CAOHC®

UPDATE

Winter 2000/2001

VOLUME 11 • ISSUE 4

The Newsletter of the Council for Accreditation in Occupational Hearing Conservation

Chair's Message

by Peter Weber, MD MBA FACS, Representative of the American Academy of Otolaryngology Head and Neck Surgery

Hi! I hope that you find our winter issue to be quite informative in addressing topics that you may not have considered in the past.

First, I would like to take this opportunity to bring to your attention that Noise Awareness Day will be Wednesday, April 25, 2001. As many of you know, this day is set aside to enhance public and worker awareness of noise and its effect on hearing loss. Materials and posters can easily be obtained by visiting CAOHC's web site www.caohc.org. Click on the red, flashing button (or you can access www.lhh.org/noise/. This is an important day and I hope that you will all participate at your workplace - as well as in your daily lives.

One of the most interesting articles that I invite you to read is that on cerumen management by Dr. Brownson. He explains the importance that earwax plays in the ear; while also discussing that when too much wax is found, proper assessment of hearing levels may be compromised. Brownson discusses the role of the OHC in this matter. I also want to mention that it is important to instruct employees that one should never use cotton swabs to remove wax from the ear. This is knowledge that applies to you, too. Cotton swabs may push wax deeper into the canal and closer to the eardrum, and may abrade the delicate lining of the canal; such abrasion may result in serious infection.

Also in this issue, you will find the NHCA brochure on firearms and how you can and should protect your hearing when using such devices. It also discusses the ramifications if one does not use hearing protection in the use of firearms.

Dr. Erdreich elucidates the importance of a hearing conservation program for employers in order to protect them from workers' compensation fraud. This is an unusual article and one that you can use to show your employer when presenting the importance of setting up, or continuing, a hearing conservation program.

Finally, Ms. Cooper starts the first in a series of articles on noise control techniques that can be directly applied in your own programs.

You'll find that this issue is full of important and useful information, and one that you may want to keep for reference in the future.

Considering an Engineered Noise Control Solution

By Beth A. Cooper, PE INCE. Bd. Cert. Representative of the Institute of Noise Control Engineering

Part 1 in a series on engineering approaches to reducing noise exposure.

As an OHC, your days may be filled with audiometric testing and employee training. You may also find it within your job description to solve problems associated with high noise levels in your workplace. Perhaps you are fortunate enough to work as part of a hearing conservation team that includes a noise control engineer who is able to recommend, develop and implement engineered controls that reduce employee noise exposure. But what if YOU are the hearing conservation program? Even if you have other professional resources at your disposal, you may be responsible for managing those resources and making overall program decisions. In any case, an understanding of fundamental noise control concepts and techniques will be helpful as you approach the following tasks:

- identify specific problems that would be realistic candidates for successful engineered noise control solutions;
- anticipate, understand and be able to evaluate the range of possible solution approaches recommended by a noise control professional;
- advocate for the funds necessary to implement the recommended changes;
- properly make use of and maintain the engineered noise controls; and
- avoid worsening the problem, either before or after the controls are implemented, by making changes to the process, equipment or work area that increase the noise level and/or employee noise exposure.

continued on page 9

Content

CAOHC UPDATE

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 $20. Payment must accompany request:*
611 E. Wells Street
Milwaukee, WI 53202-3816
Phone (414) 276-5338
Fax (414) 276-3349
E-mail: info@caohc.org

- *Executive Director*
  Janet L. Otten
- *Associate Executive Director*
  Barbara Lechner
- *Administrative Assistant*
  Chris Whiting
- *Graphic Designer*
  Kathryn Peterson
- *Publications Committee Chair & Editor*
  Elliott Berger, MS, INCE. Brd. Cert.

Contributing Editor Current Issue
Paul Brownson, MD, FACOEM, FAAFP

Committee Members
Beth Cooper, PE, INCE. Bd. Cert.
Robert Goldenberg, MD
Susan Megerson, MA, CCC-A

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

Printed on recycled paper PRINTED WITH SOY INK

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 414/276-3349; or e-mail to info@caohc.org.

CAOHC Approved OHC Courses

When you are registering for a recertification course (or if your fellow staff member is registering for the first time at a certification course), please confirm with the registrar that "this is a CAOHC approved" course. Only certified Course Directors, who have received a course approval certificate from the CAOHC Executive office, can conduct an occupational hearing conservation course that leads to CAOHC certification. Course Directors must display this certificate of approval in view of their students. If you don't see it, please ask your Course Director.

If you are uncertain whether the course you are planning to attend is certified by CAOHC, please contact Chris Whiting at the CAOHC office at 414/276-5338 or e-mail info@CAOHC.org

New Appointments to CAOHC Council

We are pleased to announce the appointment of Gayle S. Rink, MS RN COHN-S, to the CAOHC Council. Ms.Rink attended her first CAOHC Council meeting in Rosemont, IL on October 3, 2000 as a representative for the American Association of Occupational Health Nurses (AAOHN), replacing Constance Tatman.

Ms.Rink obtained her Masters degree from Ohio State University in Health Policy and Planning. She holds certification by the American Board of Occupational Health Nurses as an Occupational Health Nurse Specialist. She is also CAOHC certified as an Occupational Hearing Conservationist and has been an instructor in CAOHC courses.

Ms.Rink is currently employed by HTI, Inc. in Ohio and assists businesses and industries by developing and providing services to assist employers in promoting employee health, meeting medical surveillance standards and reducing health care costs.

The CAOHC Council is also pleased to announce that Richard L. Stepkin, MS CCC-A will represent the American Speech-Language-Hearing Association (ASHA) on the Council effective November 2000. Stepkin replaces Susan Megerson who has recently completed a 10-year term on the Council. (Ms.Megerson remains on the Council in an Ex-Officio capacity throughout 2001 to complete her term as Immediate Past Chair.)

Mr. Stepkin is the founder and president of Enviromed Corp in New Jersey and is a graduate of Florida State University, with a Masters of Audiology degree. Stepkin currently serves as Chair of the NHCA Committee on Hearing Data Acquisition and has been a CAOHC Course Director since 1974. He will be attending his first Council meeting in Salt Lake City, UT on March 8, 2001.

The CAOHC Council welcomes these two new representatives on the Council and looks forward to working with them on CAOHC projects and objectives.

NHCA 26th Annual Conference

The National Hearing Conservation Association (NHCA) will hold their 26th annual conference in Raleigh-Durham, North Carolina, February 22-24, 2001.

Full day workshops will be held on such topics as: Accurate Selection of HPDs—Practical Guidelines for the Hearing Conservationist; Noise Exposure Assessment; Hearing Critical Jobs:Decisions & Analysis; and OAEs: Prediction of Problems from Noise. Friday and Saturday presentations include; Hearing Conservation in Construction; Noise in Mining; and Keeping Noise-Induced Hearing Loss in the Public Eye.

Visit the exhibition area to see the latest in hearing conservation products and services. Also included as part of the conference will be Poster Sessions and the HINT TEST. For further information contact the NHCA office at (303) 224-9022, e-mail to nhca@gwami.com. or visit our website at www.hearingconservation.com.

COUNCIL MEETING & COURSE DIRECTOR WORKSHOP - SPRING 2001

The Spring 2001 Council meeting has been scheduled for Thursday, March 8, 2001 in Salt Lake City, Utah at the Embassy Suites Hotel.

This meeting will be followed on Friday, March 9, 2001 with a Course Director Workshop. This workshop is for applicants completing the requirements to become certified as a Course Director or CDs wishing to re-certify via the workshop method. Contact Barbara Lechner at 414/276-5338 on how to become a Course Director or reference the CAOHC web site at www.caohc.org.

OHC Corner

Cerumen Management

By Paul J. Brownson, MD, FACOEM, FAAFP
Representative of the American College of Occupational and Environmental Medicine

Approximately 2-6% of the general population is afflicted by cerumen (earwax) impaction. Some of the known causes of cerumen impaction include abnormal external earcanal anatomy, occlusion by a hearing aid mold, associated dermatosis, and misguided attempts to remove wax via instrumentation[1]. Each week in the United States, it has been estimated that approximately 150,000 cerumen removals take place[2]. Otologic complications include failure to succeed in cerumen removal (which is the most common complication), pain, perforated eardrum, dizziness, bleeding and infection. This article provides some guidance on cerumen management for the OHC and the OHC's professional supervisor, focused on simple measures the OHC may recommend to the individual prior to referral to an audiologist or physician. It is suggested that the OHC and the professional supervisor review cerumen management issues, and establish a plan or protocol for dealing with cerumen problems.

What is cerumen (earwax)?

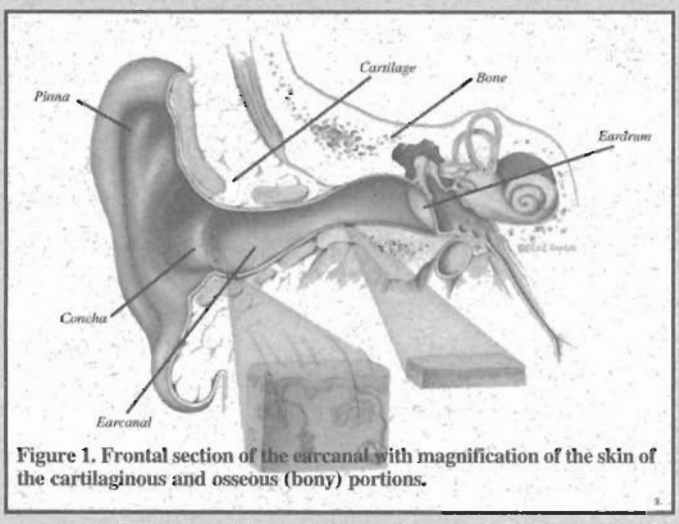


Figure 1. Frontal section of the earcanal with magnification of the skin of the cartilaginous and osseous (bony) portions.

The outer ear is the funnel-like part of the ear you can see on the side of the head, plus the earcanal (the hole which leads down to the eardrum). The earcanal is shaped somewhat like an hourglass—narrowing part way down its length. The skin of the outer part of the canal has special glands, the ceruminous and sebaceous, that produce cerumen (earwax). Earwax functions to trap dust and sand particles to keep them from reaching the eardrum. Usually the wax accumulates a bit, then dries up and comes tumbling out of the ear, carrying sand and dust with it. Or it may slowly migrate to the outside where it is wiped off. Wax is not formed in the deep part of the earcanal near the eardrum, but only in the outer part of the canal.

Earwax is healthy in normal amounts and serves to coat the skin of the earcanal where it acts as a temporary water repellent. In addition to its water repellant effect, earwax may enhance resistance to infection of the earcanal, possibly related to the normally acid pH of earwax. In diabetics, earwax has been found to be less acid, and less protective[1]. The absence of earwax may result in dry, itchy ears. Most of the time the earcanals are self-cleaning. That is, there is a slow and orderly migration of earcanal skin from the eardrum to the ear opening. Old earwax is constantly being transported from the earcanal to the ear opening where it usually dries, flakes, and falls out[3].

When an individual has wax blocked up against the eardrum, it is often because s/he has been probing their ear with such things as cotton-tipped applicators, bobby pins, or twisted napkin corners. Such objects only serve as ramrods to push the wax in deeper. Also, the skin of the earcanal and eardrum is very thin and fragile and is easily injured. Continual rubbing of the earcanal with a cotton-tipped applicator can abrade the skin and promote an infection. Individuals who wear hearing aids may also develop an accumulation of earwax because the hearing aid or earmold prevents the normal migration of the wax to the outside. Individuals who wear such devices should always have their health care provider inspect their earcanals for accumulation of cerumen.

When wax has accumulated so much that it blocks the earcanal (and reduces hearing), the individual's audiologist or physician may have to wash it out, vacuum it with suction devices, or remove it with special instruments. The professional issues and techniques of earwax removal have been reviewed elsewhere[4]. The physician may prescribe ear drops that are designed to soften the wax. Available products include prescription only (such as Cerumenex) and over-the-counter products (OTC) such as Debrox, or Murine Ear Drops, Audiologist's Choice (distributed through audiologists and same as Debrox or Murine), or straight hydrogen peroxide (3%)[5]. While the OTC drops are not as strong as the prescription earwax softeners, they are effective for many individuals, and are less likely to cause irritation or allergic reaction.

The OHC's role:

With appropriate training the OHC will recognize potential cerumen impaction from the otoscopic exam. Under the professional supervisor's guidance and with careful review of contraindications, the OHC may recommend use of ear drops to facilitate cerumen removal. A history of perforation of the tympanic membrane, the presence of myringotomy (PE) tubes, or cerumen impaction in the only hearing ear are universal contraindications for cerumen management by ear canal irrigation; such cases should be referred to the individual's physician or otolaryngologist[6]. Relative contraindications which also suggest need for referral to an employee's physician or otolaryngologist include recent earache, history of ear surgery, chronic otitis media, drainage, dizziness, diabetes mellitus, AIDS, or any other condition that would put the individual at risk[4].

The OHC may wish to provide to the individual with suggested instructions for use of over-the-counter ear drops, as in the attached box.

Suggested Use of OTC Ear Drops . . .

continued on page 8

References

1. Jabor MA, Amedee RG. Cerumen Impaction. J La State Med Soc. VOL 149, 358-362 (October 1997). 2. Grossan M. Cerumen Removal—Current Challenges. Ear, Nose & Throat Journal 77(7): 541-46, 544-46, 548 (1998). 3. Earwax...and what to do about it. brochure of American Academy of Otolaryngology-Head and Neck Surgery, Inc. (1995), One Prince Street, Alexandria, VA 22314-3357. 4. Wilson PL, Roeser RJ. Cerumen Management: Professional Issues and Techniques, J Am Acad Audiol 8:421-430 (1997). 5. Freeman RB. Impacted cerumen: How to safety remove earwax in an office visit. Geriatrics, 50(6): 52-53 (June 1995). 6. Davidson, TM. Ambulatory Healthcare Pathways for Ear, Nose, and Throat Disorders: Cerumen Extraction (Ear Wax). USCD Otolaryngology-Head and Neck Surgery. February 4, 2000.

Attention! Professional Supervisors of Audiometric Testing Programs: Seminars at AOHC

The OSHA Noise Standard, 29CFR 1910.95, specifically states that "the employer shall administer a continuing, effective hearing conservation program." As part of that effort, both OSHA & MSHA require that technicians performing audiometric testing be responsible to an audiologist or physician (i.e. "Professional Supervisor"). The professional must also review audiograms.

CAOHC is offering: A one-day seminar at the American Occupational Health Conference (AOHC) on Tuesday, April 24, 2001 entitled: **The Role and Qualifications of the Professional Supervisor in the Occupational Hearing Conservation Program. Seminar #6201**

Upon completion, participants will be able to:

- Define the role of the professional supervisor in an occupational hearing conservation program.
- Explain the standards and regulations that apply to hearing conservation programs.
- Discuss problem audiograms, standard threshold shifts, and the essential elements of a quality hearing conservation program.

The seminar will cover basic knowledge of acoustics and sound, physics, anatomy and physiology of normal human hearing and basic audiometry. Standards and regulations that apply to hearing conservation programs will be presented. The medical-legal aspects of noise-induced hearing loss will be identified. This seminar will be conducted by CAOHC Council members Peter Weber, MD FACS, Myrna Stephens, PhD CCC-A, Michael Holthouser, MD MPH, and Theresa Schulz, PhD CCC-A.

In addition, a half-day practicum entitled **Practicum in the Use of Hearing Conservation Tools and Methods Seminar #2312** will be offered on Monday, April 23,2001. This practicum will familiarize participants with the tools used in a hearing conservation program. (i.e. audiometer, noise level meter, octave band analyzer, dosimeter)

You may register for either of these seminars by referencing Postgraduate Seminar # 6201 for the Role & Qualifications of the Professional Supervisor and #2312 for the half-day practicum by phoning 847/818-1800 or faxing 847/818-9265. You may also access ACOEM's web site at http://www.acoem.org

CAOHC Chair Interviewed!

Check out the website www.AudiologyOnline.com to read an interview with our CAOHC Council Chair, Peter Weber, MD MBA FACS. Dr. Weber was interviewed on October 27, 2000.

CAOHC Exhibiting at AOHC

The American Occupational Health Conference (AOHC) will be held in San Francisco, CA April 24-26, 2001at the Moscone Convention Center. This meeting of the American Association of Occupational Health Nurses and the American College of Occupational & Environmental Medicine is the premiere meeting for occupational health nurses, physicians and allied health professionals. Over 4,700 attendees are expected and over 50% are occupational health nurses.

CAOHC has been exhibiting at this conference for several years and will be there again in April at **Booth #104.**

Barbara Lechner, of the CAOHC Executive staff will be there, so ... stop by and introduce yourself, we always look forward to meeting you personally!

Health Nurses Partner with CAOHC at AOHC

The American Association of Occupational Health Nurses (AAOHN) invited CAOHC to present a joint seminar with the American College of Environmental Medicine (ACOEM) at the 2001 American Occupational Health Conference (AOHC) in San Francisco, CA.

The title of the session is "Evaluating and Improving the Effectiveness of Your Hearing Conservation Program." This session will be presented on Sunday, April 22, 2001, 1-4:30 PM at the Moscone Convention Center. This seminar is designed to assist participants in evaluating their hearing conservation program. Participants identify weaknesses and methods for improvements. The essentials of the hearing conservation program are presented along with ways in which each area can be made more effective. Case studies are presented to demonstrate various types of pathology and the appropriate referral processes. The faculty addresses problems specific to the participants.

Objectives include:

- Describe the components of an effective hearing conservation program to determine whether their program meets requirements.
- Describe ways of improving key areas of a hearing conservation program including audiometric testing, hearing protection, employee education, record keeping, and referral process.
- Discuss selection of members of an effective hearing conservation team.
- Explain how to develop methods for solving problems specific to hearing conservation programs.

This seminar will be conducted by CAOHC Council members Peter Weber, MD FACS, Myrna Stephens, PhD CCC-A, Michael Holthouser, MD MPH, and Theresa Schulz, PhD CCC-A.

To register for this seminar #909, please contact: AOHC, PO Box 71732, Chicago, IL 60690-1732; phone 847/818-1800 or fax 847/818-9265. You may also access ACOEM's web site at http://www.acoem.org

Noise is All Around and Your Ears Can't Tell the Difference

Hearing loss, in most cases, is the result of a lifetime of accumulation of exposure to noise from various sources. Although the damage caused by exposure to gunfire may be different from that caused by exposure to continuous noise (see "What Makes Firearm Noise So Dangerous", inside), the end result is the same — loss of your ability to hear. The total of all exposure to all hazardous noise adds up to the result in your ability — or lack of ability — to hear.

Exposure to continuous noise for long periods of time, like in a factory or on the farm, can damage hearing, too. Here are a couple of ways to determine whether the noise you are in, be it in your car, on the job, from using power tools at home, or in a nightclub, could result in damage to your hearing.

- If you have to **raise your voice** to be heard at a distance of three feet or so, sound levels are probably approaching 85 decibels or dB. That's about the level where regular long-term exposure can result in permanent damage.
- **Tinnitus** or ringing in the ears is a sign of potential damage. If you hear a ringing or rushing sound in your ears after leaving a noisy environment, it was probably too loud.
- **Temporary Threshold Shift** or TTS is a temporary loss of hearing. After exposure to loud noise, you may lose some hearing, then recover after a "rest period" in quiet. If conversation sounds muffled or unclear after leaving a noisy area, or if you have to turn up the radio in your car to make it sound the same as before, it's likely that you overloaded your hearing system.

Shooters are at Risk

Recreational shooting for hunting or sport purposes has become an increasingly popular leisure-time activity. In the US, as many as 60 million people engage in shooting activities, with firearm use ranging from a few shots per year for the casual hunter to 10,000 or more shots per year for avid competition shooters.

Although most serious shooters will use appropriate hearing protection devices (HPDs) during extended sessions on the firing range, many do not protect their hearing during shorter sessions. In addition, since the ability to hear all environmental sounds is paramount in hunting activities, few individuals are willing to use HPDs in the field.

Too often, exposure to firearm noise results in serious, irreversible harm to the shooter's hearing. This Practical Guide is intended to provide information to shooters and the hearing health professionals who help them so that they will understand the hazards of firearm noise and the actions they can take to protect their hearing.

For more information, contact:

NHCA

National Hearing Conservation Association
9101 Kenyon Avenue, Suite 3000
Denver, CO 80237
303-224-9022 (V), 303-770-1812 (F),
nhca@gwami.com (E-mail)
http://www.hearingconservation.org (Internet)

Printed on recycled paper

NHCA thanks Dr. Michael Stewart of Central Michigan University, Mt. Pleasant, Michigan and Barbara Garrett of St. Luke's Hospital, Cedar Rapids, Iowa, for their contributions to this pamphlet.

3.98 version

Guide #7

A practical guide to:

Firearm Use and Hearing

NHCA

National Hearing Conservation Association

The mission of the National Hearing Conservation Association is to prevent hearing loss due to noise and other environmental factors in all sectors of society.

What Makes Firearm Noise So Dangerous?

Unlike loud continuous noise that causes gradual hearing loss over a long period of time, firearm noise can cause severe instantaneous hearing loss with as little as one exposure.

Gunfire is an intensely loud impulse noise that shatters the acoustic environment with incredible concussion, generating a rapid change in pressure and extremely high sound levels.

Although impulse type noise only lasts for a few thousandths of a second, the extreme force it generates has the potential to destroy the delicate tissue in the inner ear if the sound level reaches a critical level.

This critical level varies from person to person, with some people more susceptible than others to noise-induced hearing loss (NIHL), whether it comes from steady industrial types of sound or the impulse noises associated with gunfire.

Why Can't I Understand My Family?

Because NIHL generally involves more hearing loss in high frequencies than in lower, bass ranges, a person with NIHL can usually hear louder, low frequency vowels better than softer, high frequency consonant sounds. This means that although they may be able to hear speech, they may not be able to understand it clearly. For example, the difference between "mine", "kind", and "time" is very hard for someone with NIHL to pick out.

Often, people with NIHL think that others mumble. People with NIHL sometimes give the impression that they are not listening, when in fact, they just don't understand. Many times people with NIHL also have a ringing or roaring in the ears called tinnitus that can be extremely annoying.

How Loud Is Too Loud?

Although there are no clearly defined allowable noise exposure limits for gunfire like those enforced in industrial settings, the Environmental Protection Agency (EPA) has estimated that exposure to one impulse noise per day over about 150 dB has the potential to damage hearing over time. Most shotguns, high power rifles, and pistols can produce sound levels that high or higher.

Large caliber, short-barreled guns that can be rapidly fired are the most dangerous to your hearing.

Modifying the barrel of a gun by drilling holes to reduce recoil (like a muzzle brake) increases sound exposure by sending the shock wave back toward the shooter instead of out of the front of the gun through the barrel. In addition, shooting from an enclosed structure like a duck or deer blind can significantly increase the noise levels reaching to the ear of the shooter.

During Target Practice

Most hearing protection devices (HPD) with a labeled noise reduction rating (NRR) on the package will be adequate for shooting situations when consistently and correctly utilized where hearing verbal communication or environmental sound is not critical. Choose an HPD that attenuates sound adequately and is comfortable to wear for long periods of time. For the ultimate in protection, wear insert type plugs under earmuffs. Using HPD can actually help improve your aim because you will flinch less in anticipation of the "big boom" of your gun.

Ask your audiologist or hearing health professional for more information

What Can I Do to Protect My Ears?

While Huntings

Because most hunting involves listening for approaching game, wearing conventional HPDs is not practical in the field. However, there are two solutions to this problem.

1 Use a specially designed level-dependent HPD with a filter or valve mechanism to let more low level sounds pass and yet provide increasing protection with increasing sound level.

2 A more costly option is to use electronic hearing protective devices (EHPDs). The basic EHPD consists of a microphone, amplifier, volume control, and battery, housed either in a headset, a behind-the-ear (BTE) device, or an in-the-ear (ITE) configuration. The amplifier increases low and moderate level sounds that can improve hearing ability, but is also equipped with a special circuit which prevents loud sounds from reaching damaging levels in the ear. Each type has advantages and disadvantages, as listed below.

EHPD Type	Advantages	Disadvantages
Headset	Least expensive, high amplification, good protection	Bulky, uncomfortable for long periods of use, excessive wind noise, poor localization of sounds
BTE	Moderate amplification, good localization of sounds	More expensive than headset, some types may be uncomfortable, some wind noise
ITE	Moderate amplification, good protection, good comfort, best localization of sounds, least wind noise	Most expensive

Hearing Conservation Program Protects Employer from Racketeering

by John Erdreich, PhD
Representative of the Institute of Noise Control Engineering

It wasn't quite *Murder on the Orient Express,* but one afternoon we received a call to investigate apparent hearing losses that had suddenly developed at two newspaper plants. It seems that there was a sudden rash of severe hearing loss in the newspaper delivery drivers.

This created concern among the lawyers processing the compensation claims for the employer. Were the noise levels the drivers were exposed to so high to cause permanent, compensable loss of hearing? My firm was asked to investigate and to determine employee exposures. The details of the legal complaint reads like a detective novel. See: *United States District Court for the Southern District of New York [93 Civ. 7222 (LAP)].*

The primary purpose of an effective hearing conservation program is to protect employee's hearing. Of course, the first phase of an effective hearing conservation program is to document the workplace acoustical environment. But the newspaper delivery drivers didn't spend time in the places where high noise exposure was expected. They would arrive at work, transact some business in an office, wait near conveyors where newspapers were bundled and loaded on their trucks, and then drive throughout the metropolitan area delivering bundles of papers. An exposure survey for these employees had never been carried out since it was thought that their exposures were under 85 dBA TWA.

There are other purposes for a hearing conservation program. My firm has maintained that the data developed in a properly conducted hearing conservation program has at least two benefits to the employer. First, it is crucial to the protection of employee hearing and the early identification of potentially problematic noise exposures. Second, audiometry conducted by knowledgeable technicians under the supervision of a professional experienced in the evaluation of the industrial patient may serve to support the defense of claims for occupationally caused noise-induced hearing loss.

Dose Response

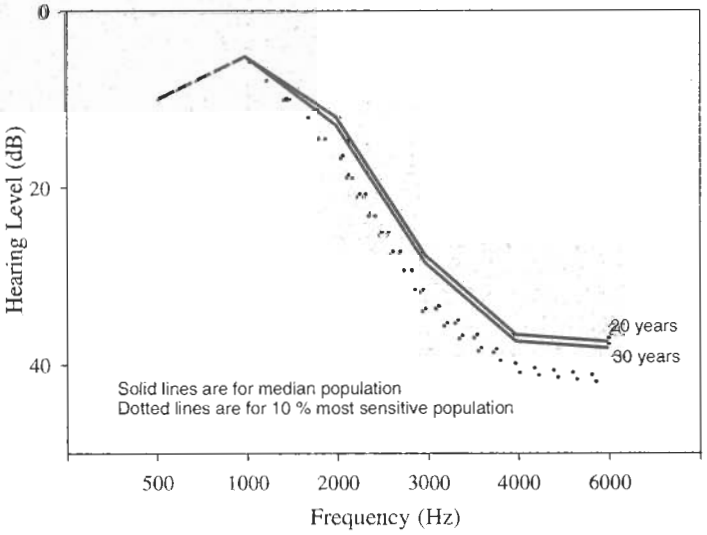
We recognize that over the past forty years rigorous, scientifically defensible dose/response relations have been established between noise exposure and the development of threshold deficits. These relationships have been widely published as International (ISO 1999-1990) and National (ANSI S3.44-1996) Standards. These documents provide a basis on which to compare the hearing thresholds exhibited by an individual exposed to noise with the hearing thresholds of a large population of individuals similarly exposed. Furthermore, because the standards are based on a large body of data, it is possible to predict the hearing thresholds of individuals with a range of sensitivities to the effects of noise exposure.

Keep in mind, however, that the standards do not predict the thresholds of any particular noise-exposed worker. They only permit comparisons between an individual and a group.

An example of the data provided in the standards is shown in the first figure. The figure shows the expected hearing threshold for a male, age 50, exposed to 90 dBA TWA for 20 and 30 years. The curves shown represent the population of average susceptibility to noise and the most sensitive 10 percent of the population.

We also know, from the age adjustment tables in the OSHA Hearing Conservation Amendment, that as a population ages, its hearing, on average, becomes poorer. This suggests that if audiograms from a large group of workers of widely varying ages were compared, we should expect to find a range of hearing thresholds. It follows that if the workers were exposed to levels of noise insufficient to cause hearing loss, workers of different ages should exhibit different audiometric profiles. Any departure from these findings is cause for consternation.

Expected Thresholds for Male Age 50 with 20, and 30 Years Exposure at 90 dBA TWA



Initial Investigation

Measurements of sound in the areas where the employees transacted their business and waited for the truck loading to be completed revealed levels in the mid-to-high 70-dBA range. The employees spend approximately two hours at this location before leaving on deliveries.

The relatively low level of the noise exposure prompted us to ask for a sample of audiograms of the claimants for further analysis. As the noise exposures were so low, we wanted to know what thresholds were shown by some of the claimants. The attorneys provided a sample of eighty audiograms.

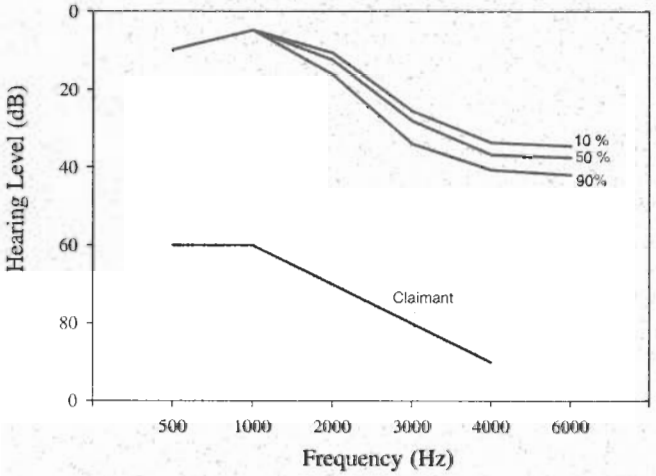
Insufficient Noise Levels: Comparison of Hearing Threshold with ANSI Standards

The second figure (shown below) indicates a comparison of the threshold of an employee in this case with the thresholds predicted for the population by the standards (named previously in this article). We found that the hearing levels claimed by the employees did not all show a typical 3-kHz notch pattern for NIHL, and exhibited losses which were substantially more severe than would be predicted for the measured noise exposures.

continued on page 8

Racketeering continued from page 7

Comparison of Claimant Threshold with Expected Thresholds for Male of Same Age with 30 Years Exposure at 90 dBA TWA



Distribution of Hearing Levels

A further discrepancy was found in the hearing thresholds themselves. The employees ranged in age from 26 years to over 70 years old. All the hearing thresholds however, fell within approximately 10 dBA of one another. For this range of ages, considering different sensitivities of individuals to noise and different rates of development of presbycusis, a range of 40 dBA would be more typical.

Miraculous Recoveries

These findings were very suspicious. As a result, the attorneys investigated further by having several of the claimants reexamined by an audiologist who was experienced in dealing with evaluation of claimants for compensation of NIHL [noise-induced hearing loss]. They also found that the drivers had recently undergone medical tests to re-qualify for their commercial driver's licenses - tests that included audiometric testing. All had passed the medical tests.

"In many cases, after comparing the results of the audiogram with the results of the tests referred to above, and noting they were not consistent, [the audiologist] then informed the claimants of the inconsistency and explained to them that the claimant's initial audiogram could not be accurate. In a number of cases, the claimants then responded accurately during a subsequent audiogram ... the results of which revealed that those claimants do not have a binaural loss of hearing." *See: United States District Court for the Southern District of New York [93 Civ. 7222 (LAP)].*

The Final Result

One test case was brought before a Worker Compensation Board Administrative Law judge for adjudication. After many hours of testimony the judge dismissed not only the test case, he also dismissed the remaining claims finding them fraudulent. The legal team had uncovered numerous irregularities in the claims. The employer filed a civil action under the Racketeering in Corrupt Organizations (RICO) law against the employees, their attorneys, and the physician who examined them. Under the RICO Act, a successful plaintiff may recover treble damages which is the relief sought in this action. "Plaintiffs have suffered damages to date to be determined but believed to exceed $3 millions a direct and proximate result of the defendants' unlawful conduct." *See: United States District Court for the Southern District of New York [93 Civ. 7222 (LAP)].*

State of Oregon OSHA Changes Position on Recordability of Occupational Hearing Loss

Editor's Note: Recordability of occupational hearing loss, and application of age corrections, have been confusing and contentious issues since the hearing conservation amendment was promulgated in 1983. Recordability (for purposes of tracking a program) has been treated separately by OSHA from STS determinations. The following memorandum from Oregon OSHA clarifies and changes their position on use of age corrections. Please note: this memorandum applies to the state of Oregon ONLY, this is not a Federal OSHA memo.

This memo [from the Oregon OSHA office] is to clarify requirements for: Logging Occupational Hearing Loss on the OSHA 200 form.

In the early 1990's we adopted most of the Federal Noise standard with a few exceptions. One exception was not allowing the use of presbycusis charts (age correction factors) when evaluating an employee's yearly hearing test to determine if a Standard Threshold Shift had occurred. The practice of not using the charts for this STS determination is supported by NIOSH. Since the annual test is not to determine the causation of the hearing loss but rather screen and refer problems to a specialist, educate, refit with hearing protection and motivate employees, we are using a conservative proactive method to ensure employee protection.

In the past, since we did not adopt the presbycusis charts, we did not allow the use of them when determining recordability of hearing loss on the OSHA 200 log. We now will allow the use of the age correction charts only when determining what cases should be recorded on the OSHA 200 log.

The rationale for allowing this is that the federal rule allows the use of the charts for both determining the STS as defined in the rule and for logging the hearing loss on the OSHA 200. Oregon OSHA does not allow the charts for either. This inconsistency will result

State of Oregon OSHA Changes *continued on page 10*

Suggested Use of OTC Ear Drops. . . *continued from The OHC Corner page 3*

Suggested Use of OTC Ear Drops as Ear Wax Removal Aid:

1. **For use in the EAR ONLY: Do not use if the individual has a history of perforation of the eardrum (including myringotomy or tympanostomy tubes) or prior ear surgery unless directed by a doctor, ear drainage or discharge, ear pain, irritation or rash in the ear, dizziness, diabetes mellitus, AIDS, chronic otitis media, or any other condition that would put the individual at risk.**
2. Adults and children over 12 years of age: tilt head sideways and place 5-10 drops into the ear (tip of applicator bottle should not enter ear-canal).
3. Keep ear drops in ear for several minutes by keeping head tilted or by placing cotton in the outer part of the earcanal.
4. Use 2 times daily for 3-4 days if needed, or as directed by your doctor or audiologist.
5. Any wax remaining after treatment may be removed by gently flushing the ear with warm water, using a soft rubber bulb syringe.
6. If excessive earwax remains after use of the drops, consult a doctor or audiologist.
7. Children under age 12 should consult a doctor.
8. Do not use for more than 4 days unless directed by a doctor.
9. Avoid contact with the eyes.

Engineered Noise Control Solution

continued from page 1

Since noise control engineering *should* be a part of any effective corporate hearing conservation program, a basic familiarity with noise control concepts and techniques will be helpful to all OHCs who work in a corporate or plant setting. This article, which is the first in a series on engineering approaches to reducing occupational noise exposure, will discuss the benefits of engineered noise controls and present a process that OHCs may follow to assess any noise exposure problem prior to involving a noise control engineer. The remainder of the series will cover concepts that are the critical to the solution of every noise control problem: the three general approaches to engineered noise controls and the basic properties of acoustical materials. Specific examples of each type of approach will be discussed, including "do-it-yourself" noise control solutions that every OHC can easily implement to fix some very common noise exposure problems.

Within the context of the hearing conservation program, engineered noise controls should have a stature equal to that of audiometric testing, employee training and the wearing of personal protective equipment. Although engineered noise controls are often perceived as being a peripheral element of the hearing conservation program, in fact, well-designed engineered controls offer benefits beyond what can be achieved with even the most comprehensive and well-managed implementation of non-engineered approaches. The aggressive implementation of engineered noise control solutions can offer the following benefits, depending on whether the particular solution reduces only the employee's noise exposure or the actual sound level in the work area as well:

- reduced cost and administrative burden of the hearing conservation program;
- hearing loss prevention as well as regulatory compliance;
- reduced reliance on employee participation in other program elements (e.g., audiometric testing and use of personal hearing protection) as an essential factor in hearing loss prevention (or regulatory compliance);
- improved productivity, speech communication, concentration and safety; and
- removal of noise-related operational restrictions that limit the hours of operation and/or the total duration of operation, including those imposed for reasons other than hearing conservation (e.g., community noise issues).

When evaluating noise exposure problems as potential candidates for an engineered noise control solution, the above factors can serve as a checklist to help the OHC determine, for each problem, whether an engineered solution will be more cost effective than other alternatives. In particular, determining which of the above factors are relevant (and which are the most important) issues in each situation is an important first step in assessing and selecting the most effective noise control approach for that particular situation.

For instance, some approaches will reduce employee noise exposure but may not necessarily reduce the amount of noise that is generated by the equipment or process. Such an approach may be quite effective in one situation while not adequate in other cases. That assessment should take into account considerations such as:

- the number of employees who work in the (noisy) area;
- the specific tasks, locations, and movement within the work area that is required in order to perform the job;
- the amount of time in the noisy area that is associated with the above activity;
- whether employees are expected to communicate with each other or on radios or telephones while working in the noisy environment;
- the nature and frequency of other auditory signals that employees must be able to hear clearly (e.g., paging, alarms, etc.);
- existence and location of any nearby quiet spaces where employees may rest, perform other tasks and communicate with each other or use the telephone;
- the size and physical characteristics of the (noisy) building or room where the work activity takes place;
- whether the noise is adequately contained in the work area or also poses a hazard (or an annoyance) for passersby, adjacent work areas or the community;
- the nature of the equipment or process that is generating the noise; and
- the characteristics of the noise itself (e.g., sound level, time characteristics, frequency spectra).

The last item on the list is clearly the responsibility of the noise control engineer, who will undoubtedly acquire detailed noise measurements at the outset of the project. The recommendations he or she makes will depend as much on the information the OHC provides about the first nine items as on the characteristics of the noise. The OHC will be best prepared to discuss the range of solution options and the relative benefits of each option after spending some time researching and documenting all of the items on the above list.

An essential part of the OHC's preparation for initiating a noise control project is a productive liaison with the exposed employees and their management. The process of developing an engineered noise control solution is really a collaborative activity that relies heavily on the support and contribution of the employees who will be expected to work with or near the particular noise control equipment after it is installed. The installed controls will be most effective, and the process by which those effective controls are developed will be most valuable, if the input of the exposed employees is sought and given a high priority early on, *before* a solution approach is selected. Ideally, the exposed employees and their management should be brought into the planning activity prior to involving a noise control engineer. It is important that the noise generating equipment and the work process are well understood, along with any other factors that may constrain the selection, design or implementation of the noise control solution. If the expectations and limitations of the engineered controls are agreed to beforehand, it is more likely that the controls will be functional, compatible with the operation and accepted by the employees who must accommodate and maintain those controls.

(to be continued)

International Noise Awareness Day

April 25, 2001 will mark the sixth annual International Noise Awareness Day, sponsored by the League for the Hard of Hearing. What started out as a local effort to address the increasing noise levels in New York City, quickly became an international event with participants in every state in the U.S. as well as 39 foreign countries.

The goal of International Noise Awareness Day remains the same since its inception - to educate the public about the harmful effects of noise on hearing, health and the quality of life. The League for the Hard of Hearing distributes packets of information to all participants who then coordinate activities in their places of business, schools and local communities. Media involvement has been extensive with coverage in national and local television, radio and print outlets.

While the goal of the Noise Center at the League for the Hard of Hearing, like that of CAOHC, is to inform the public about the hazards of noise all year round, International Noise Awareness provides the opportunity to join forces with other hearing conservationists and anti-noise activists worldwide to not only raise awareness about the dangers of noise, but offer solutions for protection against noise.

The Council for Accreditation in Occupational Hearing Conservation has been an active participant in International Noise Awareness Day for several years. CAOHC has publicized INAD in its newsletter UPDATE, resulting in numerous companies across the country offering educational programs on hearing conservation to their employees on INAD.

What you can do on International Noise Awareness Day:
A variety of activities are planned for International Noise Awareness Day. Among the many activities planned:

Free Hearing Screenings - Private audiologists and speech and hearing clinics will help to celebrate International Noise Awareness Day by providing free hearing screenings to the public. (Check www.lhh.org/noise for locations)

Dissemination of Hearing Protection - Hearing protection will be distributed on International Noise Awareness Day at hearing screenings, town meetings, various places of business and college campuses.

Town meetings to "Sound Off on Noise" - Town meetings will be scheduled in various communities on International Noise Awareness Day to provide a forum for community residents to voice their concerns about noise. Local police departments, representatives from the Department of Environmental Protection and local politicians will be invited to attend these meetings.

Publicity - Participants in International Noise Awareness Day will hold press conferences in their local areas. Press releases and public service announcements on television and radio stations will involve the media and help to promote the important message that noise hurts.

City/State Proclamations - Mayoral and Gubernatorial Proclamations in celebration of International Noise Awareness Day will be obtained.

Community Outreach - Develop Your Own Anti-Noise Group and speak out about the harmful effects of noise in your community. Analyze (or develop) your local noise codes and follow the Noise Center's steps in handling a noise complaint.

Letter Writing Campaign - Participate in the Noise Center's Letter Writing Campaign to re-establish the Environmental Protection Agency's Office of Noise Abatement & Control.

Participating in International Noise Awareness Day is easy. Simply contact the Noise Center at the League for the Hard of Hearing at 888-NOISE-88 or by email to *noisectr@aol.com* and request an INAD packet of materials. Use INAD as an opportunity to educate the people with whom you work about ways to protect their hearing at work, at home and in recreational activities. Consider visiting a local school and providing a lesson on noise and hearing. Hang posters in schools, work and stores. And, contact your local media. On International Noise Awareness Day we can come together and speak up on noise - to the ultimate success of all our efforts, across our many fields and disciplines.

State of Oregon OSHA. . .
continued from page 8

in higher and erroneous incidence rates for Oregon, since some of the recorded cases might be the result of aging. The level of protection for the employees will not be affected if we allow the use of the charts only in the recording of the illness.

ACTION

- The rule will remain unchanged. The presbycusis charts can't be used to determine if a standard threshold shift has occurred, as defined by the rule.
- The use of the presbycusis charts can be used when determining if a case is recordable.

(This memo prepared by Marilyn Schuster, Manager of Standards and Technical Services, Oregon Occupational Safety & Health Division and distributed to Oregon state OSHA offices August 4, 2000.)

Course Director Workshops Scheduled for 2001

If you are interested in becoming a Course Director and meet the qualifications described in the "Course Director Certification and Recertification Requirements" brochure, please apply now! After your application is approved by the Screening Committee, you must then complete a one-day Course Director workshop. The Spring Course Director Workshop will be held in Salt Lake City, Utah on Friday, March 9, 2001 at the Embassy Suites Hotel.

The Fall Course Director Workshop will be held in Baltimore, Maryland on Monday, October 1, 2001 at the Embassy Suites Hotel BWI.

You may contact Barbara Lechner at the CAOHC office at 414/276-5338 or e-mail info@caohc.org for more information, or access the CAOHC web site at http://www.caohc.org

Course Directors currently certified who wish to re-certify via the workshop method may also attend.

UPCOMING OHC CERTIFICATION AND RECERTIFICATION COURSES* 2001

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

Approved as of December 13, 2000 (for a complete list of courses visit our website at www.caohc.org)

Begin Date	City	State	Course Director	Phone
1/2/01	Pleasanton	CA	McDaniel, Mary	206/706-7352
1/2/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
1/4/01	Corpus Christi	TX	Elmore, John	800/357-5759
1/5/01	Beaufort	SC	Faulkner Gischia, Carol	Navy
1/5/01	Knoxville	TN	Ferrell, Charles	865/974-5453
1/9/01	Los Angeles	CA	McCall, Kirsten	360/886-9240
1/9/01	Durham	NC	Stewart, Andy	919/544-7500
1/10/01	Raleigh	NC	Elmore, John	800/357-5759
1/11/01	Elizabeth	NJ	Rhodes, Robert	713/468-3201
1/17/01	Boise	ID	Bowman, Rick	208/376-3591
1/17/01	Dallas	TX	Harris, Dean	970/586-0702
1/17/01	Brookfield	WI	Korabic, Edward	414/288-3428
1/22/01	Landstuhl	Germany	Fleener, Rhonda	Army
1/22/01	Pearl Harbor	HI	Bardolf, Lynette	808/433-8325
1/22/01	Whitewater	WI	Bradley, Scott	262/472-5202
1/23/01	Birmingham	AL	Meloy, Melette	678/363-9897
1/23/01	N.Kansas City	MO	Ratliff-Hober, Linda	816/221-1401
1/23/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
1/24/01	Daytona Beach	FL	Elmore, John	800/357-5759
1/24/01	Durham	NC	Stewart, Andy	919/544-7500
1/24/01	Amherst	NY	Nelson, David Todd	716/633-7210
1/29/01	Houston	TX	Deppensmith, Kathryn	713/869-6664
1/30/01	Seattle	WA	McCall, Kirsten	360/886-9240
1/31/01	Greeley	CO	Wells, Laurie	970/593-6339
2/5/01	Portland	OR	Atack, Rodney	503/614-8465
2/6/01	Atlanta	GA	Moore, Gregg	770/933-9236
2/6/01	Indianapolis	IN	Jerome, Jim	317/841-1065
2/6/01	St.Louis	MO	Thiele, Natalie	314/968-4710
2/7/01	Phoenix	AZ	Elmore, John	800/357-5759
2/7/01	Jacksonville	FL	Green, Nancy	904/880-1710
2/7/01	Iowa City	IA	Stephens, Myrna	319/355-7712
2/7/01	Charlotte	NC	Meloy, Melette	678/363-9897
2/7/01	Salt Lake City	UT	Cronin, Pamela	801/566-8304
2/8/01	Greensboro	NC	Cook, George	336/992-0034
2/12/01	Austin	TX	Rhodes, Robert	713/869-6664
2/12/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
2/14/01	Syracuse	NY	Swisher, Timothy	412/367-8690
2/14/01	Aiken	SC	Meloy, Melette	Private
2/19/01	Durham	NC	Stewart, Andy	919/544-7500
2/20/01	Woodfield	IL	Thunder, Thomas	847/359-1068
2/21/01	Birmingham	AL	Meloy, Melette	678/363-9897
2/21/01	W.Palm Beach	FL	Greenberg, Herbert	561/968-3536
2/26/01	Phoenix	AZ	Deppensmith, Kathryn	713/468-3201
2/26/01	Omaha	NE	Norris, Thomas	402/391-3982
2/26/01	Ft.Hood	TX	Tuten, Vickie	Army
2/28/01	Birmingham	AL	Holmes, Georgia	205/934-7178
2/28/01	Chapel Hill	NC	Bloyer, Cindy	816/471-3900
3/1/01	Montgomery	AL	Smith, Curtis	334/887-6302
3/2/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
3/3/01	Los Angeles	CA	McCall, Kirsten	360/886-9240
3/5/01	Louisville	KY	Elmore, John	800/357-5759
3/5/01	Ft.Sam Houston	TX	Byrne, Clyde	Army
3/6/01	San Francisco	CA	McCall, Kirsten	360/886-9240
3/6/01	Bellevue	WA	McDaniel, Mary	206/706-7352
3/7/01	Owensboro	KY	Etienne, Joseph	270/926-0418
3/7/01	Philadelphia	PA	Meloy, Melette	678/363-9897
3/7/01	Houston	TX	Rhodes, Robert	713/869-6664
3/8/01	Cincinnati	OH	Elmore, John	800/357-5759
3/12/01	Lexington	KY	Green, William	859/269-1526
3/13/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
3/14/01	Athens	GA	Meloy, Melette	678/363-9897
3/14/01	Durham	NC	Stewart, Andy	919/544-7500
3/14/01	Greensboro	NC	Cook, George	336/992-0034
3/19/01	San Francisco	CA	Deppensmith, Kathryn	713/468-3201
3/20/01	N.Kansas City	MO	Ratliff-Hober, Linda	816/221-1401
3/20/01	Durham	NC	Stewart, Andy	919/544-7500
3/21/01	Huntsville	AL	Meloy, Melette	678/363-9897
3/21/01	Dallas	TX	Harris, Dean	970/586-0702
3/22/01	Pittsburgh	PA	Angelelli, Roger	412/831-0430
3/26/01	New Orleans	LA	Rhodes, Robert	713/869-6664
3/27/01	Los Angeles	CA	Deppensmith, Kathryn	713/468-3201
3/27/01	Kansas City	MO	Bloyer, Cindy	816/471-3900
3/28/01	Philadelphia	PA	Swisher, Timothy	412/367-8690
3/31/01	Cleveland	OH	Elmore, John	800/357-5759
4/2/01	Portland	OR	Atack, Rodney	503/614-8465
4/4/01	Birmingham	AL	Holmes, Georgia	205/934-7178
4/4/01	Detroit	MI	Meloy, Melette	678/363-9897
4/4/01	San Antonio	TX	Elmore, John	800/357-5759
4/5/01	Greensboro	NC	Cook, George	336/992-0034
4/9/01	Woodfield	IL	Thunder, Thomas	847/359-1068
4/11/01	Orlando	FL	Elmore, John	800/357-5759
4/11/01	W.Palm Beach	FL	Greenberg, Herbert	561/968-3536
4/11/01	Marlborough	MA	Swisher, Timothy	412/367-8690
4/18/01	Durham	NC	Stewart, Andy	919/544-7500
4/24/01	Greensboro	NC	Bloyer, Cindy	816/471-3900
4/24/01	Greensboro	NC	Bloyer, Cindy	816/471-3900
4/25/01	Portland	ME	Hengen, C.Garth	508/832-8484
4/25/01	Brookfield	WI	Hase, Meredy	262/547-2227
4/27/01	San Francisco	CA	Elmore, John	800/357-5759
5/1/01	Seattle	WA	McCall, Kirsten	360/886-9240
5/2/01	Binghamton	NY	Hengen, C.Garth	508/832-8484
5/2/01	Columbia	SC	Meloy, Melette	678/363-9897
5/4/01	Dallas	TX	Elmore, John	800/357-5759
5/7/01	Normal	IL	Pollock, Gail	309/266-9949
5/7/01	Houston	TX	Rhodes, Robert	713/869-6664
5/8/01	St.Louis	MO	Bellamy, McKenna	314/968-4710
5/8/01	Durham	NC	Stewart, Andy	919/544-7500
5/8/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
5/9/01	Pittsburgh	PA	Swisher, Timothy	412/367-8690
5/11/01	St.Louis	MO	Thiele, Natalie	314/968-4710
5/15/01	Atlanta	GA	Moore, Gregg	770/933-9236
5/15/01	Kansas City	MO	Bloyer, Cindy	816/471-3900
5/15/01	N.Kansas City	MO	Ratliff-Hober, Linda	816/221-1401
5/15/01	Richmond	VA	Stewart, Andy	919/544-7500
5/16/01	Birmingham	AL	Meloy, Melette	678/363-9897
5/16/01	Dallas	TX	Harris, Dean	970/586-0702
5/16/01	Richmond	VA	Stewart, Andy	919/544-7500
5/17/01	Newark	NJ	Elmore, John	800/357-5759
5/21/01	Ft.Hood	TX	Tuten, Vickie	Army
5/23/01	Little Rock	AR	Rhodes, Robert	713/869-6664
5/23/01	Durham	NC	Stewart, Andy	919/544-7500
5/23/01	Pittsburgh	PA	Elmore, John	800/357-5759
5/31/01	Ft.Sam Houston	TX	Byrne, Clyde	Army
6/4/01	Woodfield	IL	Thunder, Thomas	847/359-1068
6/4/01	Portland	OR	Atack, Rodney	503/614-8465
6/4/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
6/5/01	Bellevue	WA	McDaniel, Mary	206/706-7352
6/6/01	W.Palm Beach	FL	Greenberg, Herbert	561/968-3536
6/6/01	Woodfield	IL	Thunder, Thomas	847/359-1068
6/6/01	Auburn	MA	Hengen, C.Garth	508/832-8484
6/6/01	Reno	NV	Deppensmith, Kathryn	713/468-3201
6/6/01	Harrisburg	PA	Swisher, Timothy	412/367-8690
6/6/01	Knoxville	TN	Meloy, Melette	678/363-9897
6/6/01	Houston	TX	Elmore, John	800/357-5759
6/7/01	Pittsburgh	PA	Angelelli, Roger	412/831-0430
6/12/01	Indianapolis	IN	Jerome, Jim	317/841-1065
6/12/01	Chapel Hill	NC	Moore, Gregg	770/933-9236
6/12/01	Durham	NC	Stewart, Andy	919/544-7500
6/13/01	Tuscaloosa	AL	Meloy, Melette	678/363-9897
6/13/01	Seattle	WA	Deppensmith, Kathryn	713/468-3201
6/14/01	San Antonio	TX	Elmore, John	800/357-5759
6/18/01	Albuquerque	NM	Rhodes, Robert	713/869-6664
6/18/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
6/20/01	Birmingham	AL	Holmes, Georgia	205/934-7178
6/20/01	Greensboro	NC	Cook, George	336/992-0034
6/20/01	Amherst	NY	Nelson, David Todd	716/633-7210
6/20/01	Houston	TX	Meloy, Melette	678/363-9897
6/21/01	Detroit	MI	Elmore, John	800/357-5759
6/25/01	Omaha	NE	Norris, Thomas	402/391-3982
6/27/01	Owensboro	KY	Etienne, Joseph	270/926-0418
6/27/01	New Orleans	LA	Rhodes, Robert	713/869-6664
7/2/01	Jamaica	W.Indies	Elmore, John	800/357-5759
7/10/01	Durham	NC	Stewart, Andy	919/544-7500
7/10/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
7/11/01	Birmingham	AL	Meloy, Melette	678/363-9897
7/11/01	Houston	TX	Rhodes, Robert	713/869-6664
7/11/01	Brookfield	WI	Hase, Meredy	262/547-2227
7/12/01	Chicago	IL	Elmore, John	800/357-5759
7/13/01	Brooks AFB	TX	Edris,RW Mjr	Air Force
7/16/01	Colorado Springs	CO	Deppensmith, Kathryn	713/468-3201
7/16/01	Baltimore	MD	Elmore, John	800/357-5759
7/17/01	N.Kansas City	MO	Ratliff-Hober, Linda	816/221-1401
7/17/01	Greensboro	NC	McCall, Kirsten	360/886-9240
7/18/01	Albany	NY	Swisher, Timothy	412/367-8690
7/18/01	Dallas	TX	Harris, Dean	970/586-0702
7/23/01	Brooks AFB	TX	Edris,RW Mjr	Air Force

PLEASE CONTACT THE CAOHC OFFICE AT 414/276-5338 FOR ADDITIONAL COURSE AVAILABILITY. PUBLICATION DATES MAY HAVE PRECLUDED SOME COURSE

For your convenience, you may now update your mailing name, address, company name, phone number, fax number, etc. via CAOHC's website address at www.caohc.org. Click on the button titled "ADDRESS UPDATE". Your mailing changes will be forwarded directly to our office e-mail system. For those of you without internet access, please see page 2 for CAOHC's address, phone, or fax number when forwarding address changes to the CAOHC office.

CAOHC Council Members and Their Represented Organizations

Chair
Peter C. Weber, MD MBA FACS
American Academy of Otolaryngology Head & Neck Surgery
Medical University of South Carolina
Charleston, SC

Immediate Past Chair
Ex-Officio
Susan Cooper Megerson, MA CCC-A
Associates in Acoustics, Inc.
Shawnee Mission, KS

Vice Chair
Theresa Y. Schulz, USAF, PhD MA BS CCC-A
Military Audiology Association
US Air Force
Brooks AFB, TX

Secretary-Treasurer
Merrie L. Healy, RN MPH
National Safety Council
Marsh, Inc.
Minneapolis, MN

James D. Banach, MBA
American Industrial Hygiene Association
Quest Technologies, Inc.
Oconomowoc, WI

Elliott H. Berger, MS INCE. Brd. Cert.
American Industrial Hygiene Association
E•A•R Hearing Protection Products
Indianapolis, IN

Paul J. Brownson, MD FACOEM FAAFP
American College of Occupational & Environmental-Medicine
The Dow Chemical Company
Indianapolis, IN

Beth A. Cooper, PE INCE. Bd.Cert.
Institute of Noise Control Engineering
NASA John Glenn Research Center
Cleveland, OH

Richard W. Danielson, PhD CCC-A
Military Audiology Association
Madigan Army Medical Center
Tacoma, WA

John Erdreich, PhD
Institute of Noise Control Engineering
Ostergaard Acoustical Associates
West Orange, NJ

Linda Frye, COHN-S MPH RN
American Association of Occupational Health Nurses
E.I. DuPont DeNemours & Co.
Richmond, VA

Robert A. Goldenberg, MD
American Academy of Otolaryngology-Head and Neck Surgery
Ear, Nose, and Throat Associates of Dayton
Dayton, OH

Michael G. Holthouser, MD MPH
American College of Occupational & Environmental Medicine
NortonSM Health Care, Inc.
Louisville, KY

George J. Krafcisin, CIH CSP
National Safety Council
National Safety Council
Itasca, IL

Gayle S. Rink, MS RN COHN-S
American Association of Occupational Health Nurses
Worthington, OH

Myrna M. Stephens, PhD CCC-A
American-Speech-Language-Hearing Association
Audiology Consultants, Inc.
Davenport, IA

Richard L. Stepkin, MS CCC-A
American-Speech-Language-Hearing Association
Enviromed Corp
Lindenwold, NJ

CAOHC®
Council for Accreditation in Occupational Hearing Conservation
611 East Wells Street Milwaukee, WI 53202-3816

Address Service Requested

BULK RATE
U.S. POSTAGE
PAID
MILWAUKEE, WI
PERMIT NO. 5438

Look for CAOHC on the INTERNET

http://www.caohc.org
or e-mail our office at info@caohc.org