CAOHC®

UPDATE

The Newsletter of the Council for Accreditation in Occupational Hearing Conservation

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Chair's Message

by Susan Cooper Megerson, MA CCC-A
CAOHC Chair, Representative of the American Speech-Language-Hearing Association

How many of you have formal customer service programs at your company? Today the business world has changed substantially. It's no longer enough to have a high quality product or service. In this era of fierce competition, a company's success is often dependent upon truly satisfying, downright delighting, customers.

So, what does this have to do with hearing conservation? In speaking with many OHCs over the years, the most successful among them have taken just this approach to their practice of preserving hearing in the workplace. It's often easy for those of us who oversee or consult to hearing conservation programs to think of ourselves as experts who know more about the topic than the employee. How many times have we found ourselves saying to a worker... "sure, that hearing protector is uncomfortable, but you'll get used to it" or "of course this noise guard will slow down production, but reducing the noise is more important." Yet, how often if we investigated a little further, worked a little harder, and thought a little more creatively, would we have helped more people? That is, if we think of the people we serve as our customers, how much more successful would we be in our jobs to protect their hearing?

Here are a few tips for maintaining a "customer-driven" Hearing Conservation Program:

- **Define each customer's needs:** You have many "customers" ... what is the impact of a change for the line employee, the supervisor, the plant manager, the safety representative and so on? What are their concerns...OSHA? Worker's Compensation costs? Worker safety? Understanding the different customer expectations and motivations will take you a long way toward developing a hearing conservation program (HCP) that will be successful in the long term.
- **Identify objections and concerns up front:** What are employee concerns that could get in the way of a successful HCP? For example, are employees nervous about cleanliness of hearing protectors? Is the supervisor wary of inadequate communication in noisy areas? Is the production manager anxious about production demands that don't allow "extra" time for conducting hearing tests? Identifying potential obstacles in advance will help you avoid unnecessary frustrations, so that you can build upon program successes more quickly.
- **Exceed expectations:** Always shoot beyond the minimum. If an employee's expectation is simply to receive results of audiometric testing in a timely manner, and your program can provide test results and recommendations on

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Hyperacusis

by Dan Malcore
Editor, Hyperacusis Newsletter

Editor's Note: The following article describes a horrible and debilitating auditory dysfunction. Although uncommon, when it strikes it can be devastating in its effect. Even worse, it is often misdiagnosed and misunderstood. UPDATE is publishing this article so that you, the practicing OHC, will be better prepared to handle such a situation should an employee be presented with these unusual, and to some, unbelievable, complaints. Such people need our compassion and our help.

Imagine all sounds being intolerable. When you have hyperacusis, even the sound of the fan running under your refrigerator is too loud. Some patients with hyperacusis must move their refrigerators to their garage just to tolerate living in their own home. Turning newspaper pages, running water in the sink or shower, placing dishes on the

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What's Inside?

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 $15. Payment must accompany request:

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OHC Certification

CAOHC Certification is valid 5 years from the date of the original 20 hour course. Recertification through an 8 hour course must be made by the expiration date of your CAOHC issued certificate. Your application must be filed with the CAOHC office to be valid. Contact CAOHC staff to verify certification or to locate an approved CAOHC course by calling 414/276-5338...or locate courses at CAOHC's website: www.caohc.org.

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Workplace Noise Means Low Productivity, Poor Communication

by Stephen I. Roth, P.E.
CAOHC Representative of the Institute of Noise Control Engineering

I recently visited an industrial plant where workers were using sign language. No, the workers were not deaf; they simply could not hear each other over the din of workplace noise. Turbulent flames from furnace burners, the clatter of metal, and the whine of combustion blowers all contributed to high noise levels. The workers had little choice but to communicate via hand signals.

Is this the most efficient way to operate a facility? Lower productivity due to high noise is a significant hidden cost in industrial plants.

Sounds that matter

Just as drivers get used to the normal sound of their cars, workers pick up audible cues from their equipment to determine if it is working properly. Drivers instinctively turn down their radios in their cars when they hear a 'different' sound so they can locate where it is coming from and can fix the problem before it gets any worse.

High noise in the workplace cannot be shut down for workers to properly listen to the operation of their equipment.

A recent project at a tube mill focused noise control on an exhaust duct leading from a pre-heat furnace. The controls were installed over the weekend. When the production superintendent came to work on Monday morning he was upset because he thought the equipment was not operating due to maintenance or production problems, only to learn that noise controls were so effective that the roar of the exhaust gases had been eliminated.

Workers at the control console can now communicate comfortably. They can hear the operation of their equipment, masked earlier by the noise from the exhaust ducting. They can also hear if a fault is developing, possibly the onset of a bad bearing or an inconsistency in the operating process. Only now is the benefit of lower noise obvious. It has provided a more productive work environment.

Why cut down on profits?

Another case really drives the point home. A noise control analysis of a fabricating facility was being conducted to determine methods to minimize noise generation. Line speed of the equipment in question was 350 feet per minute, yet when discussing noise control options with the plant engineer it was found that the design speed of the line was actually 450 feet per minute. Why were they operating the equipment below the most profitable speed? Noise at 450 feet per minute was so loud that workers in the plant complained. They found that at 350 feet per minute the noise level was acceptable! The offending gearbox was controlled and the equipment was allowed to operate at it's optimum speed. Lower noise yielded significant productivity gains.

So where do we go from here?

High noise exists in most industrial plants. And workers must wear ear protection to reduce the risk of hearing loss. What about reducing workplace noise? Sounds like an idea that fits well into the model of a lower cost, more productive work environment. Everyone gains through better worker communication, well-maintained equipment, reduced workers' compensation liability, lower worker stress, fewer lost work days, higher profits, healthier and safer workplaces. A win-win solution.

From INDUSTRIAL SAFETY & HYGIENE NEWS
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OHC Corner

Avoiding the Pitfalls

Linda S. Frye, MPH RN COHN-S
Constance M. Tatman, MS RN CCM COHN-S
CAOHC Representatives of the American Association of Occupational Health Nurses

Congratulations! You have attended the CAOHC course, passed the exam, applied for and received CAOHC certification as a hearing conservation technician (COHC). You have returned to your work site and you are eager to implement or revise your hearing conservation program.

You are aware that the purpose of a Hearing Conservation program is to protect employee's hearing and to comply with Federal Standard OSHA 29 CFR 1910.95.

To avoid common pitfalls, adhere to the following:

I. Develop a written protocol

The protocol should include the following program components:

A. Noise monitoring and employee notification of monitoring results
B. Audiometric Testing Program
   - Baseline audiometric exam
   - Annual audiometric exam
   - Written follow-up of test results to employees
C. Audiometric Evaluation
   - What to do if a work-related STS (standard threshold shift) is identified
   - Confirm the standard threshold shift within 30 days by retesting
D. Proper use of hearing protection
E. Documented training program
   - Access to information and training material
F. Record keeping, Record Retention, Access to Records
G. Address in writing how your program will handle presbycusis

II. Post a copy of the noise standard in a visible spot in the workplace

III. Maintain records in accordance with 29 CFR 1910.95

A. Keep an accurate record of all employee exposure measurements
B. Retain area noise exposure measurement records for 2 years
C. Obtain and retain employee audiometric test records for the duration of the affected employee's employment and for 30 years post employment.
   Include in this record:
   - Name and job classification of employee
   - Date of audiogram
   - Examiner's name *and CAOHC certification number*
   - Date of last acoustic calibration of audiometer
D. Keep a written chronological log that the audiometer was calibrated and by whom before each day's use. Calibration can be done using a biological ear followed by a human listening check of the headset or by testing a person with known stable hearing.
E. Keep accurate records of measurements of background sound pressure levels in audiometric test rooms.

IV. Perform an otoscopic examination

The goal is to see the tympanic membrane. Employees with impacted cerumen, drainage and/or significant congestion may not test well. Refer these employees to their primary care provider or your supervisor (a physician, otolaryngologist, or audiologist).

V. Record (STS) Standard Threshold Shifts

Within 6 days of determination that a work-related (STS) Standard Threshold Shift has occurred record as occupational hearing loss in column 7 of the OSHA 200 log

VI. Facilitate, Document and Address Results of Industrial Hygiene (IH) Sampling

- Make sure functional and calibrated sampling equipment is used.
- When documenting results, compare the results to the appropriate action level (AL) and permissible exposure limit (PEL). If the work shift is other than 8 hours in length, you need to adjust the AL and PEL.
- Document the results, recommendations and follow-up actions.
- Facilitate IH monitoring any time a change in the workplace occurs that may alter operator exposure to noise.

VII. Hearing Protection Requirements

Hearing protection is required for: employees who are exposed to an 8 hour time-weight average (TWA) of 85 dB(A) or greater and who have not had a baseline audiogram or who have experienced an STS, and employees who are exposed to an 8 hour TWA of 90 dB(A) or greater.

- Provide a variety of hearing protection at no cost to the employee
- Inform employees of the purpose, advantages and disadvantages of hearing protection
- Train the employees how to select, fit and care for hearing protection

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A Reviewer's Perspective of Case History Data

by Roger M. Angelelli, Ph.D.
CAOHC Course Director, Bethel Park, PA

After personally reviewing 50,000 plus audiograms over the course of the last 18 years, it has been a pet peeve of mine to look at the "completion" of the case history form (CHF) as the maker or breaker of an "effective" hearing conservation program. The certified occupational hearing conservationist (COHC) should seek to acquire relevant information via appropriate questions, and to obtain anecdotal comments pertinent to the hearing history, especially during the pre-employment audiogram. The initial case history usually contains truthful reporting of incidents relating to exposures of high-level noise and of ear trauma from accidents or early injuries. It behooves the interviewer (COHC) to write down under comments any history which might have the slightest relationship to non-occupational noise exposure as well as any record of having had disease(s) of the ear.

Case History Taken

This area of reporting is violated more than any other and as a result the information provided is frequently flawed. It is essential that the test taker or someone trained in the area of history taking be responsible for entering the information onto the form. It has been my experience that the employee in more instances than not is personally attempting to complete the questions on the CHF. As a result of this surrender of responsibility on the part of the COHC, a number of omissions and incomplete answers face the reviewer. The direct consequence of this partially completed case history results in delayed reports to the employer and the perception that accuracy of reporting is secondary to "finishing" the audio test in the fastest time possible. There is no substitute for getting it right the first time by taking that extra 15 to 30 seconds to scan the "finished" case history form and confirming the correctness of all responses.

The final rule (March 8, 1983) of the Occupational Noise Exposure Hearing Conservation Amendment, states that the employer must keep the following information with audiometric testing records:

1. Name and job classification of the employee
2. Date of the audiogram
3. The examiner's name
4. Date of the last acoustic or exhaustive calibration of the audiometer
5. Employee's most recent noise exposure assessment

The Amendment specifies that records of audiometric test results be maintained for the duration of employment of the affected employee and noise exposure measurement records be kept for two years.

In addition to the minimum record keeping requirements the obvious inclusion of employer name and location as well as employee number and department is recommended. Although the social security number is <u>not</u> required on the CHF most computerized reports will use the SSN as a key reference for the tested employee. In some instances (foreign workers) where no SSN is listed, the computer consultant generates a nine-digit number, e.g. 111-11-1111 to handle this situation. Occasionally the employee will not know or forget his/her SSN and, again, a delay occurs in processing if the COHC does not realize this omission or fails to obtain the SSN prior to sending the CHF's to the professional reviewer.

The ear inspection using an otoscope is <u>not</u> required by the Hearing Conservation Amendment, however, it is recommended that prior to placing the earphones over the ears an otoscopic inspection take place to note the presence of an intact eardrum (tympanic membrane) as well as any unusual condition such as excessive cerumen which might influence the hearing threshold levels. Again, if no ear inspection is performed the reviewer must "assume" that the outer ear does not present any adverse influence on the obtained pure tone air conduction thresholds. A dangerous assumption.

The date of the last electroacoustic calibration of your audiometer needs to be completed along with make, model and serial number. If calibration records are not retained for verification of valid and reliable audiometric testing in the past, the credibility of your "effective" hearing conservation program could be at risk. It is not unusual for calibration questions to be asked in the often feared *deposition*. With regard to Y2K compliance of your microprocessor audiometer, it is essential that the appropriate EPROM (chip) be installed depending upon your model and serial number, however, there is no requirement that the audiometer needs to be re-calibrated electroacoustically. A verification of the accuracy of pure tone thresholds via a biological calibration would be sufficient.

Of course, if your audiometer is due for it's annual electroacoustic calibration, it would be most appropriate to combine the installation of the necessary "chip" with calibration.

Has it been more than 14 hours since the worker's most recent noise exposure? Although the actual noise exposure level is not required on the case history form, it is essential that information of noise levels be kept or filed with the audiometric test results. It was not OSHA's intention to require that this information be entered on the actual audiogram or case history form. Again, the quiet period of 14 hours can be achieved with the use of hearing protectors as a substitute. OSHA concurred with testimony stating that hearing protectors may provide

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A Reviewer's Perspective

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sufficient attenuation to prevent noise induced TTS from contaminating baseline audiograms. It is also important to consider non-occupational noise exposure with reference to the aforementioned question. Specifically the COHC should encourage the use of hearing protectors outside the workplace and inform employees of the importance of avoiding excessive noise exposure prior to any audiometric testing, baseline or annual.

(The COHC needs to make a comment on the CHF if the employee has or has not worn hearing protection prior to audiometric testing if less than 14 hours in noise exposure.)

Selection of a variety of types & styles of hearing protection devices (HPDs) for employees needs to be documented as evidence of availability. Information of the type of HPD worn, coupled with the noise exposure level and duration, would be useful to the professional reviewer in assessing the efficiency of hearing protection. Again, the selection of one or more type of plug or muff is often overlooked, and the usually false assumption is that no hearing protection is utilized. This type of omission can usually be traced to the COHC relinquishing his/her responsibility of actually completing the CHF.

The nuts and bolts of every *effective* hearing conservation program (HCP) is the accurate determination of establishing reliable pure tone air conduction thresholds for a variety of tones or test frequencies. OSHA has specified that the frequencies of .5KHz, 1KHz, 2KHz, 3KHz, 4KHz, and 6KHz be tested, however, most companies developed CHF's to include 8KHz and, therefore, it is recommended that 8KHz be included. The information gleaned from the threshold at 8KHz helps the professional reviewer to support the existence of a mild, moderate, severe or profound hearing loss and its relationship to aging.

Each pure tone threshold must be legible, and, if it becomes necessary to cross out a previously obtained threshold for a revised one, the COHC should initial such a change. The lack of your initials beside a changed threshold may again raise a question during a deposition of the accuracy and integrity of the audiometric record. The air conduction thresholds not only provide the reviewer with information of the degree of hearing impairment, but the presence of a standard threshold shift is determined based upon the comparison of baseline thresholds at 2, 3, and 4KHz with current thresholds. Therefore, the COHC is ultimately charged with the critical task of not only supplying complete responses to the many pertinent questions on the CHF, but to establish accurate pure tone thresholds which are reviewed and entered into a computer software that generates computer reports.

The generation of computer reports to the employer provides company officials with relevant information about the success or failure of their HCP. The COHC plays a **major role** in the hearing health of the workers in their care and maintaining accurate records is one of the most important aspects of this role.

CAOHC Office Staff.....to..... OHCs!

If you are unsure of the expiration date of your certification, or your CAOHC certification number, you can find them above your name and address on the mailing label of this newsletter.

Certification Expiration ▼ Certification Number ▼

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If you have a question about your certification or recertification, you may contact the CAOHC Executive office. You'll find our phone number, fax, and e-mail on page 2. Remember to let us know when your mailing address changes so that we can continue to mail your UPDATE newsletter and to inform you when it is time to recertify!

Questions & Answers

CAOHC received these questions from an OHC at the recent American Occupational Hearing Conference (AOHC) in New Orleans:

1) An employee is exposed at constant levels of 85 dB for less than 8 hours (7 hours at 85 dB and 1 hour lunch and breaks in a quiet environment). Does this employee need to be in a Hearing Conservation Program (HCP)?

If indeed that is the case, the dose which is computed as the sum of the C/T values would be Dose = 7/16 = 44%. Since the criteria for inclusion in an HCP is 50%, according to OSHA this employee needs not be included. If, on the other hand, lunch and other breaks are taken in an area with noise levels at 85 dB, then the dose would be computed as Dose = 8/16 = 50% which meets the inclusion criteria. In addition, because there exists the "potential" for exposure at or above 85 dBA for 8 hours or more per day; it is advisable to monitor the situation closely. Most noise-exposed em-ployees work in fluctuating levels of noise and that is why dosimetry is necessary to sample these levels, average them, and provide the employer with an equivalent dose.

Illustration provided courtesy E-A-R.

2) An employee has had a standard threshold shift (STS) resulting in a Revised Baseline. When performing the annual hearing exam the following year, must I compare their new exam to the revised baseline to check for a 10 dB STS shift and must I also compare it to their original baseline to check for a 25 dB OSHA recordable shift?

Yes, employers must compare each year's audiometric thresholds to different baselines in order to determine if the following are present: 1) STS and/or 2) a recordable shift (dependent upon your state/region's formula). In your example, you would compare to the original baseline to determine whether or not the employee has sustained an OSHA Recordable shift. The exception would be if the employee has already had a recordable shift. Your professional supervisor would then revise your recordable baseline. From then on you would compare each year's thresholds to the revised recordable baseline to determine whether or not the employee was sustaining another recordable shift. It helps to remember that OSHA STS determinations and OSHA recordable shift determinations are two entirely separate functions and must be done independently. *(For more information...see "OHC Corner" UPDATE newsletter, Winter 1997-1998, P.5)*

Course Director Workshop Scheduled for Fall 1999

The Fall Course Director Workshop is scheduled for Monday, November 8, 1999 at the Hilton Hotel Airport~Atlanta, Georgia. If you are interested in becoming a Course Director and meet the qualifications described in the "Course Director Certification and Recertification Requirements" brochure and have your application approved by the Screening Committee, you must then complete a one-day Course Director workshop.

You may contact the Executive staff at 414/276-5338 for more information, or access the CAOHC web page at http://www.caohc.org

Course Directors presently certified who wish to recertify via the workshop method may also attend.

Chair's Message

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the same day of testing, you've exceeded that employee's expectations. Going beyond the minimum by providing helpful advice for hearing health off the job will also foster confidence in your ability to understand and meet that individual's needs.

- **Ask for feedback:** And of course, listen, listen, listen! Even if you're off to what you think is a great start to your HCP, be sure to step back from time to time and reassess. What do your employees really think? Feedback may at times be humbling, but readjusting along the way will keep you, and them, on track with the HCP goals.

Just a reminder ... CAOHC recognizes you, the Certified Occupational Hearing Conservationist (COHC) and Course Director (CD), as **our** most important customers. We're listening to you! In 1998, we completed an extensive survey of OHC needs and opinions. In the next few weeks, CDs will receive a similar survey. Please take a few moments to provide us with your feedback. And feel free to contact us at any time through our office or the CAOHC website. With your input, we hope that we will continue to meet, and even exceed, your expectations!

Please read on in this issue of *UPDATE* for more information on identifying "win-win" solutions for your hearing conservation programs. See Stephen Roth's article on noise effects on communication and productivity (Page 2) and the "OHC Corner" reminders on avoiding common pitfalls in your program (Page 3). We're also pleased to bring you an article on a rare but debilitating disease which could affect one of your employees, friends or family members (Page 1).

Professional Supervisor Course Held at AOHC

by Michael G.Holthouser, MD MPH
CAOHC Representative of the American College of Occupational & Environmental Medicine

CAOHC Council members, Myrna Stephens, PhD; Peter Weber, MD; and myself, presented a full day post-graduate seminar for professional supervisors entitled "The Role and Qualifications of the Professional Supervisor in the Occupational Hearing Conservation Program" at the American Occupational Health Conference (AOHC) held this past April 26, 1999 in New Orleans, LA. This conference is co-sponsored by the American Association of Occupational Health Nursing (AAOHN) and the American College of Occupational & Environmental Medicine (ACOEM).

The Occupational Safety and Health Administration's (OSHA) Occupational Noise Standard, 29 CFR 1910.95, specifies that hearing conservation programs (HCP) have a designated professional supervisor. The professional supervisor must be either an audiologist or a physician.

In a previous CAOHC sponsored survey of Certified Occupational Hearing Conservationists (COHC) it was revealed that 22% of those surveyed reported "some other" person or "no one" performing the duties of a professional supervisor (PS) in their hearing conservation program *(see UPDATE, "OHC Corner", Summer 1998, Page 3)*. While the survey also indicated that the vast majority of those in a PS role were physicians, many physicians may not be adequately informed about occupational hearing loss since this is a subject covered superficially, if at all, in most medical school curricula and residency programs.

CAOHC has responded to the need to provide HCP professional supervisor training for physicians by partnering with ACOEM, the largest North American association of physicians providing occupational health services, to offer a seminar at the Annual AOHC. The topics covered included: acoustics, normal hearing, pathophysiology of noise induced hearing loss, the differential diagnosis of hearing loss, hearing protectors, elements of a HCP, applicable standards, the role of the professional supervisor, medical-legal aspects, and HCP evaluation. Interest was strong among the 74 physicians attending the seminar in April. The full-day format permitted time to review subject matter such as problem audiograms, the process of making the determination between occupational and other causes of neurosensory hearing loss, various proposals to change existing standards for HCP, hazardous noise assessment and control, and HCP program evaluation.

CAOHC and ACOEM believe that continuing to offer these seminars will help create a much larger pool of physicians who are both interested in and knowledgeable about occupational hearing conservation and the important role that they have in it. In fact, it may be useful to mention this training to your HCP's professional supervisor if they have not already attended one of the seminars. He/she may want to learn more about their role in occupational hearing conservation through an upcoming Professional Supervisor training course.

Contact the CAOHC office at 414/276-5338 for further information about an upcoming seminar.

OHC Corner

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VIII. Develop a Hearing Conservation Database

This electronic data maintenance will save you time, provide ready documentation for an OSHA inspector, and will organize the necessary information for medical surveillance. Include these points in your database:

- Work areas
- Area and personal exposure level
- Shift duration
- Monitoring date
- Names of exposed employees and their ID number
- Test Date of baseline exam
- Test results of last annual exam
- (STS) Standard Threshold Shift - if there is any
- Necessary follow-up actions

Off the shelf IH monitoring data bases are available from software suppliers. There are vendors who will manage and evaluate data.

Stay informed by reading this publication, the UPDATE, or you can access the Federal OSHA web page at: http://www.osha-slc.gov/SLTC/noisehearingconservation/index.html

Address Updating New on the CAOHC Website!

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 entitled "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.

http://www.caohc.org

CAOHC Conducts Course Director Certification and Recertification Workshop

CAOHC held its Course Director Workshop on Friday, April 16, 1999 at the Hyatt Regency Dallas/Ft. Worth Airport, Texas. This Workshop is for:

1. New Course Director candidates with applications approved by the CAOHC Screening Committee; and
2. Course Directors (CDs) certified or recertified in 1994 who have not yet recertified.

Course Directors are responsible for planning and conducting CAOHC-approved training courses for Certified Occupational Hearing Conservationists (COHC). The Director is responsible for ensuring that specific CAOHC course guidelines are followed and for determining the qualifications and competence of participating faculty members.

The Course Director Workshop is an opportunity to gain professional experience in the field of hearing conservation.

This Course Director Workshop has been revised to better meet the differing needs of new and recertifying Course Directors. Changes include greater opportunity for CDs to share real-life situations, engage in discussion on the responsibilities and limitations of the Occupational Hearing Conservationist in record-keeping and regulations (OSHA and compensation issues).

Eight new Course Directors and eleven recertifying Course Directors completed the Workshop and are now eligible to conduct CAOHC courses for COHCs.

Congratulations to these new and recertifed CDs!

Nimet Adam, MA CCC-A
Delray Beach, FL

Ann Anderson, MS CCC-A
Rochester, MN

Kenneth Aspinall, PhD
Kerrville, TX

Kathleen Campbell
Honolulu, HI

Elizabeth M. Chiusano, MEd CCC-A
Lawton, OK

James Davidson, MA
El Dorado, AR

LTJG James Davis, MS CCC-A
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Robert Williams, MEd CCC-A
Rockford, IL

LCDR Keith Wolgemuth, PhD, CCC-A
San Diego, CA

CAOHC Council Meets in Dallas, Texas

The semi-annual CAOHC Council Meeting was held at the Hyatt Regency Hotel, Dallas/Fort Worth, Texas airport, on April 15, 1999.

In addition to reports on goals, projects and committee activity, discussion included a Long Range Planning meeting to be held in conjunction with the Fall Council meeting. Your input is valuable to us, so if you have ideas, opinions, objectives that you would like the Council to consider for CAOHC's move into the 21st century, please contact the CAOHC Executive staff at 414/276-5338, fax at 414/276-3349, or e-mail: info@caohc.org

New Wallet ID Card and Certificate for OHCs


Council for Accreditation in Occupational Hearing Conservation
This Certifies that the Person Whose Signature Appears Below is Entitled to Use the Title:
Certified Occupational Hearing Conservationist
CAOHC.
(414) 276-5338
Expiration Date
Signature
Certificate #

The OHC Committee of the CAOHC Council recently approved the design for a new and improved wallet ID card. The new card is a PVC product that should withstand the rigors of a five year certification period in your wallet!

We hope you'll like the new certificate you'll be receiving, too. Improvements include two color ink on a white linen paper. Certifying and recertifying OHCs will receive this new card and certificate when applications are processed by CAOHC staff.

Hearing Conservation Definitions

Compiled by Stephen I. Roth
CAOHC Representative of the Institute of Noise Control Engineering

A-Weighting Weighting curve applied to the noise spectrum to discount lower frequency noise. It creates the measured A-weighted sound pressure level (dBA), used by OSHA.

Acoustic Trauma A single incident which produces an abrupt hearing loss. Welding sparks (to the eardrum), blows to the head and blast noise are examples of events capable of producing acoustic trauma.

Action Level The sound level which when reached or exceeded necessitates implementation of activities to reduce the risk of noise-induced hearing loss. OSHA currently uses an 8-hour time weighted average of 85 dBA as the criterion for implementing an effective hearing conservation program.

Audiogram Graph of hearing threshold level as a function of frequency.

Baseline Audiogram The audiogram against which subsequent audiograms are compared to determine if hearing thresholds have changed. The baseline audiogram is preceded by a quiet period so as to obtain the best estimate of the person's hearing at that time.

Crest factor Ten times the logarithm to the base ten of the square of the wideband peak amplitude of a signal to the time-mean-square amplitude over a stated time period. Unit: dB.

Decibel (dB) The unit used to express the intensity of sound. Named after Alexander Graham Bell. The decibel scale is a logarithmic scale. Technically it is defined as a unit of level when the base of the logarithm is the 10th root of 10 and the quantities concerned are proportional to power.

Derate To use a fraction of a hearing protector's noise reduction rating (NRR) to calculate the noise exposure of a worker wearing that hearing protector.

Dosimeter Instrument that measures sound levels over a specific interval, stores the measures, and calculates the sound as a function of sound level and duration. It describes the results in terms of dose, time-weighted average and other parameters.

Exchange Rate The relationship between intensity and dose. OSHA uses a 5 dB exchange rate. NIOSH recommends a 3 dB exchange rate (sometimes called the equal energy rule).

Fence The hearing threshold level above which a material impairment of hearing is considered to have occurred.

Hearing Threshold Level (HTL) The hearing level, above a referenced value, at which a specified sound or tone is heard by an ear in a specified fraction of the trials. Hearing threshold levels have been established so the 0 dB HTL reflects the best hearing of a group of persons.

Hertz (Hz) The unit for audio frequencies. The frequency range for human hearing lies between 20 Hz and 20,000 Hz. The sensitivity of the human ear drops off below 500 Hz and above 4,000 Hz.

Noise Any unwanted sound.

Noise Dose The noise exposure expressed as a percentage of the allowable daily exposure. For OSHA, a 100% dose would equal an 8 hour exposure to an equivalent continuous 90 dBA noise. A 50% dose would equal an 8 hour exposure to an equivalent continuous 85 dBA noise.

Noise Induced Hearing Loss A sensorineural hearing loss that is attributed to noise and for which no other etiology can be determined.

Noise Reduction Rating (NRR) The NRR is a single number rating method which attempts to describe a hearing protector based on how much the overall noise level is reduced by the hearing protector. It is required by law that the rating is shown on the label of ear protectors sold in the United States.

Permanent Threshold Shift (PTS) Permanent increase in the threshold of audibility for an ear.

Significant Threshold Shift (STS) OSHA uses the term to describe a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000,3000 and 4000 Hz in either ear. Used by OSHA to trigger additional audiometric testing and related follow up.

Sound Pressure Level (L_p or SPL) A measure of the ratio of the pressure of a sound wave relative to a reference sound pressure. Sound pressure level in decibels is typically referenced to 20 μPa.

Temporary Threshold Shift (TTS) Temporary increase in the threshold of audibility for an ear caused by exposure to high intensity acoustic stimuli.

Time Weighted Average (TWA) A value, usually expressed in dBA, which is computed so that the resulting average would be equivalent to an exposure resulting from a constant noise level over an 8 hour period.

Reference

NIOSH publications "Preventing Occupational Hearing Loss—A Practical Guide," June 1996 (rev. October 1996) and "Criteria for a Recommended Standard—Occupational Noise Exposure - Revised Criteria 1998," June 1998.

Hyperacusis

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table - all these sounds are unbearable. Now imagine a young mother who has come down with hyperacusis, weeping as her newborn baby cries in her arms wondering how she is going to be able to care for this child and tolerate the noise.

A person who has hyperacusis can't simply get up and walk away from noise. In their life, it seems like the volume control on the whole world is stuck on HIGH. Hyperacusis is a collapsed tolerance to normal environmental sounds usually accompanied by little or no hearing loss. Not only are patients with hyperacusis unable to tolerate everyday sounds but they cannot endure quick shifts in sound loudness. Most individuals with hyperacusis also have tinnitus and experience inner ear pain.

Hyperacusis can be devastating to an individual's career, relationships and peace of mind. They suddenly feel as though they are living on the wrong planet and worry how they will survive and be productive with such a collapsed tolerance to all sounds. Moving about, traveling in a car and communicating with others is challenging. It is particularly hard for them to listen to electronic sound from a television, telephone or PA system. The things most of us take for granted like walking down the street, riding a bicycle, shopping, attending indoor sporting events, dining in a restaurant, taking vacations, and participating in group activities is often difficult or impossible. Patients perceive sound, even their own voice as uncomfortably loud or unfriendly to their ears. It is not uncommon for hyperacusis patients to wish they were deaf!

Some first develop hyperacusis in one ear, but in most cases both ears ultimately become affected. The condition can come on slowly or suddenly. Individuals who come down with hyperacusis suddenly are in real crisis. This can happen after attending a rock concert, firing a gun, air bag deployment, fireworks at close range, head injury, or unexpected blast from a stereo speaker. In some cases, the real damage is not known for days or weeks following the extreme noise exposure. More and more evidence bears out the theory that free radicals are produced within the injured ear following extreme noise exposure and over the course of a short time it deepens the seriousness of one's collapsed tolerance to sound. Research is being conducted in this area.

Patients with hyperacusis are in trouble on many levels. Their survival instincts tell them to avoid any and all noise. Following a significant noise injury, this is wise because the patient's ears need 'time off' from sound for a short time. Most hearing professionals however advise patients to remove any and all hearing protection so they can reacquaint their ears to normal environmental sounds again. Worse yet, many doctors subject their patients to an MRI or brainstem evoked test which involve very loud sounds and further collapses the patients tolerance to sound. They often renounce claims by the patient that they are experiencing pain in their ears. In many cases, the patient receives care and/or gets directives which only worsen their condition. Proper protocol would be to advise the patient to wear conservative hearing protection for at least a period of 2 - 4 weeks. The patient should not, however, wear hearing protection if at all possible in their home or while they are sleeping at night. During this period following the sudden onset of hyperacusis, the patient may need some medication to allow them to get proper sleep because their entire body is almost vibrating since they are so 'wired for sound.' This is very critical. After this period, the patient should work at weaning oneself off hearing protection when they are in sound friendly environments and contact a hearing professional that administers the Tinnitus Retraining Therapy (TRT).

With careful guidance, counseling and sound generators, most hyperacusis patients will improve their tolerance to sound by 15% - 60%. The treatment takes nearly two years. In many cases, improvement is not seen for 6 - 8 months. For that reason much counseling is needed for the patient to even start the treatment, not to mention, see it through to the end. TRT is a hard-sell to patients with hyperacusis. They cannot imagine enduring a treatment which involves sound because with hyperacusis every fiber of their being tells them to flee from sound. After all, sound is what got them in the condition they are in so how could sound (white noise) help them recover? TRT practitioners must be very compassionate and help the patient understand that their ears must be retrained to tolerate sound again. In many cases, once the treatment is completed, the patient can again enter the mainstream of life and be productive—understanding, however, they must always carry hearing protection with them at all times. TRT is not a cure and the patient must be careful with sound for the rest of their life until this auditory phenomena is understood.

The mechanisms involved which cause hyperacusis are unclear. Some feel that the efferent portion of the auditory nerve has been affected. Some feel the problem is restricted to the central processing portion of the brain. Many patients who come down with sudden hyperacusis produce an audiogram showing they can hear at minus decibel levels.

Because no test will confirm hyperacusis, it is misunderstood by most - like an invisible disability. One feels isolated and helpless even in the company of those who love them. The Hyperacusis Network consists of individuals worldwide who share information and support for those who have hyperacusis. The network shares ways to improve, discusses current treatments, reviews products which make our environment more noise-friendly, and makes referrals to physicians who administer TRT.

For more information, contacts, and printed materials, including a 20-page supplement explaining hyperacusis in great detail contact:

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