



UPDATE

VOLUME 14 • ISSUE 1

The Newsletter of the Council for Accreditation in Occupational Hearing Conservation


Chair's Message

*By Theresa Y. Schulz, PhD
Representative of the Military
Audiology Association*

I am honored to serve as the Chair of the Council for Accreditation in Occupational Hearing Conservation. Did you notice that you, the Certified Occupational Hearing Conservationist (COHC), are the core of our name? I assure you that I take notice of that fact and feel privileged to serve the over 22,000 COHCs who are currently certified as well as the 350 plus Course Directors (CDs).

Let me briefly introduce myself. I have served in the Army and Air Force as a hearing conservation audiologist, manager and staff officer for 18 years. I've been a certified CAOHC course director for the last 10 years and taught in several CAOHC courses prior to that. I represent the Military Audiology Association (MAA) on the CAOHC council, but as I mentioned, as Chair I hope to represent all COHCs and CDs as well. Please feel free to contact me through the CAOHC office regarding any questions, issues, ideas or concerns that I might be able to bring to the entire Council.

The first point I'd like to make is how important you are as COHCs. I've seen many hearing conservation programs (HCP), both successful and unsuccessful, and ALL of the successful ones have a super COHC! I truly believe that the attitude, knowledge, dedication and motivation of the certified technician are the reasons for a good HCP.

COHCs must "be responsible to" an audiologist, otolaryngologist or physician according to OSHA requirements.

We use the term "professional supervisor" to describe that person. As COHCs, you depend on these folks for supervision of the audiometric monitoring program and professional review of audiograms as mandated by OSHA, but often you depend on them for advice, guidance, support and motivation.

So, as you can see, the professional supervisor is also critical to the successful HCP. These individuals are often CAOHC Course Directors as well, but not always. Over the past few years, CAOHC has been conducting seminars in conjunction with the American College of Occupational and Environmental Medicine (ACOEM) to educate attendees about their responsibilities when they serve as professional supervisors. (See page 8 for information on the next PS course and pass this information on!) If your professional supervisor is not the Course Director who taught the CAOHC certification or re-certification class, you might keep in touch with the CD as an additional resource. The more colleagues in hearing conservation you can connect with the easier it is to keep that level of motivation and dedication up.

In that light, I also encourage you to network with other certified technicians. Sharing your successes and learning from your peers can be the basis for improvements in your HCP. The common bond of hearing conservation is one of the best ways to keep that motivation level high.

The National Hearing Conservation Association (NHCA) is an excellent resource for information and networking with fellow hearing conservationists (COHCs, audiologists, industrial hygienists, physicians, and others). For more information, contact NHCA at www.hearingconservation.org.

I hope another key to the successful HCP is CAOHC. It is the Council's goal to disseminate information to you (such as that found in this newsletter) that keeps you not only informed - but also motivated and dedicated.



Room Noise Criteria

*By Warren E. Blazier, Jr., FASA,
FASHRAE, INCE. Bd. Cert.*

Introduction:

Although practicing Certified Occupational Hearing Conservationists (COHCs) are more generally concerned with industrial environments, where the principal problem is with hazardous noise, they often have to deal with multiple criteria when visiting different plant facilities. For example, it may be necessary to determine whether the background noise level in a training room near the production floor is acceptable for communication purposes. If it is not, then by how much should the noise level be reduced in order to improve an existing situation.

Choosing the Appropriate Noise Criterion:

The selection of appropriate acoustical criteria for building spaces presents unusual challenges, because of the extraordinarily wide range of room types, their corresponding uses and the variety of potential noise sources to be considered. Although several different procedures are in common use to evaluate and/or rate the indoor sound environment, each has been developed

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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 Executive Committee Named to CAOHC Council

The Council for Accreditation in Occupational Hearing Conservation held their semi-annual Council meeting on October 2, 2001 in Baltimore, MD. The various committees reported activities that have been planned and/or completed since the last meeting, received an update from the Executive office staff about the certification process and other business matters, and discussed other pertinent issues relating to hearing conservation. At the close of the meeting, it was announced that a new Executive Committee had been elected by Council ballot. These officers will serve a two year term to fall 2003.



The Chair, **Theresa Y. Schulz, PhD.** Schulz represents the Military Audiology Association and has been a member of the CAOHC Council since 1997 and is a CAOHC Course Director. She currently serves as Chief of Modernization Planning for the Air Force Human Systems Wing at Brooks AFB, Texas. Schulz succeeds **Peter Weber, MD MBA FACS**, who will



continue service on the Council as Immediate Past-Chair. Dr. Weber is currently Professor, and Program Director; Department of Otolaryngology, Cleveland Clinic, Cleveland, Ohio. Dr. Weber represents the American Academy of Otolaryngology – Head & Neck Surgery.

Beth A. Cooper, PE INCE. Bd. Cert., will serve as Vice-Chair replacing Theresa Schulz. Cooper is an acoustical engineer and Manager of Acoustical Testing Services at the NASA John H. Glenn Research Center at Lewis Field, where she provides noise control engineering support to help Glenn Research Center's science experiment payloads meet International Space Station hearing conservation goals. She has served on the CAOHC Council since 1999 as a representative for the Institute of Noise Control Engineering, and serves as an instructor in OHC courses.



Paul J. Brownson, MD FACOEM FAAFP, who is a representative for the American College of Occupational & Environmental Medicine, will serve in the capacity of Secretary-Treasurer for the Council, replacing Merrie Healy, RN MPH. Dr. Brownson, who has been a member of the Council since 1999, is the Corporate Health Coordinator for the Dow Chemical Company in Indianapolis, Indiana and serves as a member of the ACOEM Noise Committee.

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.

How To Be a Pro-Active COHC in Hearing Conservation



By, Richard L. Stepkin, Audiologist
Representative on the CAOHC Council for the American Speech-Language-Hearing Association (ASHA)

It is the intent of this article to stimulate CAOHC Certified Occupational Hearing Conservationists (COHC's) into a "pro-active" role of "prevention" over "compliance." Once you have completed this article, I give you full permission to designate yourself as a "pro-active" Certified Occupational Hearing Conservationist! There are several questions to consider:

Question #1: Does OSHA Regulation 1910.95 really protect hearing?

Since 1971, OSHA has been the primary motivator for companies to initiate and maintain a "compliant" Hearing Conservation Program (HCP). However, the question remains, does OSHA compliance offer prevention of noise induced hearing loss (NIHL)?

Hearing professionals already know that OSHA compliance is designed only to "reduce the risk" and not to "prevent" hearing loss. The American Speech Language Hearing Association (ASHA); National Hearing Conservation Association (NHCA); American Academy of Audiology (AAA); and the Council for Accreditation in Occupational Hearing Conservation (CAOHC) to mention just a few, have supported stricter guidelines simply because the OSHA regulation is not as effective as it should be in preserving hearing. The medical, safety and industrial hygiene communities also support a need for improved guidelines.

In 1998, the National Institute of Occupational Safety & Health (NIOSH) came out with a comprehensive document (Publication #DHHS 98-126) (see UPDATE newsletter, Winter 1998, Volume 9, Issue 4) recommending a revised OSHA criteria to 1910.95. In the foreword of this document it states, "The 1998 recommendations go beyond attempting to conserve hearing by focusing on preventing occupational noise-induced hearing loss (NIHL)." To date, while OSHA is not *required* to take the advice of NIOSH, they have not acted on these recommendations. *For a free copy of the NIOSH document go to their web site at www.cdc.gov/niosh and look under "Publications."*

Even our U.S. Armed Services have implemented stricter guidelines than that established by OSHA in order to make every attempt to "prevent" rather than "reduce" the risk of NIHL.

Companies are surprised to realize that "compliance" is not "prevention" after losing a hearing loss case. They get caught in a "Catch-22" between OSHA compliance and lack of effective loss prevention.

Question #2: How can a COHC assess "compliance vs. prevention"?

After each question listed below, ask yourself: Is this Compliance or Prevention?

- OSHA requires follow-up action on Standard Threshold Shifts (STS) "after" they have occurred. **Is this Compliance or Prevention?**

The objective to any prevention program is to address how to prevent changes, rather than act after the changes have taken place.

- OSHA requires 25-dB STS to be recorded on the Log 300, but not 10-dB shifts. **Compliance or Prevention?**

OSHA changed the recording of a work-related injury from 10 to 25dB without warning or reason to substantiate their change. Safety, medical, health and audiology associations, including CAOHC, voiced dissatisfaction over the lack of sensitivity toward prevention, which fell upon deaf OSHA ears.

State OSHA programs are allowed to enforce their own interpretations if more stringent than those of federal OSHA. Five states (California, Michigan, North Carolina, South Carolina & Tennessee) still require companies within their jurisdictions to record work-related 10-dB Standard Threshold Shifts (STS). (Update, Vol. 6. Issue 1, p.4, April 1995, Megerson).

- OSHA only looks at 2000, 3000, 4000Hz for shifts in hearing. **Compliance or Prevention?**

All 50 states include additional frequencies when assessing hearing loss compensation. If we look only at the OSHA STS frequencies in the review process, employees may be unaware of an increase in hearing loss and companies would be unaware of increased compensation potential.

- OSHA presumes any STS to be work-related if an employee works in noise whether they are protected or unprotected. **Compliance or Prevention?**

The onus is on the employer to prove or disprove its relatedness. It has been my experience that companies often assume unwarranted responsibility simply because they are not providing proper referral follow-up.

- OSHA does not address baseline hearing loss of any degree, only shifts in hearing when compared to baseline. **Compliance or Prevention?**

There is no mention of existing employees with significant baseline losses requiring some follow-up action. Although new-hires are required to have a baseline, there is no mention of follow-up on any discovered hearing loss.

- OSHA allows for age adjustment. **Compliance or Prevention?**

Only 7 States (Arkansas; Hawaii; Idaho; Indiana; Maine; Maryland; Missouri) report required use of age adjustment. (American Speech-Language-Hearing Association 1992 "A Survey of States' Workers' Compensation Practices for Occupational Hearing Loss", ASHA 34, March Suppl. 8, 2-8).

- OSHA allows for employees to sign waivers NOT to participate in audiometry. **Compliance or Prevention?**

States usually do not allow waivers in cases of compensation.

OHC Corner- How to be a Pro-Active . . .*continued from page 3*

- OSHA ties all hearing loss to 85dBA time-weighted average (TWA) **Compliance or Prevention?**

Courts have become educated in knowing about individual susceptibility to noise and OSHA's TWA. NIOSH stated in their criteria document that current scientific evidence indicates a need to tighten the calculation of time-weighted average (TWA) by reducing time of exposure. Hearing professionals have often reported scientific evidence that noise exposure sensitivity and hearing loss susceptibility varies. Studies have reported NIHL at less than 85dBA (TWA). The U.S. Army threw out time of exposure as a criterion. Simply, anyone in +85dBA, regardless of time exposed, must be protected and in the Hearing Conservation Program.

- OSHA states that hearing protection is "voluntary" when exposed to levels between 85-90dBA, and "mandatory" after a shift has occurred. **Compliance or Prevention?**

It is hard to understand how OSHA has an action level of 85dBA(TWA) for implementing hearing conservation, but hearing protection is not mandatory until after a shift has occurred or employees are exposed to levels +90dBA (TWA).

- OSHA has reported that the intended purpose of audiometry is to monitor the effectiveness of hearing protection.

Compliance or Prevention?

OSHA assumes that changes in hearing are due to not wearing hearing protection or not wearing it properly. This is a "no-win" situation for companies, because even if employees are wearing hearing protection, OSHA is assuming they must not be wearing it properly (even if they are)! Personally & professionally, I thought the purpose of audiometry was to monitor & evaluate one's hearing.

- OSHA allows anyone who can read an instruction booklet to test hearing when using a micro-processing audiometer.

Compliance or Prevention?

It would appear that there is no need to know about test validity, understand thresholds, reading an audiogram, follow-up action, use and fitting of hearing protection or hearing conservation in general.

How you answered these questions may be greatly dependent upon the quality of your own program. We need to be more "pro-active" in "prevention" and not satisfied with "compliance."

Question #3: Should a COHC use a professional reviewer to interpret audiometric data?

The quality and effectiveness of a HCP is the difference between being "compliant" or "pro-active." Having a highly motivated COHC is an important part of that formula. The certified technician can perform valid audiometry, maintain the reliability of equipment & testing environment, and play an important role as part of the hearing conservation team.

However, some companies rely upon their COHC to review the data. The certified technician can identify standard threshold shifts (STS) or other reasons for referral. However, CAOHC does not allow COHCs to interpret audiograms or make statements about cause of loss.

Some certified technicians use certain software that is available today to review audiometric data. However, software evaluation of thresholds is designed to be "compliance" oriented, not

"prevention" oriented. Identifying an STS is a task that the certified technician can already offer with their training. This is not to say that software is not good, it is a great tool for record-keeping and identifying shifts that could be missed by human error. But, there is much more to interpretation of hearing loss and shifts in hearing than the OSHA STS criteria. Software IS NOT a pro-active prevention tool.

One of the important differences between "compliance" and "prevention" is utilizing a qualified professional reviewer. The pro-active COHC should seek the assistance of a professional reviewer for their audiometric data.

Question #4: What should a COHC consider in a professional reviewer?

It is important for the pro-active COHC to never presume without investigation, the credentials of a reviewer necessary for your pro-active "preventative" HCP. When looking for a reviewer, some consideration should be given to the following:

- ▶ Is the audiometric reviewer a hearing professional?
Audiologists usually have more training and front-line experience with industry than any other hearing professional. You may want to check on any industrial references your candidate may provide. Many CAOHC Course Directors are audiologists. Check the CAOHC website at www.caohc.org select "CAOHC Course Director Database."
- ▶ Does a mobile service provider use professional reviewers?
Many service providers do not have an audiologist or professional reviewer on-staff. Some providers indicate they have consultants on retainer, which usually translates into "no professional really looks at your data." Talk to the audiologist or reviewer to get a feel for what they are providing you. Be aware that many service providers let software do their work and the data are never actually reviewed by a hearing professional.
- ▶ Does an industrial clinic use professional reviewers?
Clinics use their physicians (MDs/DOs) for review. Although acceptable for compliance purposes, MDs/DOs usually do not receive any specialized training in audiology, audiometry, or audiogram interpretation in medical school, although occupational physicians do receive this training in residency and continuing medical education. It is good to know if the MD/DO attended a CAOHC program such as the Professional Supervisor Course(s) provided by CAOHC at the American College of Occupational & Environmental Medicine (ACOEM) American Occupational Health Conference, or took special courses in HC. In many cases, industrial clinics allow untrained personnel to do testing, under the supervision of their MD/DO or because they use a microprocessor audiometer. A pro-active COHC will challenge the clinic on these issues, and encourage such specialized training.
- ▶ Ask each reviewer candidate the following:
 - a. How do you report your findings to the employer?
 - b. Do you use software in the evaluation process?
 - c. Do you personally review the problem audios for interpretation?
 - d. Do you identify non-OSHA type shifts in hearing?
 - e. Do you identify slight changes in hearing or patterns developing before they become an STS?

Megerson Honored for Service

Susan Cooper Megerson, MA CCC-A, a representative on the CAOHC Council for the American Speech-Language Pathology Association, was honored by the Council at their meeting in Baltimore, MD, October 2001, for eleven years of service. Megerson served as Immediate Past Chair, Chair, and Vice-Chair, as well as spearheading many committees and special projects for the Council. She has been a CAOHC Course Director since 1984.



On behalf of all Certified Occupational Hearing Conservationists, Course Directors, Council Members, and the Executive staff, our sincere appreciation and thanks to Susan Cooper Megerson for her unselfish devotion to hearing conservation efforts on behalf of all of us! Ms. Megerson continues her work as an instructor at the graduate level at the University of Kansas. We wish her well in her future endeavors.

COL Richard Danielson, PhD CCC-A, a representative for the Military Audiology Association, was also recognized for seven years service on the Council. Danielson was instrumental in elevating the level of instruction at CD workshops and served as Vice-Chair on the Council.

Merrie Healy, RN MPH, a representative for the National Safety Council, served on the Council for five years and implemented the Publications Committee improvements to the UPDATE newsletter and served as the Secretary-Treasurer.

In addition, the Council thanked **John Erdreich, PhD**, representative for the Institute for Noise Control Engineering; and **Linda Frye, COHN-S/CMMPHRN**, representative for the American Association of Occupational Hearing Nurses for their service on the Council.

Fall 2002 Course Director Workshop

The Council will conduct the fall Course Director workshop in October 2002 in Rosemont, IL at the Embassy Suites Hotel O'Hare. This workshop is a requirement for Course Director certification upon application approval by the CAOHC Screening Committee.

Course Directors may also choose the workshop method for recertification. All questions may be directed to Barbara Lechner, Executive Director, at 414/276-5338. Application forms are available on-line at www.caohc.org. (Registration for this workshop will be available on-line later this spring.)

CAOHC Exhibiting at AOHC

The annual American Occupational Health Conference (AOHC) will be held in Chicago, Illinois on April 12-19, 2002 at McCormick Place. This joint meeting of the American Association of Occupational Health Nurses (AAOHN) and the American College of Occupational & Environmental Medicine (ACOEM) is the premiere meeting for occupational health nurses, physicians and allied health professionals. Over 4,000 attendees are expected. CAOHC has been exhibiting at this conference for several years and will be there again this April at **Booth #749**. Barbara Lechner and Chris Whiting, of the CAOHC Executive staff, will be there, so ... stop by and introduce yourself, we always look forward to meeting you personally

Letter to the Editor

Dear Editor:

If I leave my current place of employment, does my CAOHC certification stay with me or become the property of my employer?

Dear COHC:

Even if your employer paid for your course and/or your certification, this number is assigned to you, NOT to the employer NOR to your replacement. Only you can use your CAOHC number and signature on audiometric tests that you conducted. Other technicians, your supervisor, or your employer may NOT "share" your CAOHC certification number – either with or without your permission. If you have concerns, please contact the professional supervisor of your hearing conservation program (an audiologist, physician or otolaryngologist).

Please notify CAOHC when your mailing address changes, so that newsletters and mail from CAOHC goes directly to you - and not a former place of employment.

OHC Corner- How to be a Pro-Active . . .*continued from page 4*

- f. Do you know the state compensation formula for determining hearing loss percentages?
- g. Do you look at all frequencies relative to our state's compensation criteria and notify us of losses which should be referred?
- h. Do you apply age correction in your review process (may not be desirable in most states).
- i. Are you easily reachable by phone?
- j. If I ask a question about an employee's hearing, how long would it take to get a reply?
- k. If you do testing for us, how long does it take for us to get reports?

The confidence and completeness of how these questions are answered is also an important part of your "prevention" program.

Question#5: How should a COHC handle Audiometric Referrals?

The most important part of a "prevention" program is the referral process. Referral does not mean retest or send to the local clinic. If a professional reviewer recommends referral, then further evaluation to an audiologist or ear, nose, throat (ENT) physician is warranted.

In a "prevention" not "compliance" program, it is important to remember that referrals are not just STS, but can be for significant baseline losses, pre-existing losses on new hires, certain types of threshold patterns, non-OSHA type shifts, or other less than obvious reasons such as abnormal tympanic membrane suggestive of cholesteatoma. However, having confidence in your professional reviewer and understanding the reasons for referral should be very important to the COHC and the HC team.

A pro-active COHC should find a local audiologist or ENT physician for their referral source (it may be the reviewer). The reviewer should be educated about your company, production process, noise levels, and use of hearing protection. Offer access to audiometric records and other relevant information that may be helpful in the diagnosis of a loss or STS. The more knowledge the reviewer has about the HCP, the better the evaluation and determination for cause of loss.

Unfortunately, uneducated follow-up evaluations are often concluded as work-related simply by association and without justification. By educating the hearing professional on the company HCP, it should help the hearing professional distinguish non-

occupational hearing loss from work-related hearing loss. If the loss is justifiably confirmed as work related, the COHC and HC team can take the appropriate steps to "prevent" further loss of hearing.

In order to make the referral program work, the pro-active COHC must convince the company to pay for this process. This will allow the COHC to educate and work with one professional who understands the company and it's HCP. It also allows the company to control referral costs and improve referral documentation.

Question#6: How do I become a pro-active COHC?

Know these facts:

1. OSHA is a "compliance" program, not a "prevention" program.
2. Do not use 85dBA (TWA) as your "Action Level" for implementing hearing conservation or requiring use of hearing protection. Consider using 85dBA, regardless of time exposed.
3. Use a hearing professional to review your audiometric data. Do not rely solely on software or others without specialized training. Remember, it's "prevention" not "compliance."
4. Make sure your reviewer considers the issues of age correction and all the test frequencies relative to your state's compensation laws.
5. Find and educate a local hearing professional for referral of problem audios or shifts in hearing. Make certain that your referrals include other than STS that may be relevant to loss prevention, not just OSHA compliance.
6. Convince your company to pay for follow-up referrals to determine cause of loss.

If you apply the knowledge of this article into your HCP, you can consider yourself a "pro-active" COHC – Congratulations!

The opinions and recommendations in this article are those of the author and do not necessarily reflect official CAOHC policy.

The Publications Committee and Editor would like to remind you that this newsletter is for you! We welcome your ideas for topics to cover in the "OHC Corner." Please contact Barbara Lechner at info@caohc.org or phone 414/276-5338

New Representatives Join Council

CAOHC was pleased to announce the following appointments to the Council at their October 2, 2001 Council meeting in Baltimore, MD:

Robert D. Bruce, PE INCE.Bd.Cert, will represent the Institute of Noise Control Engineering, Inc. replacing John Erdreich. *(Photo unavailable at press time.)*



Dave W. Chandler

David W. Chandler, PhD CCC-A, will represent the Military Audiology Association replacing COL Richard Danielson, PhD CCC-A. COL Chandler obtained his PhD in Army-funded research at Vanderbilt University and has subsequently investigated auditory blast injuries as an audiology consultant for individuals injured in Army training accidents, and for survivors of the bombings in Oklahoma City and at the US Embassy in Nairobi.

He has participated as an instructor in CAOHC Course Director Certification Courses since 1984.

Mary M. Daniels, IH, representative for the National Safety Council, replaces George Krafcsin.

Helen W. Young, RN COHN-S/CM, representative for the American Association of Occupational Health Nurses, replaces Linda Frye. *(Photo unavailable at press time.)*



Mary M. Daniels

New Course Directors

Congratulations to the eight new Course Directors (CDs) who completed their certification process by attending the Course Director Workshop in Baltimore, MD at the Embassy Suites BWI Hotel held on October 1, 2001. This 8-hour workshop is a requirement for new Course Directors and instructs the CD on how to conduct an OHC course. In addition, seventeen CDs recertified at this workshop.

Sandra J. Adams, RN COHN
Adams Consulting
Mesa, AZ

Kevin J. Breshike, MS CCC-A
US Navy Hospital
Okinawa, Japan

Dennis L. Burrows, PhD
Constance Brown Hearing/Speech Center
Kalamazoo, MI

David C. Byrne, MS CCC-A
NIOSH-Pittsburgh Research Lab
Pittsburgh, PA

Cassandra L. Colville, MA CCC-A
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Portland, OR

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West Virginia University
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Occupational Health Develops Emergency Preparedness Web site

With the growing threat of bioterrorism in America's workplaces, and the need to have emergency preparedness/disaster plans either updated or developed, the American Association of Occupational Health Nurses Inc. (AAOHN), a component member of CAOHC, has launched a new online section at <http://www.aaohn.org> to assist occupational and environmental health professionals in their roles regarding these issues.

The section - Occupational Health Response to Terrorism - offers various resources for the professionals responsible for the health and safety of our nation's workforce. These resources

include: Bioterrorism - Implications for the Occupational and Environmental Health Nurse - an article from the November 2001 AAOHN Journal summarizing potential agents, detection, surveillance, mitigation, treatment, and disaster planning.

The address for the terrorism page of the web site is:
<http://www.aaohn.org/practice/advisories/index.cfm>

These advisories are available from the web site at no charge. Click on: Emergency Preparedness/Disaster Planning and Bioterrorism-Occupational Health Nurse Response; or Occupational Health Nurse's Role in the Wake of Tragedy.

International Noise Awareness Day, Wednesday, April 24, 2002

“Noise poses a serious threat to hearing, health, learning and behavior,” says Nancy Nadler, Director of the Noise Center of the League for the Hard of Hearing. This year the League is developing a special effort to inform the public of the necessity of creating a quiet home, school and recreational environment.

Continuous exposure to noise, documented research has found, leads to physiological changes in blood pressure, sleep, digestion and other stress-related disorders. Volumes of literature exist documenting the harmful effects of noise. “It is essential,” Nadler says, “that we take seriously this relationship between noise and health. We need to take necessary steps to reduce noise in our lives before we risk creating a generation which suffers from the stress-related disorders and health impacts associated with noise.”

Among the many activities planned during International Noise Awareness Day, Wednesday, April 24, sponsored by the League for the Hard of Hearing, the public will be asked to observe the Quiet Diet - one minute of quiet, regardless of their location, from 2:15 P.M. to 2:16 P.M.

Among activities planned are:

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/screenings 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. Hearing protection was generously donated by E-A-R/Aearo Company.

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.

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 code and follow the Noise Center’s steps in handling a noise complaint.

Additional information on International Noise Awareness Day and how you can participate is available at the Noise Center website at www.lhh.org/noise or by contacting Nancy Nadler via email at noisectr@aol.com or the address above.

LEAGUE FOR THE HARD OF HEARING

71 West 23rd Street,
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Phone: 888 NOISE 88 (TollFree)

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 16, 2002 entitled **The Role and Qualifications of the Professional Supervisor in the Occupational Hearing Conservation Program, Seminar #2302**. If you are a physician or audiologist completing this course you 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.

This full day 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. You may register for this seminar by contacting ACOEM at 847/818-1800 or faxing 847/818-9265. You may also access ACOEM’s web site at <http://www.acoem.org>

Room Noise Criteria

continued from page 1

based on data for specific applications. Thus, not all methods are equally suitable for the rating of noise in the wide range of applications encountered in practice.

However, there is one commonality among most noise rating methodologies, in that each involves some measure of relative *loudness* to assess the potential impact on speech intelligibility and/or communication. It is important to understand that the main distinction between the simple and more complex noise-rating schemes is the capability to assess the “quality” of the sound, or the potential for subjective annoyance *independently of its loudness*. (For a detailed discussion of several room criteria and noise-rating schemes in common use, see Chapter 13, “Room Noise Criteria” of *The Noise Manual*, fifth edition, recently published by The American Industrial Hygiene Association).

Is A-Weighted Sound Level Adequate For a Quick Estimation?

The answer is no! For example, single-number ratings, such as A-weighted sound level and the popular *tangent NC* methodology, provide only an indication of the relative *loudness* of the sound spectrum. Nothing is learned about the subjective “character” of the noise, or how it likely sounds or is judged by the human ear. Consequently, it is a risky proposition to use a criterion based solely on the A-weighted sound level or “NC” curves for rating rooms intended for noise-sensitive applications. In fact, at even moderate A-weighted sound levels, the room environment may be judged annoying by the occupants, if the subjective quality of the background noise spectrum is poor. Consider the illustration in Fig. 1:

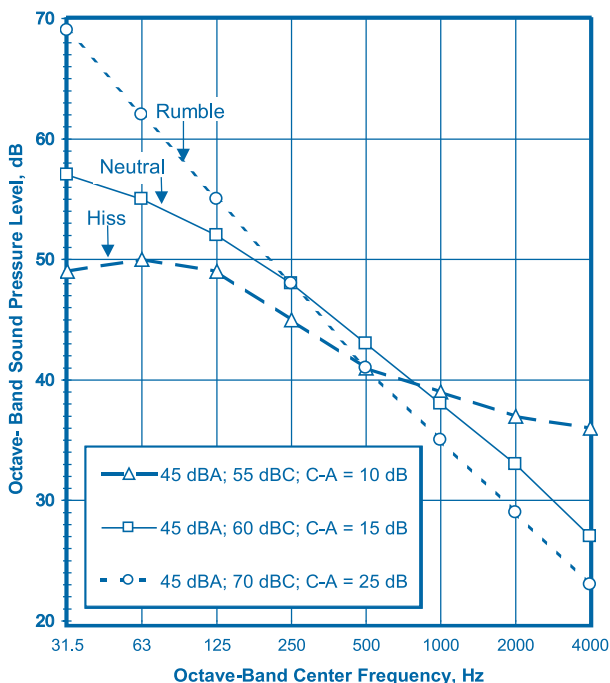


Fig 1: Typical Heating Ventilating & Air-Conditioning (HVAC) noise spectra having the same A-weighted sound level, but significantly different sound quality as judged by the ear.

The A-weighted sound level of each of these Heating Ventilating & Air-Conditioning (HVAC) noise spectra is *identical* (45 dBA). However, each will sound distinctly different to the human ear and they will not rank at the same level on a scale of

subjective acceptability. These subjective differences can be described as follows:

Triangle-Encoded Spectrum

This spectrum has a hissy-sounding character that some people find subjectively annoying at even moderate sound levels. In an HVAC system this spectrum shape is typically produced by an undersized air diffuser, or because a volume damper is located too close to a diffuser terminal. The dominant high-frequency content of this type spectrum can degrade speech intelligibility by masking consonant sounds, depending upon the signal to noise ratio between speaker and listener. In a training room situation, where the average speaker to listener distance may be 12 ft. or more, speech intelligibility can be problematical if the background noise level has this type of spectrum shape and exceeds about 45 dBA.

Square-Encoded Spectrum

This spectrum shape has a neutral-sounding character, i.e., no one portion of the spectrum subjectively dominates another. Field experience has shown that a spectrum of this general shape, about -5 dB/octave, is the least likely to be subjectively annoying, if it is not too *loud* in level. This nominal spectrum shape is characteristic of optimally designed and properly installed HVAC equipment and systems.

Circle-Encoded Spectrum

This spectrum shape is rumbly-sounding in character. It can be quite annoying subjectively to the average listener. Whenever an HVAC system has been identified as the source of excessive low-frequency noise (rumble), the cause is usually either radiated noise from large air distribution ductwork passing overhead, or the fact that the room may be adjacent to or near a mechanical equipment space. On the other hand, should the room be located too near the factory production floor, the sound transmission loss of the intervening wall isolation system may simply be inadequate. Whatever the cause, rooms having background noise spectra significantly dominated by low-frequency content (< 100 Hz) are likely unsuitable for training, particularly if cognitive testing is involved.

For example, the results of a recent pilot study in Sweden indicated that an exposure of one hour duration to moderate levels of low-frequency background noise had a measurable effect on the ability of test subjects to cope with cognitive demands¹. This observation was based on comparisons made with the same cognitive tasks performed in the presence of a neutral-sounding background noise of *similar* A-weighted sound level (42-43 dBA). The test subjects interviewed, following the experiment that was conducted in the presence of excess low-frequency noise, spoke of a sense of mental tiredness, lack of concentration and headache related symptoms as possible reasons for their poorer performance. However, a most intriguing observation during this research was that none of the subjects commented on the background noise environment in either instance! This suggests that there may be subliminal aspects to the effects of low-frequency noise on people.

Using the Relationship (C-A) to Supplement the A-Weighted Sound Level.

For screening purposes, one can use the difference between the C-weighted and A-weighted sound levels to gain an insight to the probable frequency structure of the background noise in a room. For example, note that in Fig. 1 the value of (C-A) is different for each spectrum shape, although each spectrum has the identical

(continued on page 10)

Room Noise Criteria*continued from page 9*

A-weighted sound level. Observe that the hissy-sounding spectrum has a (C-A) difference of 10 dB, whereas the rumbly-sounding spectrum has a (C-A) difference of 25 dB. The (C-A) difference of the neutral spectrum lies in between these two extremes at 15 dB.

Thus, the value of (C-A) could be used as a screening tool to identify rooms with a potential sound quality problem, which otherwise might be rated acceptable strictly based on the A-weighted sound level. This screening procedure requires only the use of a standard sound level meter. Of course, more refined diagnostic techniques are necessary to develop appropriate remedial measures to correct an existing problem situation, but these are beyond the scope of this article.

Acceptability Criteria for Checking Background Noise in Rooms

For training and testing facilities, where some interaction between speaker and listener is usually essential, the A-weighted sound level should be on the order of 45 dBA or less. For optimal subjective sound quality, the (C-A) spectral difference should not exceed about 20 dB, nor be less than about 10 dB. Sound levels in excess of 50 dBA, having (C-A) values outside the limits stated above, may cause problems with speech intelligibility and likely interfere with any necessary cognitive process.

Note: It is important to understand that C-weighting on the sound level meter (SLM) is to be used, not the Linear setting, for the aforementioned limits to be valid. The low-frequency cutoff on the Linear setting can vary significantly among standard SLMs because this requirement has not been standardized.

Potential Limitations of the A-Weighted/Δ(C-A) Methodology

Ideally, room background noise should have the following characteristics:

- 1) A level that does not exceed the requirements for optimal space use
- 2) Balanced contributions from all parts of the sound spectrum, with no predominant bands of noise
- 3) Contain no *audible* tonal components, such as a hum, whine or whistle
- 4) No fluctuations in level that would be perceived as a throbbing or pulsing

With respect to the first characteristic (level), the A-weighted sound level is a reasonably adequate metric applicable to rooms where good speech intelligibility and communication is a requirement. With respect to the second characteristic (balance), the (C-A) difference is a coarse indicator of relative spectral imbalance. Although it does not provide the detail necessary to develop noise-control measures, it does provide an indication of a potential sound quality problem. This methodology does not identify to the presence of annoying tonal components. Neither is it particularly sensitive to throbbing or pulsing fluctuations in level. However, both of these characteristics, if significant, are easily detectable by listening. Thus, a trained observer should be able to make a value judgment based on his/her own aural observations.

¹K. Persson-Waye et al, "Effects on performance and work quality due to low-frequency ventilation noise," J.Sound Vib., Vol. 205 (4), pp. 467-474 (1997).

Mr. Blazier is an internationally-recognized specialist in addressing problems concerning noise and vibration control of mechanical equipment and systems serving a wide variety of buildings including offices, apartments, hotels, multi-purpose complexes, educational and/or performing-arts facilities.

Mr. Blazier is the author of numerous technical papers and articles published in the scientific literature. He has collaborated in the writing of two textbooks, and four handbooks on the subjects of noise criteria and noise and vibration control in buildings.

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 2002 American Occupational Health Conference (AOHC) in Chicago, Illinois.

The title of the session is "Evaluating and Improving the Effectiveness of Your Hearing Conservation Program." This session will be presented on Saturday, April 13, 2002 from 8:00 –11:15 AM at McCormick Place and is designed to assist participants in evaluating their hearing conservation program.

Objectives include:

- Describe the components of an effective hearing conservation program to determine whether their program meets requirements.
- Describe ways they can improve key areas of their 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 their programs.

This seminar will be conducted by CAOHC Council members.

To register for this seminar #901, 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>

CLASSIFIED ADVERTISING/JOB PLACEMENT

Need to sell your used sound booth, or has upgrading your audiometer left you with the old one to sell? Or, are you being relocated to a new city and need a job in hearing conservation? Space is now available in this newsletter for your classified ad or job search. Your ad will be placed in an upcoming issue of the UPDATE. We will accept text only (no logos or graphics). Maximum of 50 words. Fee is \$1.00 per word – payment in advance and accepted as Mastercard, Visa, check or money order.

Deadline for submitting classified ads is:

| | |
|-------------------|--------------------------|
| May 4, 2002 | (Summer 2002 issue) |
| September 4, 2002 | (Fall 2002 issue) |
| November 4, 2002 | (Winter 2002/2003 issue) |

You may send your ad copy via e-mail to:

info@caohc.org

Mail to: CAOHC, Attention: Barbara Lechner,
611 E. Wells Street, Milwaukee, WI 53202

UPCOMING OHC CERTIFICATION AND RECERTIFICATION COURSES* 2002

*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 January 31, 2002 (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.

| <i>Begin Date</i> | <i>City</i> | <i>State</i> | <i>Course Director</i> | <i>Phone</i> | <i>Begin Date</i> | <i>City</i> | <i>State</i> | <i>Course Director</i> | <i>Phone</i> |
|-------------------|-------------------|--------------|------------------------|--------------|-------------------|-------------------|--------------|------------------------|--------------|
| 2/18/2002 | Tampa | FL | Abrams, Harvey | 727/398-9395 | 4/19/2002 | Chicago | IL | Elmore, John | 800/357-5759 |
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| 2/19/2002 | Pearl Harbor | HI | Bardolf, Lynnette | Navy | 4/24/2002 | Richmond | VA | Swisher, Timothy | 412/367-8690 |
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| 2/20/2002 | Memphis | TN | Prince, Jane | 870/972-1166 | 4/29/2002 | Wuerzburg | Germany | Hannah, Kevin | Army |
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