaluation, communication, and, most importantly, the buy-in of the true owner of noise-induced hearing loss.

### Leadership

Leadership is not about who gets blamed if anything goes wrong or if failure arises. And, very often, leadership is not about the person with the most or the highest educational degree(s). For the audiometric review, a professional supervisor — an audiologist or physician, typically — is necessary, but that isn’t the same as leadership. Managing the budget for the hearing conservation program isn’t leadership, either.

Leadership in a hearing conservation program requires drive, passion, and authority with responsibility. It can be provided by

the nurse, industrial hygienist, safety engineer, or even the human resources manager. It isn’t rooted so much in the technical knowledge as it is in the outcomes, desire, and accountability. It is about drawing the various technical disciplines together to achieve an outcome: the reduction and eventually the elimination of all incidence of noise-induced hearing loss.

In so many hearing conservation programs, the one in charge is a reluctant participant stuck with a responsibility. Effective leadership in hearing conservation is no different than effective leadership in business or life in general: It must be centered on principles, prioritized, measured, adjusted, and continued.

Leadership is also not a lone activity. It must be supported by executive management as a business principle, and the team members must work together. There is no room for territorial behavior. The desired outcome needs to be more important than any distracting agenda.

### Integration

Integration is about bringing the disparate segments of the hearing conservation program together through the common and overlapping threads that exist. These often lie in the needed information that must flow to make each of the stand-alone pieces effective.

For example, selecting the appropriate protection requires a clear understanding of the noise levels that are present, whether they are steady state or intermittent, whether they are frequency-specific or broad band. Is there a dominant frequency? Is it within the range of frequencies the protector is most effective at limiting?

A time-weighted average of 95 decibels would indicate the need for hearing protection. Simply observing a 95 dB TWA and then determining the hearing protection for the entire work shift may or may not be an appropriate solution. It is possible that higher levels occur for part of the shift, but there also may be prolonged periods when the noise levels are well below a hazardous level. During the quiet times, the protection is unnecessary, but requiring the protection to be worn may reduce the credibility when it is really needed...sort of the “cry wolf” syndrome.

continued on page 7

| Content                                                               | Page |
|-----------------------------------------------------------------------|------|
| Hearing Conservation Going from Compliance to Effectiveness . . . . . | p.1  |
| Chair’s Message . . . . .                                             | p.2  |
| OHC Spotlight . . . . .                                               | p.3  |
| OHC Corner-Can You Hear Me Now? . . . . .                             | p.3  |
| Preventing Hog Ears . . . . .                                         | p.4  |
| 2008 Bureau of Labor Statistics Update . . . . .                      | p.5  |
| NIOSH Safe and Sound Awards . . . . .                                 | p.6  |
| Upcoming OHC Courses . . . . .                                        | p.10 |



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

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

*Payment must accompany request:*

555 E. Wells Street / Suite 1100  
Milwaukee, WI 53202-3823  
Phone (414) 276-5338  
Fax (414) 276-2146  
E-mail: [info@caohc.org](mailto:info@caohc.org)

• **Publications Committee Chair**  
Ted K. Madison, MA CCC-A

• **Editors:**  
Chandran Achutan, PhD  
Theresa Schulz, PhD, Lt Col USAF (ret)

• **Committee Members**  
Robert D. Bruce, PE, INCE. Bd. Cert.  
Diane DeGaetano, RN BSN COHN-S COHC  
Lee D. Hager  
Thomas Hutchison, MA MHA FAAA CCC-A

• **Executive Director**  
Kim J. Breitbach, CAE

• **Administrative Assistant**  
Chris Whiting

• **Graphic Designer**  
Jennifer Gubbin

*Opinions expressed in the UPDATE are those of the authors, and do not necessarily reflect official CAOHC policy. © CAOHC 2008*

Printed on recycled paper



### Opt-Out Option

If you wish to have your name removed from mail solicitations from vendors who have purchased the CAOHC database, please notify CAOHC staff via fax at 414/276-2146; or e-mail to [info@caohc.org](mailto:info@caohc.org).



## Chair's Message

By: Lee D. Hager

## The 5 W's of CAOHC

"So I know I need this CAOHC thing to give hearing tests at work – but what is it really all about? And why do they keep sending me this newsletter???"

As the incoming chair of the CAOHC Council, let me approach these questions in the classical journalistic fashion – the 5 W's and an H.

### First – WHO?

CAOHC is comprised of appointed representatives from a variety of professional organizations who have vested interest in occupational hearing conservation.

- **American Industrial Hygiene Association (AIHA)**, represented by me and Chandran Achutan, PhD.
- **American Speech-Language-Hearing Association (ASHA)** represented by Mary McDaniel, AuD CCC-A CPS/A and Ted Madison, MA CCC-A
- **American Academy of Audiology (AAA)**, represented by Laurie Wells, AuD FAAA CPS/A and Theresa Schulz, PhD LtCol USAF (ret)
- **Military Audiology Association (MAA)** represented by Vickie Tuten, COL, MS, CPS/A and Tom Hutchison, MA MHA FAAA CPS/A
- **American College of Occupational and Environmental Medicine (ACOEM)** represented by Bruce Kirchner, MD MPH CPS/A and Eric Evenson, MD MPH
- **American Association of Occupational Health Nurses (AAOHN)**, represented by Madeline Kerr, PhD RN and Diane DeGaetano, RN BSN COHN-S
- **American Academy of Otolaryngology – Head and Neck Surgery (AAO-HNS)**, James Crawford, LTC, MC, USA
- **American Society of Safety Engineers (ASSE)** represented by Ron Schiabile, CIH CSP PE (Mass.) and David Lee, MIS CIH CSP
- **Institute for Noise Control Engineering (INCE)** represented by Robert Bruce, PE INCE Bd. Cert and Kimberly Lefkowitz

Each of these people and their parent organizations has a strong vested interest in the prevention of occupational hearing loss. The component professional organizations (CPOs) appoint members to the Council for up to two 5 year terms. The Council meets face to face a couple of times a year and via conference call regularly.

### So WHAT do you all do?

The responsibility of the Council is to provide cross-disciplinary oversight of the curriculum and training provided to you all to improve the quality and integrity of occupational hearing conservation programs. We establish and maintain budgets, review and develop training materials, establish educational standards and qualifications, and take on new projects that align with our objective of helping you prevent hearing loss by continuously improving the skills of people working in hearing conservation.

### WHERE do you all do this stuff?

While our offices are headquartered in Milwaukee, we hope that our effect is felt most where you are – where the rubber hits the proverbial road in the practice of hearing conservation. You can find us and Kim Breitbach, our Executive Director, at 414-276-5338, but we hope you feel the effect of CAOHC and the training you received in your place of business every day.

### WHY do you do what you do??

Simply put, to help you prevent hearing loss. Work-related hearing loss remains a chronic problem for US workers in industry and in the military. Over the past 6 years, an average of more than 25,000 people per year have received permanent, irreversible noise-induced hearing loss on the job – and that's just the industrial side (see related article in this issue of Update). Recent reports indicate that a significant portion of service personnel returning from deployment in the Middle East are coming back with significant hearing problems (as an example, see The Guardian from December 20, 2009) – noise is an issue that has not gone away. That's why we continue to try to find ways to improve the practice of hearing conservation to enable you to do a better and better job of protecting the hearing of the folks you work with.

continued on page 8

OHC Corner



## Spotlight on Hearing Conservation Programs



### Protecting a Great Past

*T. Ryan Martin, Emergency Medical Staff  
Silver Dollar City  
Branson, MO*

Silver Dollar City, a theme park set in the 1880's, opened its front gates 50 years ago with the goal of providing a safe, fun, family-oriented environment. As guests enter the park, they walk under a sign that says, "You have a GREAT past ahead of you." And this is just what we want them to experience while on our park. Part of this experience is being able to come and go from any of over 9 live theater venues without having to worry about losing their hearing. Additionally, we feel when we hire an employee we are doing them an injustice unless we do everything we can to ensure that employee succeeds.

As part of setting our employees up for success, we began an active hearing conservation program almost 20 years ago. This may seem insignificant: such programs are not brand new. However, at the time of its creation SDC was not required to have a hearing conservation program. That's right, you heard me correctly. We created our hearing conservation program without being mandated. The Council for Accreditation in Occupational Hearing Conservation (CAOHC) has long been aware of the prevalence of hearing loss in the live entertainment industry. Because our venues remain stationary (as opposed to traveling shows), it is easy for us to place engineering controls over all of our shows so none of them exceed established decibel thresholds. It was with this in mind, and the fact that many of our employees work other live entertainment venues while moonlighting, that we wanted to educate and provide hearing testing to our employees. We know many of their other positions do not provide this same level of care and concern, as the entertainment industry has long been able to side step many rules, or turn a blind eye to violations. Simply put, "We care about our employees."

Additionally, we know that if our employees suffer hearing loss at another job, it will have a negative impact on their performance; in addition to its effect on us as an employer now, and ultimately cost them many years of performing in the future. If you have not had the

pleasure of working with entertainers in the past, I can assure you it can be difficult to get their attention, especially when you are sharing about possible future problems. They, along with many young employees, believe they are invincible and cannot see how this actually affects them, or will if they do not care for their hearing. This is where we have taken a different approach.

It has been said that with any form of education, you must find a way to make the information REAL to your audience, which is exactly what we have tried to do. We needed a way for our employees to see how this "hearing loss" we spoke of would have an actual affect on them and their abilities to continue functioning in their present roles. We needed to present this information in a way they could see, or should I say hear, how much they rely on this sense. As performers, and technicians, they rely on visual and auditory cues for much, if not all, of their work. This is why we took audio from "THEIR" shows, and then ran this audio through a software application, "Hearing Loss Simulator" as released by NIOSH.

This software does exactly what it says it will; it simulates loss of hearing. You can adjust the simulator for exposure to different noise levels, length of exposure, age, and gender; and then demonstrate actual sound, comparing it to the simulated hearing loss. In choosing our audio, we made it a point to pick audio that truly demonstrated them performing a notably difficult scene, where they were relying on audio cues from their counterparts. In addition to demonstrating the dramatic ultimate results of exposure over 20 years, we can show the slow progression of hearing loss over time. This aids the employee in being able to relate to what we are demonstrating to their own careers.

Although simulated hearing loss has been used for years, we have found that pulling audio from our employee's daily lives to be the "missing link" when discussing hearing loss in this field. Additionally, in our educational material, we include information from H.E.A.R. (Hearing Education and Awareness for Rockers), which reinforces the idea that other entertainers are supporting hearing conservation, or are endorsing hearing protection in the entertainment industry. (For more information on H.E.A.R. go to [www.hearnet.com](http://www.hearnet.com).)

The WOW factor has been notable, with improved feedback from our employees. It is almost as though they are finally seeing (make

continued on page 5



### Can You Hear Me Now?

This may be a popular catch phrase for a phone company, but at Milliken and Company's Enterprise Plant, we are using it to raise awareness and prevention of hearing loss. Our goal as a company is prevention, our plants are tested for noise levels in each department and hearing protection is required as personal protective equipment based on the findings of each department. All of our newly hired associates receive hearing tests as part of their routine physical, and we establish a base line for each individual. We continue to monitor each associate on regular basis. If someone has suffered hearing loss before they were

hired, we counsel and make arrangement for further testing if necessary. With over 5 million workers in the manufacturing industry exposed to 85 dBA or above, our company is committed to prevention of hearing loss. Even though some may find the phrase annoying at times, if it prevents even one person from unnecessary noise-induced hearing loss, we will continue to annoy them just a little, Can you hear me now?

Dale S. Capps, COHC  
Milliken and Co



## Preventing Hog Ears: A task-based noise analysis at a swine confinement

Chandran Achutan, PhD  
Representative of AIHA

### INTRODUCTION

There is a paucity of data on noise exposures and hearing loss from animal husbandry. A few studies have looked at occupational noise exposures among dairy farmers in New York. There is evidence to suggest that workers in swine confinements are exposed to high levels of noise (Siebens, 1997; Kristensen & Gimsing, 1988). Though most of the initial research on noise exposures in swine confinements was carried out in small-scale confinements, the shift over the years from small-scale confinements to industrial size confinements means that more workers are going to be exposed to noise for a longer time periods while performing a specific task for a full shift. Humann et al (2005) suggests that these workers are exposed to high noise levels. This study describes noise exposures experienced by students and staff at a community college that operated a small-scale swine confinement for academic training and profit. The paper employs a task-based approach in assessing noise levels during a variety of tasks, including castration, breeding activities, snout snaring, and power washing. The task-based exposure levels were extrapolated to show potential maximum daily exposure levels if the tasks were carried out for 8 hours a day, thus making the findings relevant to employees at large-scale swine confinements who may work on a specific task for approximately eight hours.

### METHODS

#### Facility and Process Description

The facility is a 150-head farrow-to-finish swine confinement center, located on the campus of a community college in Iowa. Farrow-to-finish refers to the breeding and farrowing of sows and raising the piglets until they weigh 200 pounds, at which stage they are sold. The farrow-to-finish operation involves the following processes: breeding and gestation, farrowing, weaning the piglets in nurseries, and finishing. The whole cycle can take up to 11 months. The facility is a small-scale swine confinement facility used to teach students at the community college. The day-to-day operations are handled by a farm technician with the assistance of students who work part-time. The facility is run by a veterinarian, who also examines the animals and assists with chores as needed.

In the breeding and gestation barn, it is determined if sows are ready for breeding. This is done by passing a boar in a cage in front of the sows' pens. Sows that are ready for breeding are quiet, and those that are not, squeal in the presence of the boar. This process is called "heat checking." Sows are inseminated artificially, and the pregnant sows remain in the barn during their gestation period.

Photo 1: Heat checking



Upon giving birth, the sows and their litters are moved to the farrowing rooms, where the piglets are nursed. After a few months, the piglets are moved to the nursery where the males are castrated. In the farrowing

and nursery barns, piglets and the mothers are routinely checked for health problems. The animals are also given appropriate vaccinations in these rooms.

Photo 2: Castration



As the piglets get bigger, they are moved to the finishing area. The finishing area consists of different barns that house litters of similar age/weight groups. In the finishing area, the hogs have their snouts snared and ears tagged for identification. These activities are usually performed by two individuals, one to round up the animals, and the other who manually performs the snout snaring and ear clipping.

Hogs are periodically weighed in the finishing area, and when they have attained the optimal weight (usually 200 pounds), they are sold.

Photo 3: Snout snaring and ear tagging



### Study Population

All students and employees who were working on the two days of the study were invited to participate. The study population consisted of a veterinarian, a farm technician, and two students who worked from one to four hours during this study. The veterinarian who was also the director of the swine confinement had administrative and academic responsibilities in addition to assisting with the confinement's daily operations. The farm technician's main responsibility was to handle day-to-day management of the swine confinement.

### Instrumentation

Quest® Electronics Model Q-300 Noise Dosimeters were worn by a total of seven employees over a 2-day period while they performed their daily activities. Samples were collected throughout the work shifts that ranged from less than an hour to approximately 4 hours. The noise dosimeters were attached to the wearer's belt and a small remote microphone was fastened to the wearer's shirt at a point midway between the ear and the outside of the shoulder. A windscreen provided by the dosimeter manufacturer was placed over the microphone during recordings. At the end of the sampling period, the dosimeter was removed and paused to stop data collection. The information stored in the dosimeters was downloaded to a personal computer for interpretation with QuestSuite® Professional computer software. The dosimeters were calibrated before and after the measurement periods according to the manufacturer's instructions.

Real time, instantaneous noise monitoring was done using a Quest Electronics Model 2400 Sound Level Meter (SLM). The instrument was set to measure noise levels between 70 and 140 dB, on an A-weighted slow-response scale. The SLM was calibrated before and after the measurement periods according to the manufacturer's instructions. Real time spectral analysis was done with a Larson-Davis Laboratory Model 2800 Real-Time analyzer and a Larson-Davis Laboratory Model 2559 ½-inch random incidence response microphone. The analyzer allows for the analysis of noise into its spectral components in a real-time mode. The ½-inch diameter microphone has a frequency response range ( $\pm 2$  decibels [dB]) from 4 Hertz (Hz) to 21 kilohertz (kHz) that allows for the analysis of sounds in the region of concern. One-third octave bands consisting of center frequencies from 25 Hz to 20 kHz were integrated for 10-60 seconds and stored in the analyzer.

continued on page 8



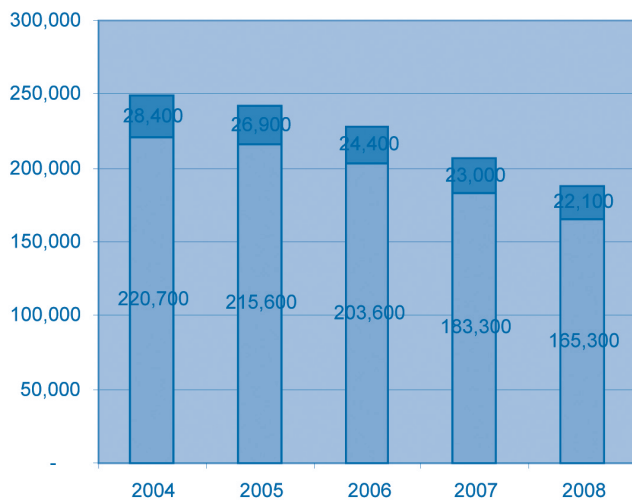
## Hearing Loss Data for 2008 Shows Little Change

By: Lee D. Hager, CAOHC Council Chair  
From NHCA Spectrum

The Bureau of Labor Statistics (BLS) released the compiled 2008 workplace injury and illness statistics in October 2009. Since the revision to 29CFR1904.10 in 2003, hearing loss has been tabulated as a separate entry on Form 300, enabling tracking of trends in this specific area of workplace health and safety separate from other workplace issues.

The 2009 report shows little change from previous reports. About 22,000 cases of recordable hearing loss (a change in hearing of 10 dB or more from the baseline test resulting in hearing threshold levels of 25 dB or greater) were reflected in the BLS report. This downward trend in recordable hearing loss from previous years was echoed in the overall workplace illness trend, as reflected in the chart.

**Injury and Illness Trend 2004-2008**



Hearing loss retains its' rank as the second most prevalent specific workplace illness, with only skin disorders (dermatitis, etc.) reflecting more occurrences in 2008.

Since the revised recordkeeping requirements came into full effect in 2004, over 125,000 workers have been reported with significant, permanent, disabling hearing loss.

### Manufacturing Shows Most Hearing Losses

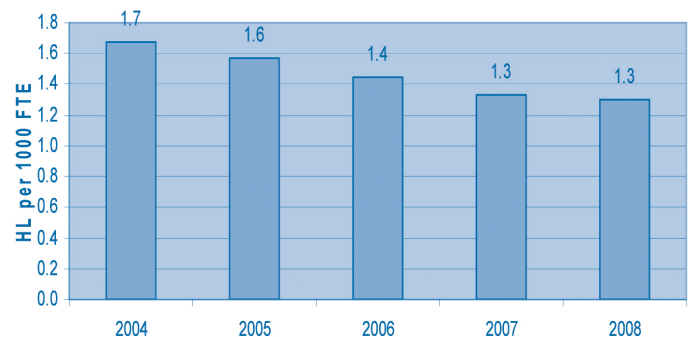
As previously, the manufacturing sector (North American Industry Classification System or NAICS codes 31 to 33) reported the greatest

number of hearing loss cases. Of the 22,000 or so hearing losses indicated by BLS, over 17,500 were from the manufacturing sectors. The industry subsectors with the greatest number of hearing loss cases and prevalence in each is indicated in the table.

| NAICS Code | Industry                 | Hearing Losses Reported | Hearing Losses per 1000 workers |
|------------|--------------------------|-------------------------|---------------------------------|
| 311        | Food                     | 2,900                   | 1.9                             |
| 336        | Transportation Equipment | 2,900                   | 1.7                             |
| 332        | Fabricated Metal         | 2,300                   | 1.5                             |
| 331        | Primary Metal            | 1,400                   | 3.1                             |
| 333        | Machinery                | 1,300                   | 1.1                             |
| 322        | Paper                    | 1,200                   | 2.7                             |
| 326        | Plastics & Rubber        | 1,100                   | 1.5                             |
| 321        | Wood Products            | 1,000                   | 2.0                             |

Overall prevalence since 2004 is reflected here, and shows no change in the number of hearing losses per 1000 workers from 2007.

**HL Prevalence Trend**



### Are the Data Meaningful?

Questions about the sufficiency and validity of Form 300 reporting have colored the interpretation of the information provided by BLS. Rather than tabulating the number of injury and illness cases reported by employers on their Form 300s, BLS uses a survey format to collect the information they collate and provide annually.

This process involves developing a secondary survey, which is sent to a small sample (about 1/2 of 1%) of employers. The secondary sample responds to BLS, who then extrapolates this small survey to total employment in each NAICS sector to develop the estimates provided here. Sample selection can significantly bias final results.

In addition, the Occupational Health and Safety Administration (OSHA) has expressed concern over the accuracy of even the initial Form 300 reports. OSHA has launched a national emphasis program to scrutinize the way workplace illnesses and injuries are reported, and to try to improve compliance with reporting requirements. See <http://www.osha.gov/recordkeeping/odi-background.html> for detailed information on the OSHA initiative.

## Protecting a Great Past... – continued from page 3

that hearing) what this "hearing loss" we have been discussing for years, could mean to their career as well as their ability to perform into the future. We have found a new interest from our employees and increased questions, which would lead us to believe we have improved

the educational experience. It is by letting entertainers experience what they may not be able to hear in the future that we have convinced them to listen right now.

## NIOSH and NHCA present 2010 Safe-in-Sound Excellence in Hearing Loss Prevention Awards

Work-related hearing loss is a permanent but preventable problem. The National Institute for Occupational Safety and Health (NIOSH), in partnership with the National Hearing Conservation Association (NHCA), is pleased to announce the recipients of the 2010 Safe-in-Sound Excellence in Hearing Loss Prevention Awards™, honoring those who have shown their dedication to the prevention of noise-induced hearing loss through innovative or excellent hearing loss prevention practices in the work environment.

The awards were presented at the 35th Annual Hearing Conservation Conference on February 26, 2010 in Orlando, Florida.

The award honors hearing loss prevention programs in the construction, manufacturing, and service sectors. In addition, it recognizes individuals or organizations for innovation in hearing loss prevention and their dedication to fostering and implementing new and unique advances in the prevention of hearing loss.

"This year's awardees highlight how work-related hearing loss affects people across all industry sectors," said NIOSH Director Dr. John Howard. "The impact of partnerships and innovation in developing solutions and policies to address the preventable problem of work-related hearing loss is clear in these initiatives."

The Safe-in-Sound Awards Expert Committee (comprised of experts in the fields of public health, hearing loss prevention, audiology, and industrial hygiene), evaluates applicants against key performance indicators. Examples include: development and adoption of new strategies for hearing loss prevention; demonstration of increased awareness of the value of healthy hearing and the prevention of hearing loss and tinnitus; documented reduction in noise levels and hearing loss registered longitudinally; and the use of a participatory approach between workers and employers.

The recipient for Innovation in Hearing Loss Prevention in the Manufacturing Sector is:

Etymotic Research, Inc., a research and product development group founded in 1983 that creates products designed to measure, improve, and protect hearing. It is recognized for their pioneering technical expertise, remarkable influence, ardent support, and essential

sponsorship of hearing loss prevention research, services, products, and public outreach. Etymotic Research's innovations have had a direct impact on the quality, delivery, and effectiveness of hearing loss and tinnitus prevention programs.

The recipients for Innovation in Hearing Loss Prevention in the Construction Sector are:

The New York City Department of Environmental Protection (NYC DEP) and Parsons Brinckerhoff, Inc. (PB), recognized for their combined efforts in developing, implementing and overseeing the New York City Construction Noise Mitigation Rule. The rule, which is a result of a mayoral charge to update the New York City's Noise Code and create a new law establishing rules for construction noise, established noise emission limits and mitigation measures for all construction within New York City and also proactively addressed work-related exposures.

The recipients for Innovation in Hearing Loss Prevention in the Services Sector are:

Associate Professor Dr. Kris Chesky and the College of Music, University of North Texas, are recognized for their contribution towards raising the awareness of the importance of hearing loss prevention among student and professional musicians. Dr. Chesky and colleagues are pursuing innovative research and methodology, education and advocacy to contribute to the success of hearing loss prevention among individuals involved in music performances and practice. Their work is bringing additional attention to the risk of music-induced hearing loss to other professionals in entertainment venues and to the general public.

Nominations for the next awards will be accepted until September 1st, 2010. For further information please visit [www.safeinsound.us](http://www.safeinsound.us).

Through research and the NORA cross-sector program, NIOSH has developed a number of resources to assist workers and employers in reducing noise exposure as well as in finding and fitting the proper kind of hearing protection and determining hazardous levels of noise. NIOSH recommends removing hazardous noise from the workplace whenever possible and using hearing protectors in those situations where dangerous noise exposures have not yet been controlled or eliminated. For more information about noise and hearing loss prevention research at NIOSH please visit <http://www.cdc.gov/niosh/topics/noise/aboutnlp/aboutnlp.html>.

NIOSH is the federal agency that conducts research and makes recommendations for preventing work-related injuries and illnesses. Mention of any company or product does not constitute endorsement by NIOSH. More information about NIOSH can be found at [www.cdc.gov/niosh](http://www.cdc.gov/niosh).

## Hearing Conservation Quiz

What's the name of NASA's new hearing conservation website? It features a variety of activities, services, and products that support the practice of hearing conservation, including numerous free downloadable auditory demonstrations and teaching tools. The director of the NASA Auditory Demonstration Laboratory at NASA's John H. Glenn Research Center, Dr. Beth A. Cooper, is a CAOHC-certified course director and a past Chair of CAOHC. Find out the answer by visiting the "In the News" page on the CAOHC website

[www.CAOHC.org](http://www.CAOHC.org)

---

**Hearing Conservation: Going from Compliance to Effectiveness... – continued from page 1**

---

Peak levels reported during exposure sampling also can be misused. High peak levels in excess of 130 dB may or may not result from noises that actually reach the ear. False readings may arise from microphones being touched or bumped against surfaces. There is value in the information, but only as far as it is understood and correctly applied.

Noise exposure, the controls applied, the protection selected, and the determination of work-related hearing loss are all intimately interconnected. It is important to understand these relationships so that exposure measurements do more than document compliance, they actually provide the information needed for the other program segments to be effective.

**Evaluation**

Measurements and their evaluation help to determine how much change has been achieved. Evaluation moves a program from a compliance focus to a true understanding of what works and doesn't and the progress being made to a desired outcome.

Before and after noise level measurements are core to assessing the successful outcome of noise control efforts. Fit testing of hearing protection helps both the provider and the worker understand good fitting technique and the realistic expectations for the protection's performance for the individual worker. Hearing protection usage surveys in the workplace will prove out whether the protection is where it needs to be: in the ears. It is as simple as periodically taking the time to look. Are the muffs over the ears or around the neck? Is that string on the plugs keeping the plugs from falling, or is it being used as a necklace?

Audiometric data analysis is the ultimate measure of how well a program is achieving its goal. However — and this is truly important — by the time we know the outcomes from this evaluation, it is too late for the worker. So while this analysis is important, it needs to be kept in its proper perspective. Long before we get to the audiometric analysis, we'd better know that each preceding part is effective.

**Communication**

I can remember when the paramount concern of most employers was to keep the employee from knowing any information regarding the hearing conservation program. One of the key features asked for in noise dosimeters was the ability to keep their eyes off the numbers. There was a philosophy of not letting them know anything because they would probably file for worker's compensation.

Not involving and informing the employee is like trying to solve a jigsaw puzzle with a missing piece. The one who understands the work activity better than anyone else is the one doing it. The one who can

most affect the control of the exposure is the one who has to wear the protection, utilize the tools properly, or keep the noise controls in place.

The European Union in its hearing conservation directive mandates the use of signage to communicate the presence of a hazard. While a simple sign on its face doesn't seem that significant, it is part of creating awareness, accepting the reality of a hazard, and putting it out front that responsibility for prevention is acknowledged.

Today, dosimeters are available that signal to the worker when a hazardous level exists. Also, low-cost personal indicating devices may be provided to the worker so they can be factually aware of when noise levels have reached hazardous values or when they are low enough that it may be safe to remove hearing protection. The more the worker understands the exposure, the protection, and the desired outcomes, the more that worker can contribute.

**The Owner**

In all of these efforts, it is important to remember who is the ultimate owner of the outcome of an effective hearing conservation program. While employers pay for the program elements, the true outcome belongs to the workers. They are the ones who will keep their loss long after the job is done. The achievement of an effective program is hard to imagine without their input and contribution.

Certainly, including the employee is a cultural change, but it is one that can arise out of other programs that are already active in the workplace. If lean concepts, quality programs, and wellness efforts are already occurring, stretching to include occupational safety and health is not a big leap.

**Conclusion**

Hearing conservation has been in place for decades. Effective hearing conservation is a growing concept. It requires true leadership, the use of all of the tactics available, and the involvement of all stakeholders. It is truly a management — or, better said, leadership — challenge that can be achieved.

**About the Author**

*Jim Banach is Executive Vice President of Quest Technologies, Inc., an Oconomowoc, Wis.-based 3M company, and past president of the National Hearing Conservation Association.*

*Reprinted with permission from the March 2010 issue of Occupational Health & Safety. Copyright 2010 1105 Media, Inc.*

*For more information about reprints from Occupational Health & Safety, please contact PARS International Corp. at 212-221-9595.*

---

## CAOHC Offers Special Thanks

The CAOHC Council held its fall meeting in Philadelphia this past November and at the close of business on Thursday afternoon, Jim Banach ended his tenure with CAOHC. His contribution, wisdom, perspective, passion, and quirky sense of humor will be missed.

Jim came to CAOHC in the fall of 1997 as one of two representatives for the American Industrial Hygiene Association expecting to be on the Council for two 5-year terms. He ably served CAOHC and represented AIHA throughout his terms. Then in the fall of 2006, Jim was asked and agreed to assume the role of Chair, a 2-year assignment. This was actually an additional 4-year commitment because of the ensuing

responsibilities of Immediate Past Chair. Jim's expected 10-year stint turned into 12 years.

Twelve years is a long time. Consider the changes that occur between first grade and high school graduation! Although CAOHC's evolution might not be quite that extreme, the Council weathered its share of storms. Through the journey, Jim was an active participant, a strong advocate for the mission, and a true believer in our motto.

Jim, the Council extends a heartfelt thank you for your excellent service. Jim Banach...there is no equal.

## The 5 W's of CAOHC... – continued from page 2

### So HOW do you do that?

We start by trying to make sure that the folks providing training to you all are qualified and are teaching you what you need to know to be effective in your hearing conservation work. The Course Directors (CDs) who teach CAOHC-approved classes undergo regular training and retraining, and are experts in the fields of both hearing conservation and education.

In addition, we have established training courses for Professional Supervisors (PS). These are the folks we look to when we see issues or problems in industrial hearing tests – the physician or audiologist who provides the technical review of the hearing tests to determine work-relatedness and referral criteria. Your relationship with your PS is a critical aspect of the effectiveness of your hearing conservation program, and we believe that a PS who has successfully passed a CAOHC Professional Supervisor course is best qualified to provide the help you need in hearing conservation program management.

We are also trying to enhance other areas of hearing conservation program practice. We currently have an on-line noise measurement course under development that will help those folks who collect noise

exposure information to do a better job of assessing the risk to hearing posed by noise in the workplace.

### WHEN does all this stuff go on?

Always. The year-round list of courses offered by CAOHC-approved course directors is posted on the CAOHC website at [caohc.org](http://caohc.org). You can always find the latest list of course offerings there as well as lots of other useful stuff.

There is another clock ticking for you, though. CAOHC credentials must be renewed every five years to make sure that you have the latest training and information about hearing conservation. While we will try to remind you, it is up to you to arrange to attend a one-day refresher course typically offered by CDs in conjunction with their full 3-day classes. If you are still practicing in hearing conservation, it is important that you update your skills and your credentials.

Well, that's my story and – as they say – I'm sticking to it. Please call us at 414-276-5338 or email us at [info@caohc.org](mailto:info@caohc.org) if you have any questions. The status of your credential and renewal date are available to you at CAOHC.org.

## Preventing Hog Ears: A task-based noise analysis at a swine confinement... – continued from page 4

### RESULTS

The results presented describe potential exposures to employees at the swine confinement during the 2 days of the survey. The workday at the confinement may vary depending on the number of hogs, number of student helpers, and the veterinarian's schedule. On the assumption that the 2 days evaluated were typical workdays at the confinement, the data were analyzed to project an 8-hour dose for each individual. In addition, 8-hour doses for specific tasks were calculated to predict exposures in large-scale confinements. Spectral data collected during the heat checking and the snout snaring and ear tagging processes show that pig squeals can exceed a sound pressure level of 85 dB from 1000–6000 Hz.

During the 2 days that NIOSH collected personal dosimetry data, noise exposures exceeded the NIOSH REL for three people for the actual time that they worked in the confinement facility. When the results were extrapolated to simulate an 8-hour work shift, five of the seven personal dosimetry samples exceeded the NIOSH REL, and two exceeded the OSHAAL (more than 50%). The extrapolation assumes that the percent dose collected during the actual work shift is representative of an 8-hour shift, and the dose has been increased accordingly. The actual and extrapolated results are shown in Tables 1 and 2 respectively.

Table 1. Personal noise dosimeter results

| Date  | Job Title       | Duration (hh:mm:ss) | Dose (Percent) |          |              |
|-------|-----------------|---------------------|----------------|----------|--------------|
|       |                 |                     | OSHA AL        | OSHA PEL | NIOSH/A CGIH |
| Day 1 | Director        | 03:37:29            | 11.7           | 5.5      | 42.4         |
|       | Farm Technician | 03:41:53            | 10.3           | 3.0      | 34.0         |
|       | Student –I      | 01:42:14            | 21.4           | 20.6     | 140.4        |
|       | Student –II     | 00:48:34            | 1.7            | 1.3      | 13.3         |
| Day 2 | Director        | 03:49:42            | 13.8           | 10.9     | 116.2        |
|       | Farm Technician | 03:41:38            | 11.8           | 7.8      | 69.1         |
|       | Student –I      | 03:38:14            | 27.7           | 25.2     | 219.7        |

Table 2. Personal noise dosimeter results extrapolated to an 8-hour TWA.

| Date  | Job Title       | Duration (hh:mm:ss) | Dose (Percent) |          |              |
|-------|-----------------|---------------------|----------------|----------|--------------|
|       |                 |                     | OSHA AL        | OSHA PEL | NIOSH/A CGIH |
| Day 1 | Director        | 08:00:00            | 25.9           | 12.0     | 93.6         |
|       | Farm Technician | 08:00:00            | 22.2           | 6.5      | 43.6         |
|       | Student –I      | 08:00:00            | 100.3          | 96.8     | 659.3        |
|       | Student –II     | 08:00:00            | 17.3           | 12.8     | 131.6        |
| Day 2 | Director        | 08:00:00            | 28.8           | 22.2     | 242.8        |
|       | Farm Technician | 08:00:00            | 24.7           | 16.3     | 144.4        |
|       | Student –I      | 08:00:00            | 60.8           | 55.4     | 482.7        |

An analysis of noise exposures by tasks show that the highest exposures occurred during the power washing job, and during the snout snaring and ear tagging operation. The power washing operation was observed for 29 minutes and snout snaring for 17 minutes. During both operations, the percent dose exceeded the NIOSH criterion for the short time period for at least one of the employees performing the task. When all tasks were extrapolated to an 8-hour work day, the NIOSH criterion was exceeded on eight occasions (128% to 3111%), and the OSHA AL was exceeded four times (178% to 265%) during the snout snaring and the power washing operations, and once during activities at the breeding and gestation barn. The exposure time, actual noise dose, and the 8-hour extrapolated noise dose of each task are given in table 3.

Table 3. Noise exposures expressed as percent dose, as a function of tasks

| Task          | Criterion | Director                                                                        | Farm Technician      | Student-I           | Student -II           |
|---------------|-----------|---------------------------------------------------------------------------------|----------------------|---------------------|-----------------------|
| Castration    | OSHA AL   | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 12<br>0.7<br>28.4    |                     |                       |
|               | NIOSH REL | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 12<br>3.2<br>128.4   |                     |                       |
| Breeding      | OSHA AL   | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 30<br>4.2<br>67.2    |                     |                       |
|               | NIOSH REL | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 30<br>14.2<br>227.8  |                     |                       |
| Gate Repairs  | OSHA AL   | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 41<br>1.2<br>13.8    | 46<br>0.9<br>9.3    | 46<br>1.6<br>16.1     |
|               | NIOSH REL | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 41<br>5.7<br>66.3    | 46<br>5.4<br>56.6   | 47<br>12.5<br>31.4    |
| Power Washing | OSHA AL   | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours |                      |                     | 29<br>15.2<br>252.3   |
|               | NIOSH REL | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours |                      |                     | 29<br>103.8<br>1718.6 |
| Feed Mill     | OSHA AL   | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 13<br>13.8<br>28.8   | 19<br>1.9<br>48.8   | 8<br>0.1<br>5.3       |
|               | NIOSH REL | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 13<br>1.7<br>63.8    | 19<br>5.5<br>139.5  | 8<br>0.3<br>16.7      |
| Snaring       | OSHA AL   | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 17<br>8.5<br>238.9   | 16<br>5.9<br>177.9  | 17<br>9.4<br>264.9    |
|               | NIOSH REL | Exposure time (min)<br>% dose for exposure time<br>Projected % dose for 8 hours | 17<br>93.5<br>1496.4 | 16<br>54.3<br>745.1 | 17<br>110.2<br>3111.4 |

### DISCUSSION

Though none of the workers' noise levels in this survey exceeded any regulatory standards, noise levels of two employees exceeded the daily percent dose over the course of the survey, as calculated by the NIOSH criterion. The noise level exceeded one worker's dose on both

continued on page 9

**Preventing Hog Ears: A task-based noise analysis at a swine confinement... – continued from page 8**

days that personal samples were collected. An analysis of associated tasks revealed that the power-washing job presents the highest noise hazard at this facility, contributing as much as 104% of the daily dose for approximately 30 minutes of exposure. All employees were wearing ear muffs during the work day, but a close inspection of the ear muffs showed that the cushions were cracked and needed repair.

Over the past several years, there has been a shift from small-scale swine confinements to large-scale production facilities (Mallin & Cahoon, 2003). At some of these large production facilities, employees perform dedicated chores throughout the work day. For example, employees may be required to power wash pens for a full work shift. The 8-hour task-based results from this survey are useful to characterize potential noise exposures for these employees. Data from this evaluation suggest that some tasks related to swine production may result in excessive noise exposure, and employees should be enrolled in a hearing conservation program.

**CONCLUSIONS**

There is potential excessive noise exposure to employees at the swine confinement, though none of the values measured in this limited survey exceeded any recommended or regulatory standards. However, if employees were to carry out their tasks over an 8-hour work day, the NIOSH REL would have been exceeded on five occasions, and the OSHA AL would have been exceeded twice. The OSHA PEL would not have been exceeded.

An analysis of specific tasks revealed that the power washing and snaring and ear tagging operations were the most hazardous. These jobs exceeded the 100% daily dose for the time period worked, per the NIOSH criteria. When the results from this survey were projected to reflect an 8-hour exposure, the OSHA AL for noise exposure during breeding, power washing, and snaring exceeded 50% of the employees' daily dose.

**REFERENCES**

- Siebens D. Noise and hearing loss in agriculture, forestry, and fisheries. In: Langley RL, McLymore RL, Meggs WJ, Robertson GT, editors. *Safety and Health in Agriculture, Forestry, and Fisheries*. Rockville, MD, Government Institutes. 1997; 59-66.
- Kristensen S, Gimsing S. Occupational hearing impairment in pig breeders. *Scand Audiol*. 1988; 17(3):191-192.
- Mallin, MIA.; Cahoon, LB. Industrialized Animal Production-A Major Source of Nutrient and Microbial Pollution to Aquatic Ecosystems. *Population & Environment*. 2003; 24(5):369-385
- Humann MJ, Donham KJ, Jones ML, Achutan C, Smith BJ. Occupational Noise Exposure Assessment in Intensive Swine Farrowing Systems : Dosimetry, Octave Band, and Specific Task Analysis. *Journal of Agromedicine*. 2005; 10(1):23-37

**AAA**

Theresa Y. Schulz, PhD CPS/A  
Sperian Hearing Protection, LLC  
Fredericktown, PA  
Email: tschulz@sperianprotection.com

Laurie L. Wells, AuD, FAAA, CPS/A  
Associates in Acoustics, Inc  
Loveland, CO  
Email: LWells@AssociatesInAcoustics.com

**AAO-HNS**

James V. Crawford, MD  
LTC, MC, USA  
Madigan Army Medical Center  
Tacoma, WA  
Email: james.v.crawford@us.army.mil

**AAOHN**

Diane S. DeGaetano, RN BSN COHN-S  
Merial, Ltd.  
Duluth, GA  
Email: diane.degaetano@merial.com

Madeleine J. Kerr, PhD RN  
Univ. MN/School Nursing  
Minneapolis, MN  
Email: kerrx010@umn.edu

**ACOEM**

Eric T. Evenson, MD, MPH  
US Army Occupational Medicine Staff Officer  
Proponency Office for Preventive Medicine-  
NCR Office of the Surgeon General  
Falls Church, VA  
Email: eric.t.evanson@amedd.army.mil

Donald Bruce Kirchner, MD MPH CPS/A  
Procter & Gamble  
Cincinnati, OH  
Email: kirchner.db@pg.com

**AIHA**

Chandran Achutan, PhD  
University of Nebraska Medical Center  
Omaha, Nebraska  
Email: cachutan@unmc.edu

Lee D. Hager  
E-A-Rfit E-A-R Custom  
Portland, MI Email: leehager@cabelspeed.com

**ASSE**

David D. Lee, MIS CIH CSP  
Sparks, NV  
Email: ddlee@sbcglobal.net

Ronald D. Schaible, CIH CSP PE (Mass.)  
Robson Forensic, Inc.  
Lancaster, PA  
Email: rschaible@robsonforensic.com

**ASHA**

Mary M. McDaniel, AuD CCC-A CPS/A  
Pacific Hearing Conservation, Inc.  
Seattle, WA Email: m3@  
pacifichearingconservation.com

Ted K. Madison, MA CCC-A  
3M Occupational Health & Environmental  
Safety Division  
Saint Paul, MN  
Email: tkmadison@mmm.com

**INCE/USA**

Robert D. Bruce, PE INCE Board Cert.  
CSTI Acoustics  
Houston, TX  
Email: bob@cstiacoustics.com

Kimberly A. Lefkowitz  
State College, PA 16803  
Email: kal337@psu.edu

**MAA**

Thomas L. Hutchison, MA MHA FAAA CPS/A  
Navy and Marine Corps Public Health Center  
Portsmouth, VA  
Email: tom.hutchison@med.navy.mil

Vickie L. Tuten, COL, MS,  
Proponency for Office of Preventive Medicine,  
Office of the Surgeon General  
Falls Church, VA  
Email: vickie.tuten@us.army.mil

# UPCOMING OCCUPATIONAL HEARING CONSERVATIONIST (OHC) COURSES 2010

Below is a listing of all OHC certification and re-certification courses from May - August, as of April 23, 2010. Please note that new courses are added daily, for the most up-to-date information please check the OHC Course Listing section of the CAOHC website, [www.caohc.org](http://www.caohc.org).



| Start Date | End Date  | City               | State | Course Director                                 | Phone        |
|------------|-----------|--------------------|-------|-------------------------------------------------|--------------|
| 5/18/2010  | 5/20/2010 | Tifton             | GA    | Melette L. Meloy, MS CCC-A                      | 679-363-9897 |
| *5/19/2010 | 5/19/2010 | Tifton             | GA    | Melette L. Meloy, MS CCC-A                      | 678-363-9897 |
| 5/18/2010  | 5/20/2010 | Farmington Hills   | MI    | Thomas H. Simpson, PhD CCC-A                    | 313-516-7786 |
| *5/19/2010 | 5/19/2010 | Farmington Hills   | MI    | Thomas H. Simpson, PhD CCC-A                    | 313-516-7786 |
| 5/19/2010  | 5/21/2010 | Ocala              | FL    | John H. Elmore, AuD MBA CCC-A                   | 800-357-5759 |
| *5/20/2010 | 5/20/2010 | Ocala              | FL    | John H. Elmore, AuD MBA CCC-A                   | 800-357-5759 |
| 5/19/2010  | 5/21/2010 | Houston            | TX    | Johnny L. Sanders, MA CCC-A                     | 800-869-6783 |
| 5/19/2010  | 5/21/2010 | Baltimore          | MD    | Margaret Sasscer, AuD CCC-A                     | 410-470-9055 |
| *5/20/2010 | 5/20/2010 | Baltimore          | MD    | Margaret Sasscer, AuD CCC-A                     | 410-470-9055 |
| 5/21/2010  | 5/21/2010 | Auburndale         | FL    | Melette L. Meloy, MS CCC-A                      | 678-363-9897 |
| 5/24/2010  | 5/24/2010 | Seattle            | WA    | Mary M. McDaniel, AuD CCC-A CPS/A               | 206-706-7352 |
| 5/25/2010  | 5/27/2010 | Seattle            | WA    | Mary M. McDaniel, AuD CCC-A CPS/A               | 206-706-7352 |
| 5/26/2010  | 5/28/2010 | Columbia           | SC    | Michele Alexander, MS CCC-A                     | 336-834-8775 |
| *5/27/2010 | 5/27/2010 | Columbia           | SC    | Michele Alexander, MS CCC-A                     | 336-834-8775 |
| 5/28/2010  | 5/30/2010 | Seneca             | SC    | A. Gregg Moore, MS CCC-A                        | 336-834-8775 |
| *5/29/2010 | 5/29/2010 | Seneca             | SC    | A. Gregg Moore, MS CCC-A                        | 336-834-8775 |
| 6/2/2010   | 6/4/2010  | Anchorage          | AK    | Sandra C. MacLean Uberuaga, MA CCC-A FAAA CPS/A | 907-380-2335 |
| *6/3/2010  | 6/3/2010  | Anchorage          | AK    | Sandra C. MacLean Uberuaga, MA CCC-A FAAA CPS/A | 907-360-2335 |
| 6/7/2010   | 6/9/2010  | Omaha              | NE    | Thomas W. Norris, PhD                           | 760-636-4191 |
| *6/9/2010  | 6/9/2010  | Omaha              | NE    | Thomas W. Norris, PhD                           | 760-636-4191 |
| 6/8/2010   | 6/10/2010 | North Kansas City  | MO    | Linda Kay Ratliff-Hober, MS CCC-A               | 816-221-3230 |
| *6/9/2010  | 6/9/2010  | North Kansas City  | MO    | Linda Kay Ratliff-Hober, MS CCC-A               | 816-221-3230 |
| 6/9/2010   | 6/11/2010 | Charlotte          | NC    | Thomas H. Cameron, PhD CCC-A CPS/A              | 919-459-5255 |
| 6/9/2010   | 6/11/2010 | Baltimore          | MD    | Lynn E. Cook, AuD FAAA                          | 800-869-6783 |
| 6/10/2010  | 6/10/2010 | Baltimore          | MD    | Lynn E. Cook, AuD FAAA                          | 800-869-6783 |
| 6/9/2010   | 6/11/2010 | Denver             | CO    | John H. Elmore, AuD MBA CCC-A                   | 800-357-5759 |
| *6/10/2010 | 6/10/2010 | Denver             | CO    | John H. Elmore, AuD MBA CCC-A                   | 800-357-5759 |
| 6/9/2010   | 6/11/2010 | Alpharetta         | GA    | Jason M. Feld, MCD CCC-A                        | 770-485-2055 |
| 6/9/2010   | 6/11/2010 | Birmingham         | AL    | Georgia W. Holmes, AuD CCC-A                    | 205-934-7178 |
| 6/9/2010   | 6/11/2010 | Columbus           | OH    | James J. Jerome, MA CCC-A                       | 317-841-9829 |
| *6/10/2010 | 6/10/2010 | Columbus           | OH    | James J. Jerome, MA CCC-A                       | 317-841-9829 |
| 6/9/2010   | 6/11/2010 | Columbia           | SC    | Melette L. Meloy, MS CCC-A                      | 678-363-9897 |
| 6/9/2010   | 6/11/2010 | Greensboro         | NC    | Cheryl S. Nadeau, MEd FAAA                      | 336-834-8775 |
| *6/10/2010 | 6/10/2010 | Greensboro         | NC    | Cheryl S. Nadeau, MEd FAAA                      | 336-834-8775 |
| 6/9/2010   | 6/11/2010 | Harrisburg         | PA    | Timothy A. Swisher, MA CCC-A                    | 412-367-8690 |
| *6/10/2010 | 6/10/2010 | Harrisburg         | PA    | Timothy A. Swisher, MA CCC-A                    | 412-367-8690 |
| 6/10/2010  | 6/12/2010 | Pittsburgh         | PA    | Roger M. Angelelli, PhD                         | 412-831-0430 |
| 6/11/2010  | 6/11/2010 | Pittsburgh         | PA    | Roger M. Angelelli, PhD                         | 412-831-0430 |
| *6/10/2010 | 6/10/2010 | Alpharetta         | GA    | Jason M. Feld, MCD CCC-A                        | 770-475-2055 |
| 6/10/2010  | 6/10/2010 | Birmingham         | AL    | Georgia W. Holmes, AuD CCC-A                    | 205-934-7178 |
| 6/10/2010  | 6/10/2010 | Columbia           | SC    | Melette L. Meloy, MS CCC-A                      | 678-363-9897 |
| 6/14/2010  | 6/16/2010 | Portland           | OR    | Thomas G. Dolan, PhD CCC-A                      | 503-725-3264 |
| *6/15/2010 | 6/15/2010 | Portland           | OR    | Thomas G. Dolan, PhD CCC-A                      | 503-725-3264 |
| 6/14/2010  | 6/14/2010 | Aloha              | OR    | Michael H. Fairchild, MS JD CCC-A F-AAA         | 503-259-2685 |
| 6/14/2010  | 6/16/2010 | Aloha              | OR    | Michael H. Fairchild, MS JD CCC-A F-AAA         | 503-259-2685 |
| 6/14/2010  | 6/16/2010 | Tampa              | FL    | Herbert J. Greenberg, PhD CCC-A                 | 813-974-0989 |
| *6/15/2010 | 6/15/2010 | Tampa              | FL    | Herbert J. Greenberg, PhD CCC-A                 | 813-974-0989 |
| 6/15/2010  | 6/17/2010 | Auburn             | MA    | Steven R. Fournier, AuD CPS/A                   | 508-832-8484 |
| 6/16/2010  | 6/18/2010 | Albuquerque        | NM    | John H. Elmore, AuD MBA CCC-A                   | 800-357-5759 |
| *6/17/2010 | 6/17/2010 | Albuquerque        | NM    | John H. Elmore, AuD MBA CCC-A                   | 800-357-5759 |
| 6/16/2010  | 6/18/2010 | St. Louis          | MO    | Johnny L. Sanders, MA CCC-A                     | 800-869-6783 |
| *6/17/2010 | 6/17/2010 | St. Louis          | MO    | Johnny L. Sanders, MA CCC-A                     | 800-869-6783 |
| *6/22/2010 | 6/22/2010 | Destin             | FL    | Georgia W. Holmes, AuD CCC-A                    | 205-934-7178 |
| *6/22/2010 | 6/22/2010 | Chicago/Schaumburg | IL    | Thomas D. Thunder, AuD FAAA INCE Bd.Ct.         | 847-359-1068 |
| 6/23/2010  | 6/25/2010 | Chicago/Schaumburg | IL    | Thomas D. Thunder, AuD FAAA INCE Bd.Ct.         | 847-359-1068 |
| 6/23/2010  | 6/25/2010 | Knoxville          | TN    | Michele Alexander, MS CCC-A                     | 336-834-8775 |
| *6/24/2010 | 6/24/2010 | Knoxville          | TN    | Michele Alexander, MS CCC-A                     | 336-834-8775 |
| 6/23/2010  | 6/25/2010 | Las Vegas          | NV    | John H. Elmore, AuD MBA CCC-A                   | 800-357-5759 |
| *6/24/2010 | 6/24/2010 | Las Vegas          | NV    | John H. Elmore, AuD MBA CCC-A                   | 800-357-5759 |

\*indicates a one-day recertification course

## UPCOMING OCCUPATIONAL HEARING CONSERVATIONIST (OHC) COURSES 2010, continued

| Start Date | End Date  | City              | State       | Course Director                     | Phone        |
|------------|-----------|-------------------|-------------|-------------------------------------|--------------|
| 6/23/2010  | 6/25/2010 | San Juan          | Puerto Rico | Timothy A. Swisher, MA CCC-A        | 412-367-8690 |
| *6/24/2010 | 6/24/2010 | San Juan          | Puerto Rico | Timothy A. Swisher, MA CCC-A        | 412-367-8690 |
| 6/28/2010  | 6/30/2010 | Spokane           | WA          | Mary M. McDaniel, AuD CCC-A CPS/A   | 206-706-7352 |
| *6/29/2010 | 6/29/2010 | Spokane           | WA          | Mary M. McDaniel, AuD CCC-A CPS/A   | 206-706-7352 |
| 6/28/2010  | 6/30/2010 | Kalispell         | MT          | Rebecca Sturdevant, MSN APRN COHN-S | 406-751-4189 |
| *6/29/2010 | 6/29/2010 | Kalispell         | MT          | Rebecca Sturdevant, MSN APRN COHN-S | 408-751-4189 |
| 7/7/2010   | 7/9/2010  | Dallas/Ft Worth   | TX          | John H. Elmore, AuD MBA CCC-A       | 800-357-5759 |
| *7/8/2010  | 7/8/2010  | Dallas/Ft Worth   | TX          | John H. Elmore, AuD MBA CCC-A       | 800-357-5759 |
| 7/7/2010   | 7/9/2010  | Madison           | WI          | James J. Jerome, MA CCC-A           | 317-841-9829 |
| *7/8/2010  | 7/8/2010  | Madison           | WI          | James J. Jerome, MA CCC-A           | 317-841-9829 |
| 7/7/2010   | 7/9/2010  | Little Rock       | AR          | Jane Prince, PhD                    | 870-972-1166 |
| *7/8/2010  | 7/8/2010  | Little Rock       | AR          | Jane Prince, PhD                    | 870-972-1166 |
| 7/7/2010   | 7/9/2010  | Albany            | NY          | Timothy A. Swisher, MA CCC-A        | 412-367-8690 |
| *7/8/2010  | 7/8/2010  | Albany            | NY          | Timothy A. Swisher, MA CCC-A        | 412-367-8690 |
| 7/13/2010  | 7/13/2010 | Davenport         | IA          | James J. Jerome, MA CCC-A           | 317-841-9829 |
| 7/12/2010  | 7/14/2010 | Davenport         | IA          | James J. Jerome, MA CCC-A           | 317-841-9829 |
| *7/9/2010  | 7/9/2010  | Morrisville       | NC          | Thomas H. Cameron, PhD CCC-A CPS/A  | 919-459-5255 |
| 7/14/2010  | 7/16/2010 | Jackson           | MS          | Michele Alexander, MS CCC-A         | 336-834-8775 |
| *7/15/2010 | 7/15/2010 | Jackson           | MS          | Michele Alexander, MS CCC-A         | 336-834-8775 |
| 7/14/2010  | 7/16/2010 | Little Rock       | AR          | Lynn E. Cook, AuD FAAA              | 800-869-6783 |
| *7/15/2010 | 7/15/2010 | Little Rock       | AR          | Lynn E. Cook, AuD FAAA              | 800-869-6783 |
| 7/14/2010  | 7/16/2010 | San Antonio       | TX          | John H. Elmore, AuD MBA CCC-A       | 800-357-5759 |
| *7/15/2010 | 7/15/2010 | San Antonio       | TX          | John H. Elmore, AuD MBA CCC-A       | 800-357-5759 |
| 7/21/2010  | 7/23/2010 | Bismarck          | ND          | Mary M. McDaniel, AuD CCC-A CPS/A   | 206-706-7352 |
| *7/22/2010 | 7/22/2010 | Bismarck          | ND          | Mary M. McDaniel, AuD CCC-A CPS/A   | 206-706-7352 |
| 7/21/2010  | 7/23/2010 | Greensboro        | NC          | A. Gregg Moore, MS CCC-A            | 336-834-8775 |
| *7/22/2010 | 7/22/2010 | Greensboro        | NC          | A. Gregg Moore, MS CCC-A            | 336-834-8775 |
| 7/21/2010  | 7/23/2010 | Houston           | TX          | Johnny L. Sanders, MA CCC-A         | 800-869-6783 |
| *7/22/2010 | 7/22/2010 | Houston           | TX          | Johnny L. Sanders, MA CCC-A         | 800-869-6783 |
| 7/21/2010  | 7/23/2010 | Seattle           | WA          | Amy R. Stewart, MA CCC-A            | 206-764-3330 |
| *7/22/2010 | 7/22/2010 | Seattle           | WA          | Amy R. Stewart, MA CCC-A            | 206-764-3330 |
| 7/22/2010  | 7/24/2010 | Kittanning        | PA          | Douglas N. Callen, PhD              | 724-543-7068 |
| *7/23/2010 | 7/23/2010 | Kittanning        | PA          | Douglas N. Callen, PhD              | 724-543-7068 |
| 7/26/2010  | 7/28/2010 | Norfolk           | VA          | George R. Cook, Jr., AuD CCC-A      | 276-637-6595 |
| *7/27/2010 | 7/27/2010 | Norfolk           | VA          | George R. Cook, Jr., AuD CCC-A      | 276-637-6595 |
| 7/27/2010  | 7/29/2010 | Kansas City       | MO          | Linda Kay Ratliff-Hober, MS CCC-A   | 816-221-3230 |
| *7/28/2010 | 7/28/2010 | North Kansas City | MO          | Linda Kay Ratliff-Hober, MS CCC-A   | 816-221-3230 |
| 7/28/2010  | 7/30/2010 | Las Vegas         | NV          | Kathryn M. Deppensmith, MS CCC-A    | 800-869-6783 |
| *7/29/2010 | 7/29/2010 | Las Vegas         | NV          | Kathryn M. Deppensmith, MS CCC-A    | 800-869-6783 |
| 7/28/2010  | 7/30/2010 | Atlanta           | GA          | Melette L. Meloy, MS CCC-A          | 678-363-9897 |
| *7/29/2010 | 7/29/2010 | Atlanta           | GA          | Melette L. Meloy, MS CCC-A          | 678-363-9897 |
| 7/28/2010  | 7/30/2010 | Dayton            | OH          | Chris M. Pavlakos, PhD              | 937-436-1161 |
| *7/30/2010 | 7/30/2010 | Dayton            | OH          | Chris M. Pavlakos, PhD              | 937-436-1161 |
| 8/2/2010   | 8/4/2010  | Indianapolis      | IN          | James J. Jerome, MA CCC-A           | 317-841-9829 |
| *8/3/2010  | 8/3/2010  | Indianapolis      | IN          | James J. Jerome, MA CCC-A           | 317-841-9829 |
| 8/3/2010   | 8/5/2010  | Bethlehem         | PA          | James B. Robertson, AuD             | 610-868-8606 |
| *8/4/2010  | 8/4/2010  | Bethlehem         | PA          | James B. Robertson, AuD             | 610-868-8606 |
| 8/4/2010   | 8/6/2010  | Little Rock       | AR          | Michele Alexander, MS CCC-A         | 336-834-8775 |
| *8/5/2010  | 8/5/2010  | Little Rock       | AR          | Michele Alexander, MS CCC-A         | 336-834-8775 |
| 8/4/2010   | 8/6/2010  | Detroit           | MI          | John H. Elmore, AuD MBA CCC-A       | 800-357-5759 |
| *8/5/2010  | 8/5/2010  | Detroit           | MI          | John H. Elmore, AuD MBA CCC-A       | 800-357-5759 |
| 8/4/2010   | 8/6/2010  | Birmingham        | AL          | Georgia W. Holmes, AuD CCC-A        | 205-934-7178 |
| *8/5/2010  | 8/5/2010  | Birmingham        | AL          | Georgia W. Holmes, AuD CCC-A        | 205-934-7178 |
| 8/4/2010   | 8/6/2010  | Pittsburgh        | PA          | Timothy A. Swisher, MA CCC-A        | 412-367-8690 |
| *8/5/2010  | 8/5/2010  | Pittsburgh        | PA          | Timothy A. Swisher, MA CCC-A        | 412-367-8690 |
| 8/9/2010   | 8/11/2010 | West Palm Beach   | FL          | Herbert J. Greenberg, PhD CCC-A     | 678-352-0312 |
| *8/10/2010 | 8/10/2010 | West Palm Beach   | FL          | Herbert J. Greenberg, PhD CCC-A     | 678-352-0312 |
| 8/11/2010  | 8/13/2010 | Morrisville       | NC          | Thomas H. Cameron, PhD CCC-A CPS/A  | 919-459-5255 |
| 8/11/2010  | 8/13/2010 | Tampa             | FL          | Johnny L. Sanders, MA CCC-A         | 800-869-6783 |
| *8/12/2010 | 8/12/2010 | Tampa             | FL          | Johnny L. Sanders, MA CCC-A         | 800-869-6783 |
| 8/11/2010  | 8/13/2010 | Cincinnati        | OH          | Timothy A. Swisher, MA CCC-A        | 412-367-8690 |
| *8/12/2010 | 8/12/2010 | Cincinnati        | OH          | Timothy A. Swisher, MA CCC-A        | 412-367-8690 |
| 8/18/2010  | 8/20/2010 | Baton Rouge       | LA          | Michele Alexander, MS CCC-A         | 336-834-8775 |
| *8/19/2010 | 8/19/2010 | Baton Rouge       | LA          | Michele Alexander, MS CCC-A         | 336-834-8775 |
| 8/18/2010  | 8/20/2010 | Houston           | TX          | John H. Elmore, AuD MBA CCC-A       | 800-357-5759 |
| *8/19/2010 | 8/19/2010 | Houston           | TX          | John H. Elmore, AuD MBA CCC-A       | 800-357-5759 |

## Upcoming 2010

### Upcoming **Course Director** Workshop

Friday, November 5, 2010  
Sheraton Gateway Suites O'Hare  
Rosemont, IL

## Upcoming 2010

### Upcoming **Professional Supervisor** Workshop

Saturday, November 6, 2010  
Sheraton Gateway Suites O'Hare  
Rosemont, IL

Registration now open see CAOHC website [www.caohc.org](http://www.caohc.org) for further details.

CAOHC-0410-462

*Spring 2010*

Look for CAOHC  
on the  
**INTERNET**  
↑  
[www.caohc.org](http://www.caohc.org)

