



UPDATE

VOLUME 16 • ISSUE 3

The Newsletter of the Council for Accreditation in Occupational Hearing Conservation

Thoughts on the Noise “Notch” and the Importance of Testing 8 kHz



By Mark R. Stephenson, PhD
 Representative for the American Academy of Audiology
 with Christa L. Themann, MA CCC-A and William J. Murphy, PhD

The primary purpose of audiometric monitoring is to identify hearing changes while they are still small. Hopefully, these changes can be identified before they represent permanent changes, i.e., while they are temporary threshold shifts. The susceptibility to developing a hearing loss is not the same at all frequencies. Assuming that a worker’s ears are otherwise healthy, that there is no excess build-up of cerumen, and that appropriate audiometric test methods are followed, hearing changes due to noise are first detected and grow most rapidly at the higher frequencies. The American National Standards Institute (ANSI) provides data estimating expected hearing loss as a function of noise level, years of exposure, and audiometric frequency (ANSI, 1996). Table 1 below illustrates the predicted noise-induced hearing loss for workers exposed to time-weighted average levels of 95 dBA.

Years of Exposure to Time Weighted Average of 95 dBA

Frequency (Hz)	10	20	30	40
500	0	0	1	1
1000	2	3	3	3
2000	5	9	12	14
3000	16	19	22	23
4000	20	23	25	26
6000	14	16	18	19

TABLE 1. Predicted noise-induced hearing loss from daily time-weighted average exposure to 95 dBA for 10, 20, 30, and 40 years (ANSI S3.44-1996).

Plotting the data in Table 1 illustrates how noise-induced hearing loss is primarily observed in the higher frequencies

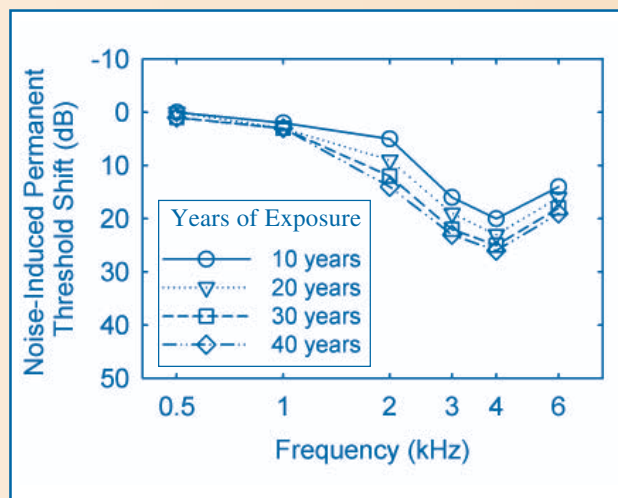


Figure 1 - Noise-induced hearing loss from 10-40 years of exposure at a TWA of 95 dBA

Note: these levels represent only the amount of hearing change that would be attributable to noise. An actual audiogram would reflect changes due to noise, plus any other factors that affect hearing, such as aging.

(Figure 1). Note also that the greatest hearing loss is observed at 4 kHz, giving rise to what is commonly referred to as the 4-kHz “notch.” While these data are illustrative of the 4-kHz notch, they also demonstrate the presence of considerable noise-induced hearing loss at 3 and 6 kHz.

Although noise-induced hearing loss is typically characterized by a 4-kHz notch, the possibility of a notch at other frequencies, particularly at 6 kHz, is well-known (Monley, et al. 1985, Dempsy, 1995). Because of the recent OSHA rule on recording occupational hearing loss (OSHA, 2002), the ability to determine the presence or absence of a “noise notch” must be reexamined (Rabinowitz and Dobie, 2003). OSHA’s new rule includes a provision for determining whether or not a hearing loss is work-related. Consider how a 6-kHz notch would affect the interpretation of a worker’s audiogram. Presently, OSHA (29 CFR 1910.95) does not

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CAOHC Approved 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 or recertification. 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

Chair's Message

By Beth A. Cooper, PE INCE Bd. Cert.



For most of us, the onset of the fall season brings an increase in the pace of life, both at work and at home. If you are like me, you look forward to the relative freedom of the summer months when our lives are less scripted and structured. I always try to start (and maybe even finish) one or two enjoyable but consuming "vacation projects" that are just too daunting when faced from the vantage point of the beginning of fall or the impending winter holidays or the end of the school year. This summer was no exception, and I was thrilled to be joined by my fellow CAOHC Council members in a particularly exciting project. This summer, your Council undertook a campaign to *personally* talk to all of our active Course Directors. For seventeen very busy people to connect with 112 other very busy people, some serious determination (and coordination) was present, and that in itself is worth celebrating. But, let me tell you the really exciting part, which is some of what we learned from talking to these Course Directors.

First, Course Directors take their teaching responsibilities very seriously, and they are dedicated to upholding the quality and consistency of OHC courses. Uniform and enforced standards for OHC courses, which is the end goal of CAOHC's course requirements, course approval procedure, and quality assurance process, are enthusiastically embraced by Course Directors. Regardless of their specific views on some of the individual policies that make up the larger CAOHC oversight picture, Course Directors are dedicated to providing the best possible education for you, the OHC.

Second, Course Directors are willing to invest in additional professional development and education in order to provide the most current, accurate, and effective training for OHCs. Upcoming CAOHC Course Director workshops will incorporate state-of-the-art technical content as well as information about teaching strategies and resources that Course Directors can immediately implement and pass on to the OHCs in their courses.

We were pleased, but not surprised, to learn that many Course Directors go far beyond CAOHC's minimum requirements for OHC certification and recertification courses, often extending the number of contact hours, number of speakers, and number of exam questions required. We learned about how they've incorporated clinic observations, classroom demonstrations, additional topic areas, and well-refined handout materials into their courses, simply because they feel it's the right thing to do.

Since we'd used a minimum 2-course-per-year criterion for selecting the Course Directors for our conversation campaign, we talked to a lot of folks for whom the mainstay of their business is something other than teaching CAOHC-approved OHC courses (as well as those for whom it is a full-time business). As I worked my way through the list that was (randomly) assigned to me, I found myself talking to an encouraging number of the former group. Contrary to what one might expect, I found that Course Directors who teach as few as two OHC courses per year consider themselves to be loyal, professional, and dedicated to providing a high-quality course. Interestingly, although some "less active" Course Directors teach CAOHC-approved OHC courses in order to supplement or stimulate their business as service providers, a gratifying number told me that they teach OHC courses simply because they enjoy the experience and because it provides a rejuvenating and enlightening respite from their day-to-day business.

Of course, these are just some of the noteworthy observations from a cursory scan of the notes that your Council members took during this summer's conversations. With the assistance of the CAOHC office staff, we are digesting the voluminous records of these conversations to identify opportunities for process improvements, potential new projects, and better communication with Course Directors, and to help shape CAOHC's goals for the future. I look forward to sharing specifics with you as we define and implement these new initiatives. As always, I'd be pleased if you'd share your ideas with me via email at Beth.A.Cooper@nasa.gov or via the CAOHC office.



CAOHC Adds Written Exam to 8-Hour Course and Revises Exam Format for 20-Hour Course

By Gayle S. Rink, MS RN COHN-S
Representative for the American Association of Occupational Health Nurses

Since January 1, 2004, CAOHC Course Directors (CDs) have been required to adhere to a standardized format for administering the written exam component of CAOHC's 20-hour OHC certification course. As of January 1, 2005, CDs will also be required to include a written exam in each 8-hour OHC recertification course and, in doing so, to adhere to similar standards pertaining to the exam's content and administration.

Instituting a written exam with a standardized format for the recertification course is intended to address the same four objectives as intended for the 20-hour certification course: (1) to evaluate the level of course knowledge gained by the OHC student, (2) to provide information for the CD to utilize in determining whether the OHC student has passed the written exam to the CD's satisfaction, (3) to provide an additional learning experience for the OHC student through the reinforcement of course content referenced in the written exam, and (4) to further standardize the OHC student's course experience to enhance the credibility and value of CAOHC certification.

Highlights of the standardized format for the written exam in BOTH courses as of **January 1, 2005** include:

- the clear communication and consistent application of the newly instituted passing score criteria of 70%
- the advance announcement of the *minimum* allotted time for completing the written exam –
 - **20-hour course:** minimum allotted time left to the discretion of the CD within the 90 minutes stipulated for all examinations (written and audiometric technique, including otoscopic inspection)
 - **8-hour course:** 30 minutes – either in one block or distributed throughout the course
- a minimum number of items/questions dedicated to CAOHC's course curricula –
 - **20-hour course:** 50
 - **8-hour course:** 20
- a question bank from which CDs are required to select a subset of questions (allocated according to the proportion of time allotted to the questions' topics within CAOHC's curricula).

The question bank incorporates several hundred question items and includes (among others) all the questions provided in CAOHC's 4th Edition Manual*. Therefore, OHC students will find the manual an extremely useful resource in preparing for their certification or recertification exam.

CAOHC will continue to monitor and, if appropriate, refine the written exam component of both the 20-hour course and the 8-hour course. For quality assurance purposes, as of January 1, 2005, CDs will be required to submit a copy

of the written exam for each 20-hour course and each 8-hour course the CD presents. As is the case with respect to all CAOHC course matters, Council members will seriously process all exam-related feedback from both students and CDs. Whether favorable or critical, information from the certifying or recertifying student about his/her written exam experience will be appreciatively received and thoughtfully considered. Such input is a valuable resource in ensuring the effectiveness of this important course feature.

You may send comments to CAOHC by contacting the Council through the "Contact CAOHC" menu selection at www.caohc.org or you may mail or fax your comments to CAOHC (using contact information found elsewhere in this newsletter).

* CAOHC "Hearing Conservation Manual, 4th edition" order form can be found on page 11 of this issue or on-line at: <http://www.caohc.org/manual.html>

"Stamp of Approval" for Certified Occupational Hearing Conservationists

Your responsibility to provide occupational hearing testing provides a valuable service to your employer and co-workers. CAOHC certification as an Occupational Hearing Conservationist not only addresses current regulatory requirements that you use on the job, but greatly enhances your contribution to the entire occupational hearing conservation team through comprehensive training, nationally recognized credentials, and timely updates provided in this newsletter and on the CAOHC website.

The "Stamp of Approval" brochure was recently revised to directly convey this message to employers, supervisors, and potential students. The revised version of the brochure provides concise information on the value of including CAOHC-certified personnel on the hearing conservation team — benefiting the entire program with knowledge of regulatory standards and best practices to reduce the incidence of noise-induced hearing loss in the workforce. For a printable copy to present to your employer go to our website at: <http://www.caohc.org/stampofapproval.html> or contact the CAOHC office for a copy.



CAOHC Deployed

By CPT. David Scott McIlwain, MS CCC-A



CPT. David Scott McIlwain

In the Army, monitoring audiometry as a function of hearing conservation has long been recognized as an important identifier of soldier readiness and has often been conducted before and after major military deployments. Normally this has been adequate because deployments did not usually exceed six months. With the length of current deployments typically exceeding six months, soldiers and their leaders have been at a disadvantage because there was no capability of monitoring audiometry in the combat zone. There is no way to quantify a soldier's hearing without a medical evacuation.

Hearing is the most important survival sense for the soldier. Good hearing is essential for such common tasks as: localizing snipers, communicating to patrol members, determining the position, number and type of friendly or enemy vehicles, responding to the activation of perimeter alarms, being aware of enemy movement, aiding in small arms accuracy, identifying weapons, acquiring targets, and accurately receiving radio messages and verbal orders. Leaders need to know the status of soldier readiness. In the Army, good hearing can mean the difference between life and death.

As battlefield base camp environments mature, they resemble garrison operations found elsewhere in the Army in which formal occupational health programs exist. Senior leaders look for better ways to provide the best care for their soldiers in a forward deployed setting. As a result, hearing conservation regulations are being enforced more vigilantly than in the past. Soldiers who are trained hearing conservationists have been regularly present in combat theaters and a part of this movement since April 2003. Initially, these technicians were placed in Kosovo. From lessons learned on



Hearing Conservation Technicians
Camp Bondseel, Kosovo - December 2003

that mission, other hearing conservation programs have been established in Kuwait, Bosnia, and Iraq. The rationale for taking these steps is based on noise surveys as part of a comprehensive preventive medicine survey. With the exception of Iraq, noise was the number one occupational health hazard identified by industrial hygienists.



Hearing Conservation Technicians
Baghdad, Iraq - November 2003

In Iraq, recommendations were made for comprehensive hearing conservation support drawn from preventive medicine detachments utilizing a minimum of nine hearing conservation technicians strategically assigned to the soldiers so that the whole of the deployed force could utilize their service. A military audiologist was included as well to examine follow-up patients for threshold shifts as well as any pathology identified by the hearing monitoring. U.S. forces in Iraq have experienced a substantial amount of blast injuries from improvised explosive devices, rocket propelled grenades, and mortar rounds. These types of explosions remain the single largest cause of hearing loss from Operation Iraqi Freedom. Out of 564 patients seen for hearing loss at Landstuhl Regional Medical Center in Germany during the first year of the war, 65% were from blast injuries. Sensorineural hearing loss from friendly forces weapons systems made up approximately 25% of the injuries. The remaining 10% were balance-related or conductive type hearing loss that was predominantly unrelated to hazardous noise exposure.

These environments pose a unique and challenging environment for a hearing conservation technician to overcome. Utilizing CAOHC standards for training, these young men and women have made a positive difference in the lives of our service members around the world.

CPT McIlwain is currently stationed at the US Army Aviation Research Lab at Fort Rucker, AL. Previous assignments include the US Army Center for Health Promotion and Preventive Medicine - Europe at Heidelberg, Germany, and 1207th US Army Hospital (RC) at Fort Benning, GA. He earned BS and a MS degrees from the University of Southern Mississippi.



Federal Railroad Administration and Hearing Conservation

By Theresa Y. Schulz, PhD
Representative of the Military Audiology Association
CAOHC Immediate Past-Chair

“I’ve been working on the railroad.” Well not really, but I have been reading a lot about hearing conservation and railroads. The Federal Railroad Administration (FRA) recently announced a Notice of Proposed Rulemaking (NPRM) in which they propose a new occupational noise standard for workers in locomotive engines. As a reminder, an NPRM is an official step toward a new regulation or federal standard. The FRA has requested comments regarding their proposed noise standard. Several professional organizations including CAOHC have responded.

The FRA and OSHA have a complementary relationship and overlapping jurisdiction with respect to occupational health and safety issues for railroad employees. The FRA used OSHA’s 29 CFR 1910.95 as the model for their proposed noise standard. Many railroad workers are covered under OSHA. However, locomotives, by nature of their business, cross state lines and are therefore covered under a separate federal standard. The table below shows some of the differences between OSHA’s hearing conservation amendment and FRA’s proposals:

ISSUE	OSHA Regulations	FRA Proposal
Periodic audiogram	Required annually	Required every 3 years
Qualified technician	CAOHC certification required (except if using microprocessor)	CAOHC Certification or training to the satisfaction of the professional supervisor required
Training	Required annually	Required every 3 years with additional topic of how to recognize and report hazard
Occasional exposure	Must be enrolled in HCP	Only in HCP if exposed > 20 days/year
Retest of STS	Optional retest within 30 days	Optional retest within 90 days
HPD effectiveness	NRR-Method A based on optimum-fit ANSI S3.19 tests	Same + possibility of more realistic Method-B test data
Recordkeeping	Noise measurements for 2 years Audiogram for duration of employment	Noise measurements for 3 years; Audiogram for duration of employment
Noise control	Hierarchy of engineering controls, hearing protection and administrative controls	Required design and maintenance standards, required hearing protection and <i>optional</i> “noise operational controls”
Initial implementation	Over first year after standard adopted	Over 3 year period after standard adopted

Much of the FRA proposed standard is consistent with OSHA, such as:

- Employee noise exposures must be limited to 90-dB Time Weighted Average (TWA)
- Hearing conservation program must be implemented for employees whose TWA is equals or exceeds 85 dBA
- An exchange rate of 5 dB to determine exposure levels
- STS defined as average change of 10 dB at 2000, 3000 and 4000 Hz either ear

The FRA proposes new design and building standards for new locomotives and maintenance standards for existing locomotives. They use this instead of OSHA’s hierarchy that engineering controls should be considered first. OSHA recommends administrative controls as the next level in the hierarchy to reducing noise, and states that hearing protection should be used only if these approaches cannot reduce the noise exposure. However, we have all seen that in most of industry, hearing protection has become the default method for addressing over-exposure to hazardous noise. The FRA’s proposal acknowledges this different approach to noise control.

The goal of these proposed standards are to “reduce the likelihood of noise-induced hearing loss for railroad operating employees.” We hope the final rule will incorporate lessons learned and the best practices developed over the last 20 plus years since the OSHA regulation to propel it toward that goal.

Thoughts on the noise “notch” – continued from page 1

require testing at 8 kHz. Without testing 8 kHz, a worker with a substantial 6-kHz notch would exhibit an audiometric configuration indistinguishable from hearing loss due to presbycusis. Although even one missed diagnosis is one too many, is this a scenario occupational hearing conservationists, audiologists, and physicians are likely to encounter? How common is a noise notch at frequencies other than 4 kHz? New data are emerging that can shed additional light on these issues.

These data are part of the current National Health and Nutrition Examination Survey (NHANES) conducted by the National Center for Health Statistics with collaboration from the National Institute for Occupational Safety and Health (NIOSH) and the National Institute on Deafness and Other Communication Disorders (NIDCD). As part of the NHANES study, hearing thresholds from 500 Hz to 8 kHz are being collected on adults aged 20 – 69. From data collected during 1999 and 2000, 1660 hearing tests have been evaluated for the presence or absence of a notch. Of the audiograms reviewed to date, 474 represented persons reporting a history of occupational noise exposure. From this group, notches were identified in 317 ears. From these data a 4-kHz notch was clearly not the frequency of most common occurrence. Instead, if a notch was present, it was more likely to occur at 6 kHz, particularly in females. Figures 2 and 3 illustrate the results of this analysis for females and males, respectively.

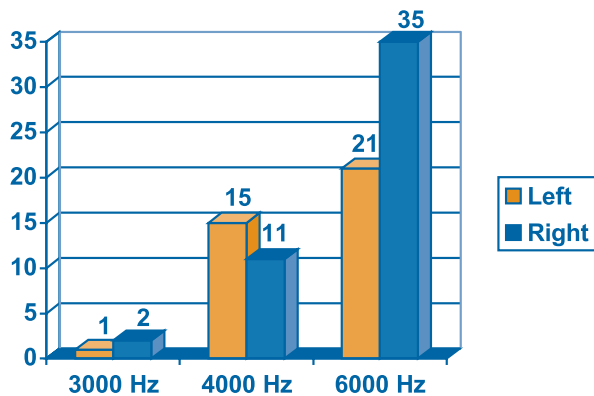


Figure 2 - Number of occupationally noise exposed females having notches at selected frequencies.

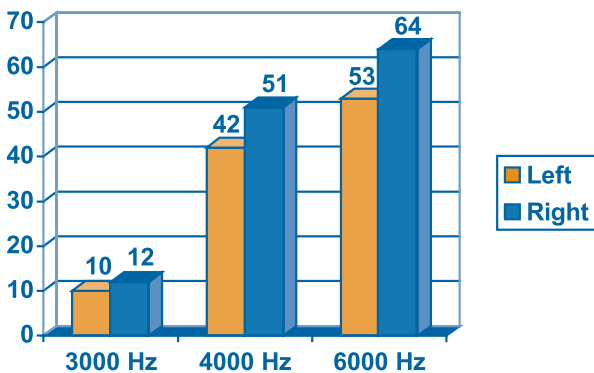


Figure 3 - Number of occupationally noise exposed males having notches at selected frequencies.

Although the above data represent unweighted, preliminary findings from the first two years of the NHANES data set,

occupational hearing conservationists (OHCs) should be alert to the likely presence of a notch at frequencies other than 4 kHz. If a worker presents with a sloping high frequency hearing loss and 8 kHz is not tested, determination of the presence of a 6-kHz notch is not possible. In fact, a 6-kHz notch is so common that OHCs may wish to reconsider which audiometric frequencies they wish to test.

Thus, the question remains: if the OHC is not already doing so, should he/she start testing 8 kHz? NIOSH (1998) and the American Academy of Audiology (2003) have recently published guidelines that recommend including 8 kHz when performing audiometric monitoring in support of a hearing conservation/hearing loss prevention program. While this represents “best practice,” OHCs may find it is nearly as effective to include 8 kHz only on certain hearing tests. For example, all audiograms that provide reference hearing threshold levels, i.e., baseline and exit audiograms, should include 8 kHz. Also, when an STS is suspected, any subsequent retest or confirmatory audiogram should include 8 kHz.

CONCLUSION. The current data represent preliminary results from the National Health and Nutrition Examination Survey. When the six-year NHANES data collection period is complete at the end of 2004, approximately 6000 hearing tests will have been administered. A more definitive analysis examining the effects of other variables (e.g. age, gender, and ethnicity) on the prevalence of 3, 4, and 6-kHz notches will be forthcoming following the collection period. In the meantime, OHCs should be aware that the noise notch is very likely to occur not just at 4 kHz, but at 6 kHz as well.

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- Christa L Themann, MA, CCC-A is a Research Audiologist at the National Institute for Occupational Safety and Health, Division of Applied Research and Technology (Engineering and Physical Hazards Branch) Hearing Loss Prevention Team in Cincinnati, OH.
- William J. Murphy, PhD, is a Senior Research Biophysicist at the National Institute for Occupational Safety and Health, Division of Applied Research and Technology (Engineering and Physical Hazards Branch), Hearing Loss Prevention Team, Cincinnati, OH.

Representatives Join CAOHC Council

These new representatives for various Component Professional Organizations (CPO) will join the CAOHC Council at their fall 2004 meeting in Chicago, Illinois



Ronald D. Schaible, CIH PE will represent the American Society of Safety Engineers (ASSE) replacing Marcella Thompson. Mr. Schaible has over 31 years experience performing occupational safety and health investigations in industrial settings, including: steel mills, chemical processing plants, construction and demolition, food processing plants, electroplating

shops, electronic assembly, and printing plants. He is employed by Robson Lapina, Inc., providing technical services to manufacturers and others in the areas of: product and process design and development; manufacturing practices; safety engineering; health exposures from chemical, biological, and industrial safety. He has taught in university settings and resides in Pennsylvania. Mr Schaible enjoys traveling with his wife, Gloriajean, who is a chaplain at a regional hospital. They have 2 children and 3 grandchildren.

Diane S. DeGaetano, RN BSN CAT COHN-S is a certified Occupational Health Nurse – Specialist and certified as an Occupational Hearing Conservationist. Ms. DeGaetano has presented national programs on hearing conservation for AAOHN, the National Safety Council and the Department of Labor. Currently she is employed with Merial, Limited, headquartered in Duluth,



Ms. DeGaetano holding "Nurse of the Year" award presented by Atlanta, Georgia Chapter of the Occupational Health Nurses Association.

Georgia, as the Occupational Health Manager for North America. Ms. DeGaetano assists with medical surveillance, facilitating health promotion programs and managing health safety and environmental programs for her colleagues. Diane is currently a faculty member in CAOHC courses providing practical and scientifically based methods for program development and challenges. She joins the CAOHC Council as a representative for the American Association of Occupational Health Nurses (AAOHN).

Thomas L. Hutchison, MA MHA FAAA CCC-A, will represent the Military Audiology Association (MAA) replacing Theresa Schulz at the completion of the October 28, 2004 Council meeting. Mr. Hutchison is a CAOHC Course Director and an audiologist currently supervising the Navy Hearing Conservation Program and Audiology Department at the Portsmouth Naval Shipyard, Portsmouth, NH and Brunswick Naval Air Station, Brunswick, ME. He and his staff provide diagnostic audiometric evaluations to Navy personnel, and he conducts CAOHC courses for Occupational Hearing Conservationists (OHCs). He is a past-president of the Military Audiology Association and has presented programs nationally on hearing conservation.



Professional Supervisor Course Scheduled for AAA

New federal recordkeeping and reporting requirements will stimulate interest in hearing conservation programs (HCPs) and will increase roles of audiologists and physicians as "Professional Supervisors" of HCPs. Audiologists and physicians who take on supervision of audiometric testing in such programs should be competent in "best practices" of hearing conservation. This skills-based training will provide a comprehensive tutorial on:

- Roles and responsibilities of the Professional Supervisor
- Elements and organization of successful hearing conservation programs
- Surviving new OSHA and MSHA recordkeeping regulations
- Latest tools to identify and prevent noise-induced hearing loss
- Guidelines for audiometric baseline revision and medical referral
- Managing "problem audiograms"
- Work relatedness and workers compensation

The Council will present a course titled: "The Professional Supervisor of the Audiometric Monitoring Component of Hearing Conservation Programs" prior to the American Academy of Audiology (AAA) convention on Wednesday, March 30, 2005 in Washington, DC at the Renaissance Hotel. The faculty will include Beth Cooper, PE Bd.Cert INCE, Richard Danielson PhD, and Peter Rabinowitz, MD MPH. Attendees will receive continuing education credits (applied for), a copy of the *Hearing Conservation Manual 4th Edition*, and unique training materials. Register online at: <http://www.caohc.org/professional.html>

A second course is pending in early May 2005 in conjunction with the American College of Occupational & Environmental Medicine (ACOEM) at the American Occupational Health Conference also in Washington, DC. More information on this in a later issue.

Letter to Editor: Telephone Testing

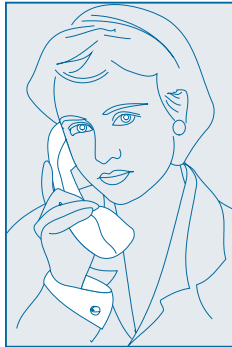
Dear Editor:

Could you please tell me if it is possible to conduct audiometric tests over a telephone line? Would it be considered scientifically valid if you used a calibrated audiometer with a feedback loop on the telephone line to measure the quality of the connection?

Answer:

Members of the CAOHC Council have been contacted to answer your question about whether it is possible to conduct valid pure-tone audiometric tests over a telephone line. To date, attempts at conducting a hearing test with telephones have been limited to "screening" tools (similar to hearing screenings offered at health fairs or state fairs) that are intended to generate awareness of hearing loss and the need for further (more valid) evaluation.

A 1988 report by the American Speech-Language-Hearing Association's Committee on Audiologic Evaluation (published in ASHA 30[11]:53) expressed concerns about the efficacy, validity, reliability and propriety of conducting hearing screening over the phone. Remember that this process involves several acoustic variables that are difficult or impossible to control (e.g., frequency response of the telephone speaker, acoustic changes caused by imprecise coupling of the phone to the external ear canal, ambient noise levels, etc.) Any and all of these variables could dramatically impact the outcome of the audiometric results. OSHA hearing conservation regulations certainly don't accept hearing tests conducted with a telephone,



nor does CAOHC recommend use of such a procedure for hearing conservation purposes.

You may be interested to know that audiologists at Utah State University have investigated the use of "telehealth technology" to test patients in a remote location (North Dakota), but they used integrated video, standard earphones with remote PC software, and a bandwidth of 192 Kbs (not phones). Their work indicated that, even with this technology, the correlation between pure-tone audiometry done in a "face-to-face" manner and pure-tone hearing tests done remotely was only acceptable when well-trained audiologists used

the right equipment, had sophisticated computer network connections, and when the listener was seated in a sound-treated room. These characteristics obviously describe an ideal situation, not typical of industrial applications. More information on the Utah State study (as well as their hearing research with other telehealth technology) is available from: John Ribera, PhD, CCC-A, E-mail: jribera@cc.usu.edu.

If your purpose is to determine whether someone "needs further testing" (such as an audiometric evaluation), a better remote strategy is a self-administered questionnaire. You can review examples at websites of some of CAOHC's Component Professional Organizations:

<http://www.audiology.org/consumer/guides/hhqt.php>

<http://www.asha.org/public/hearing/disorders/Self-Test.htm> and

http://www.entnet.org/healthinfo/hearing/hearing_test.cfm.

Sincerely,
UPDATE Editor

Time to Recertify? CAOHC's 3-Day Course May Better Meet Your Learning Needs

Requirements for recertification as an OHC are that the prospective student received his/her CAOHC certification/recertification within the previous 5 years, and that they then register for a one-day recertification course. Some applicants may determine that they would be better served by attending the same type of CAOHC-approved 3-day course that they initially completed.

If you are due to recertify soon and any of the following apply:

- you have not worked in the field of occupational hearing conservation during the past 5 years
- your work in hearing conservation has been sporadic or minimal

you are strongly encouraged to consider attending a CAOHC-approved 3-day course in lieu of the less extensive 1-day CAOHC-approved course. The more comprehensive curriculum of the 3-day course will better refresh your knowledge base, and the lengthier practicum component of the 3-day course may be just what you need to become more active

and effective in the field of occupational hearing conservation. Given the January 1, 2005 addition of a written exam to the 1-day course (with a minimum passing score requirement of 70% for recertification), you may also recognize that for you CAOHC's 3-day course would provide a better platform for maintaining your certification.

So, if any of the above benefits of attending a 3-day CAOHC-approved course appeal to your personal learning needs, just register for a 3-day course instead of a 1-day course when your next recertification is due. The CAOHC Course Director will recognize your sincere interest in occupational hearing conservation and will gladly welcome you into the 3-day course.

To help you determine which course is best for you, go to the curricula on the CAOHC website at: www.caohc.org select the button on the homepage (top, center) "Changes in OHC Curriculum" or go directly to: <http://www.caohc.org/changesinohccurriculum.html>. If you do not have web access, please contact the CAOHC office for a copy.

Wanted: Certification Course Feedback from OHCs

OHCs play an essential role in the fight against occupational hearing loss. Today, thousands of OHCs will:

- Administer hearing tests
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- Fit hearing protection
- Counsel employees

The **quality** of the hearing testing of the noise-exposed workforce rests in your hands. If employees aren't properly educated and motivated to wear hearing protection or if they wear it improperly, and are then overexposed to noise, many of them will incur noise-induced hearing loss. At your certification or recertification course, you learned the importance of your role on the hearing conservation team.

CAOHC is interested in receiving your thoughts about the adequacy of training you have received. Do you feel prepared to do your job? Was the course you took adequate to prepare you for your role as an OHC? Have you acquired other knowledge that you think all OHCs should have? How would you rate the material used in your course? Tell us about the instructors. Please give us **feedback**.

Please feel free to send us your thoughts or you may resubmit the course survey form that you previously completed at the course.:
<https://ssl17.pair.com/caohc/forms/ohccertandrecert.html>

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Council Revises Expiration Limit for OHC's

If you are unable to attend a recertification course due to: difficulty locating a course in a specific geographic area, medical illness, or a death or illness in the family you may be granted a 60-day extension beyond your current certification date.

All requests must be received at the CAOHC office 30 days prior to the expiration and are subject to the approval of the CAOHC Council.

If you are granted an extension you will be notified in writing by the CAOHC office. **Please present that CAOHC approved extension notification to your CAOHC Course Director prior to the recertification course.**

Workshop for New Course Directors

The Council will conduct a Course Director Workshop on Friday, March 18, 2005 at the Embassy Suites Hotel - Denver International Airport. This workshop is a requirement for new Course Director certification. Attendees must submit an application for approval by the CAOHC Screening Committee prior to the workshop.

All questions may be directed to Barbara Lechner, Executive Director, at 414/276-5338. CD application forms are available on-line at www.caohc.org, and registration information for the workshop will be posted in early November 2004.



Course Director Celebrates 30th Year

Dean A. Harris, PhD, President of Dean A. Harris Associates, Inc. in Estes Park, Colorado is celebrating his 30th year as a CAOHC Course Director. Over the span of his career, he has offered 285 courses and trained close to 5,000 occupational hearing conservationists. In the history of conducting these courses, Dr. Harris has only had to cancel one course.

He states that the best thing that happened to him in his career was when he was drafted into the U.S. Army in 1953, three months after completing his Masters degree in audiology at the University of Michigan. Dr. Harris was assigned to Walter Reed Army Medical Center at the Army and Air Force Audiology Center. His passion for hearing conservation blossomed during that time at Walter Reed. When he was discharged from the army in 1955, he moved to Dallas, Texas and started a private practice in audiology. He was then hired by the University of Oklahoma as a staff audiologist at the University of Oklahoma Health Science Center in Oklahoma City, where he also obtained his doctorate in audiology under the GI Bill.

Dr. Harris became certified as a CAOHC Course Director in February 1975. In the early 1980's he continued his love of teaching CAOHC courses after ending a seventeen-year career as a Professor of Audiology at Southern Methodist University in Dallas. His wife, Ginger, has been an important helpmate in all of these activities. Dr. Harris has two sons and two daughters – none have followed him into the hearing field, but he reports, they all have good hearing!

Hearing conservation has changed considerably since 1953, and Dr. Harris feels the biggest change has been in the public awareness of the relation of noise and hearing loss.

Congratulations and thank you to Dean Harris for his devotion to hearing conservation and his love of teaching. He will retire from teaching CAOHC courses in early 2005, but will continue to review audiograms for his 300+ nationwide clients....and perhaps even have time to play a few more computer games!

UPCOMING OHC CERTIFICATION AND RECERTIFICATION COURSES* 2004 & 2005

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

Current as of September 2004 (for a complete list of courses visit our website at www.caohc.org);
for the most current list of courses contact the CAOHC office at 414/276-5338.

Begin Date	State	City	Course Director	Phone	Begin Date	State	City	Course Director	Phone
11/15/2004	VA	Norfolk	Joel R. Bealer	Navy	12/28/2004	IL	Rockford	Marvin W. Engelberg	815-964-4465
11/15/2004	HI	Kahului, Maui	Dennis T. Sekine	808-487-9443	1/10/2005	GA	Atlanta	Herbert J. Greenberg	678-352-0312
11/17/2004	IL	Oak Park	Robert C. Beiter	708-445-7171	1/12/2005	CA	Concord	Charles E. Fankhauser	707-746-6334
11/17/2004	TX	Houston	Kathryn M. Deppensmith	713-468-3201	1/18/2005	CA	Irvine	Kirsten R. McCall	425-254-3833
11/17/2004	NJ	Piscataway	Ellen J. Kelly	732-238-1664	1/19/2005	CA	Irvine	Kirsten R. McCall	425-254-3833
11/17/2004	OH	Cleveland	Carol J. Snyderwine	216-491-6104	2/16/2005	FL	W. Palm Beach	Herbert J. Greenberg	678-352-0312
11/18/2004	PA	Pittsburgh	Roger M. Angelelli	412-831-0430	3/1/2005	WA	Bellevue	Mary M. McDaniel	206-706-7352
11/19/2004	NV	Las Vegas	John H. Elmore	800-357-5759	3/7/2005	GA	Atlanta	Herbert J. Greenberg	678-352-0312
11/19/2004	CT	Niautic	Jay C. Hans	Army	3/8/2005	CA	Sacramento	Kirsten R. McCall	425-254-3833
11/22/2004	IL	Normal	Gail L. Pollock	309-266-9949	3/9/2005	CA	Sacramento	Kirsten R. McCall	425-254-3833
11/23/2004	NC	Morrisville	Tamara H. Thompson,	919-657-7500	4/19/2005	CA	Ontario	Kirsten R. McCall	425-254-3833
11/30/2004	NY	Buffalo	John P. Coniglio	716-821-0091	4/20/2005	FL	W. Palm Beach	Herbert J. Greenberg	678-352-0312
12/1/2004	TX	Houston	John H. Elmore	800-357-5759	4/20/2005	CA	Ontario	Kirsten R. McCall	425-254-3833
12/1/2004	NC	Greensboro	Sarah E. Ervin	336-834-8775	5/16/2005	GA	Altanta	Herbert J. Greenberg	678-352-0312
12/1/2004	OR	Aloha	Michael Fairchild	503-259-2685	5/16/2005	IL	Normal	Gail L. Pollock	309-266-9949
12/1/2004	WI	Madison	James J. Jerome	317-841-9829	6/1/2005	WA	Bellevue	Mary M. McDaniel	206-706-7352
12/1/2004	NJ	Piscataway	Ellen J. Kelly	732-238-1664	6/15/2005	FL	W. Palm Beach	Herbert J. Greenberg	678-352-0312
12/1/2004	WA	Bellevue	Mary M. McDaniel	206-706-7352	6/21/2005	CA	San Diego	Kirsten R. McCall	425-254-3833
12/1/2004	LA	Kenner	Michael F. Seidemann	504-443-5670	6/22/2005	CA	San Diego	Kirsten R. McCall	425-254-3833
12/1/2004	GA	Atlanta	William K. Wolfe	770-475-2055	7/11/2005	GA	Atlanta	Herbert J. Greenberg	678-352-0312
12/6/2004	CA	San Diego	Charles F. Jackson	Navy	8/17/2005	FL	W. Palm Beach	Herbert J. Greenberg	678-352-0312
12/7/2004	NC	Morrisville	Tamara H. Thompson	919-967-6064	8/30/2005	WA	Bellevue	Mary M. McDaniel	206-706-7352
12/8/2004	TX	San Antonio	John H. Elmore	800-357-5759	8/31/2005	WA	Bellevue	Mary M. McDaniel	206-706-7352
12/8/2004	MA	Marlboro	Pamela J. Gordon	860-526-8686	9/12/2005	GA	Atlanta	Herbert J. Greenberg	678-352-0312
12/8/2004	AL	Birmingham	Georgia W. Holmes	205-934-7178	9/20/2005	CA	Fremont	Kirsten R. McCall	425-254-3833
12/8/2004	AK	Anchorage	Sandra C. MacLean-Uberuaga	907-360-2335	9/21/2005	CA	Fremont	Kirsten R. McCall	425-254-3833
12/8/2004	TN	Nashville	Mellette L. Meloy	678-363-9897	10/18/2005	CA	Irvine	Kirsten R. McCall	425-254-3833
12/8/2004	OH	Cincinnati	Timothy A. Swisher	412-367-8690	10/19/2005	FL	W. Palm Beach	Herbert J. Greenberg	678-352-0312
12/8/2004	IL	Chicago/Woodfield	Thomas D. Thunder	847-359-1068	10/19/2005	CA	Irvine	Kirsten R. McCall	425-254-3833
12/8/2004	IL	Chicago/Woodfield	Thomas D. Thunder	847-359-1068	11/7/2005	GA	Atlanta	Herbert J. Greenberg	678-352-0312
12/9/2004	NC	Greensboro	George R. Cook, Jr.	336/834-8775	11/30/2005	WA	Bellevue	Mary M. McDaniel	206-706-7352
12/13/2004	TX	San Antonio	Robert C. Rhodes	713-468-3201	12/14/2005	FL	W. Palm Beach	Herbert J. Greenberg	678-352-0312
12/15/2004	FL	West Palm Beach	Herbert J. Greenberg	561-818-1507					

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The screenshot shows a web browser window titled "EI Assessor Home Page - Microsoft Internet Explorer". The address bar contains "http://assessor.ei1.com". The page content includes a navigation menu with links for "login", "maintenance", "contact us", "services", and "demo". A large banner for "Audio Assessor" is prominently displayed, featuring the EI logo and the text "WELCOME TO EI OHC-HEALTH SERVICES ONLINE". Below the banner, there is a "View Demo" button. The footer of the page contains the copyright notice "©2002-2004 EI, Inc. | Legal/Disclaimer".

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CAOHC Announces — The 4TH Edition Hearing Conservation Manual

About the Manual . . .

The Hearing Conservation Manual 4th edition is here! If you're a member of a hearing conservation team in industry, military or mining – including occupational hearing conservationists, audiologists, physicians, industrial hygienists, acoustical engineers, safety engineers, and others – this manual will assist you in the front-line defense against hearing loss in your workers.

The 4th edition contains invaluable information & significant revisions including:

- How to set-up & maintain a hearing conservation program
- How the hearing conservation team works to prevent hearing loss
- Updated and expanded regulatory information from OSHA & MSHA
- Quick reference table comparing OSHA/MSHA/NIOSH
- OSHA and MSHA program compliance checklists
- 3 American National Standard Institute (ANSI) documents
- NHCA guidelines for revision of baseline audiograms
- A current survey of workers' compensation regulations in North America
- Expanded information on audiometric equipment & procedures; noise measuring instrumentation; and hearing protectors Reprints of valuable articles on hard to test workers, tips for fitting hearing protectors, and on noise controls
- Updated photos and graphs
- references to valuable website and useful documents in print

About the Author . . .

Alice H. Suter, PhD served as a Senior Bioacoustical Scientist in the U.S. EPA's Office of Noise Abatement and Control. As Manager of the Noise Standard at the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA), she was the chief author of the Hearing Conservation amendment to the noise standard (29 CFR 1910.95). Dr. Suter joined the National Institute for Occupational Safety and Health (NIOSH) in 1988 as a Visiting Scientist and Research Audiologist. She is presently a private consultant in industrial audiology and community noise abatement.

About the Editor . . .

Elliott H. Berger, MS, is the Senior Scientist for Auditory Research at E·A·R / Aearo Company, where for over 25 years he has studied noise and hearing conservation, with an emphasis on hearing protection. He chairs the ANSI working group on hearing protectors, has been lead editor for two highly-regarded texts in noise and hearing conservation, and has also presented his research in over 60 articles and other text book chapters.

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