

Vol. 25, Issue 2

The newsletter of the Council for Accreditation in Occupational Hearing Conservation

Celebrating 40 Years of Excellence History of CAOHC

History files provided by Dr. Joseph Sataloff, founding member Article written by Bianca Costanzo



40 years ago in August, CAOHC signed the legal paperwork and was officially incorporated to promote hearing loss prevention by enhancing the quality of occupational hearing loss prevention practices.

Although noise-induced hearing loss (NIHL) has existed for many years, hearing conservation programs (HCPs) are a more recent phenomenon.

The first published criteria for the prevention of hearing loss were written in the 1950s. In the early 1960s, several companies initiated programs to protect workers' hearing. The Department of Defense and military departments using jet engines began HCPs for noise-exposed personnel.

In 1966, the most widely used study that attempted to define noise exposure criteria was that of W.L. Baughn, MD, who suggested that an exposure of 90 decibels (dBA) for 8 hours a day for 45 years would lead to hearing loss.

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The American Academy of Otolaryngology–Head and Neck Surgery (AAO-HNS)¹, the Intersociety Committee on Noise Exposure Control and the American Conference of Governmental Industrial Hygienists (ACGIH) recommended that exposures be halved for each increase of 5 dBA over 90 dBA. This standard was adopted by the US Department of Labor in 1969 under the authority of the Walsh-Healy Public Contracts Act and the Occupational Safety and Health Act of 1970.

In the early 1960s, the American Association of Occupational Health Nurses (AAOHN)², recognizing the need for a program focusing on the prevention of hearing loss, contacted the American Speech-Language-Hearing Association (ASHA)³, the American College of Occupational and Environmental Medicine (ACOEM)⁴ and the American Industrial Hygiene Association (AIHA) for their expertise. The Intersociety Committee was formed, which produced the *Guide for Training Audiometric Technicians in Industry* in 1965.

In 1965, the AAOHN obtained a federal grant to establish 5 courses using the guidelines for training from the Intersociety Committee. These courses were given by Dr. Joseph Sataloff and his staff. By the late 1960s more than 3,000 nurses, health professionals and industrial personnel had completed this training. In 1968, a second Intersociety Committee consisting of 2 representatives from the American Academy of Occupational Medicine, AAO-HNS, ACGIH, AIHA and ACOEM was formed to continue these efforts.

In 1970, the Occupational Safety and Health Act called for the development of regulations for noise exposure. In response, the Intersociety Committee developed guidelines for the evaluation of noise hazards, noise-control methods, planning hazard-free operations and audiometry.

CAOHC Council for Accreditation in Occupational Hearing Conservation

update

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Message from the Chair Celebrating CAOHC!

By: Madeleine J. Kerr, RN, PhD

CAOHC upda<u>te</u>

Happy Birthday to CAOHC, 40 years old! In this issue of Update you can read the milestones of the past four decades. Thanks to former council member Dr. Robert Sataloff, we have learned more about CAOHC history through the files of his father Dr. Joseph Sataloff, a founding member. Reading these papers we can really appreciate the meticulous letter writing over months of time that forged the collaborations of the inaugural CAOHC professional organizations. What would the founders think of the rapid communications of the digital world of today?

Today, CAOHC is fully engaging in the digital world with a new more interactive website, social media, and a transition to online issues of the Update publication. We've even ventured into e-learning with our first online course. *Noise Measurement* is available 24/7 to any professional interested in learning more about noise and noise measurement. After last year's success, another series of hearing conservation webinars in collaboration with the National Hearing Conservation Association will be announced soon! We hope you'll try some of these new modes of communication and send us your feedback

On the horizon is another breakthrough in the digital world, the ability to share hearing-related data at the population level. In the Fall 2012 Update, the National Institute for Occupational Safety and Health (NIOSH) Occupational Hearing Loss Surveillance project was described by Elizabeth Masterson. Since then, the full article titled *Prevalence of Hearing Loss in the United States by Industry* was published in the American Journal of Industrial Medicine (Masterson et al., 2013). The early release version was one of the top read articles of 2012 on MDLinx.com according to NIOSH director John Howard (2013). Population data can raise interest in occupational hearing loss! The foundation for this new database is pure tone audiometric testing, the gold standard used by CAOHC Occupational Hearing Conservationists. For information about partnering with NIOSH on this Project go to http://www.cdc.gov/niosh/topics/ohl/partner.html. This is just another way we can extend our reach and work together to prevent occupational hearing loss. Here's to the next 40 years of CAOHC!

References

 $Howard, J. \ (2013) \ A \ Sound \ Investment. \ NIOSH \ eNews, \ 10(11) \ Available \ http://www.cdc.gov/niosh/enews/enews/10n11.html$

Masterson, E. A., Tak, S., Themann, C. L., Wall, D. K., Groenewold, M. R., Deddens, J. A., & Calvert, G. M. (2013). Prevalence of hearing loss in the United States by industry. *American Journal of Industrial Medicine*, *56*(6), 670-681. doi:http://dx.doi.org.ezp1.lib.umn.edu/10.1002/ajim.22082

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Celebrating 40 Years of Excellence... - continued from page 1

When the Occupational Safety and Health Administration (OSHA) noise regulations were promulgated in the early 1970s, the National Institute for Occupational Safety and Health (NIOSH) worked with the Intersociety Committee to further develop noise standards.

In 1972, the AAOHN expanded its leadership role in the Intersociety Committee. The significant impact of this nursing association and the courses offered by Dr. Sataloff and his team led to the appointment of Mildred Sittner, RN, as the first executive secretary for the Committee.

Later that year, the Intersociety Committee met in Chicago with representatives of every important organization in the United States connected with the prevention of occupational hearing loss.

The Committee, officially named the Intersociety Committee for Standardization of Industrial Audiometric Technician Training and Hearing Conservation, was notified that NIOSH would underwrite the formation, development and first-year operation of the Certification Board for Industrial Audiometric Technicians.

Following the formation of the Certification Board in 1973 the Board changed its name to the American Board of Occupational Hearing Conservation Technicians. At the Board's meeting in Waterville, ME, in August, 1973, the organization changed its name to the Council for Accreditation in Occupational Hearing Conservation (CAOHC). The first Course Director (CD) Workshop was held at this meeting. Since then, more than 300 CDs have trained more than 21,000 occupational hearing conservationists⁵.

The current CAOHC Council consists of 2 representatives from: AAOHN – 1960s, ACOEM – 1960s, AIHA – 1960s, ASHA – 1960s, AAO-HNS – 1968, Military Audiology Association – 1985, Institute of Noise Control Engineering of the United States of America – 1998, American Society of Safety Engineers – 2002, and the American Academy of Audiology – 2003.

The CAOHC mission has always focused on the advancement of occupational HCPs and the prevention of NIHL. CAOHC continually strives to be the go-to resource for education, knowledge and standards related to quality hearing-conservation practices.

¹ Previously known as: American Academy of Ophthalmology and Otolaryngology

- ² Previously known as: American Association of Industrial Nurses
- ³ Previously known as: American Speech and Hearing Association
- ⁴ Previously known as: Industrial Medical Association

⁵ Previously known as: *Audiometric Technicians*

UPCOMING WORKSHOPS

Professional Supervisor of the Audiometric Monitoring Program

Thursday, November 7, 2013

Hyatt Regency Coconut Point • Bonita Springs, FL (This is a preconference workshop to the Academy of Doctors of Audiology (ADA) conference)

Registration details can be found on CAOHC's website

Course Director Certification & Recertification Workshop

Friday, November 22, 2013 St. Paul Hotel • St. Paul, MN

Registration details can be found on CAOHC's website



CAOHC © Council for Accreditation in Occupational Hearing Conservation



Recording Occupational Hearing Loss on the OSHA 300 Log

CAOHC update

By: Susan Cooper, PhD, CCC-A

According to the U.S. Bureau of Labor Statistics (BLS), occupational hearing loss accounts for roughly 30% of work-related illnesses reported for the manufacturing sector. Although incidence rates have declined somewhat in recent years (Figure 1), it is estimated that roughly 14,000 manufacturing workers are affected annually. Incidence rates are highest in the manufacturing sector, but occupational hearing loss is also reported for an additional 12,000 individuals per year across other industries.



In the early 1980s, the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) promulgated regulations for preventing occupational hearing loss in general industry. OSHA's Noise Standard and Hearing Conservation Amendment, 1910.95, provides guidance for identifying potentially hazardous noise, implementing noise controls, selecting and fitting hearing protection devices, providing employee education, and monitoring success through annual audiometric evaluations and follow-up. Only much later, however, did OSHA clarify a formal system for tracking the annual incidence of occupational hearing loss (OHL). Current requirements appeared in a revision to OSHA's Recordkeeping Rule, 29 CFR 1904, in 2003. Following is a summary of OSHA's requirements for recording routine cases of OHL on the OSHA 300 Log. See the Example Protocol for suggested steps in determining recordable shifts in hearing.

• **Recording criterion.** As part of a hearing conservation program (HCP), companies conduct baseline and annual audiometric testing for their noise-exposed workers. Based on results of this testing, employers must record cases of work-related hearing loss that meet the following criterion:

Standard Threshold Shift, or STS (an average change of 10 dB or more at 2000, 3000, and 4000 Hz in either ear, compared to baseline hearing test; age-adjustments allowed), **provided that** the employee's average hearing level at the same frequencies in the same ear is 25 dB HL or greater (regardless of employee's age).

It is important to note that STS as part of a HCP is designed to function as a "warning" or "flag" to follow-up with counseling, refitting/retraining hearing protection, engineering controls, and so on. In contrast, the OHL recording criterion is intended to represent an injury/illness, important for statistical/ tracking purposes. This is why OSHA determined that employers need not record all cases of STS. Rather, recordable OHL cases represent only persistent shifts in hearing, co-occurring with hearing loss/impairment, and of course, only those that are work-related.

- **Baseline/reference audiogram.** To determine whether an STS has occurred, the employer must compare the current hearing test results to the employee's baseline audiogram. This comparison is made to the original baseline or when appropriate, a revised baseline according to existing hearing conservation program definitions under 1910.95. Although baseline revision decisions are made according to the professional judgment of the reviewing audiologist or physician, OSHA has clarified certain issues such as that baseline revisions must be conducted separately for each ear (OSHA, 2003a, 2005, 2007). The National Hearing Conservation Association has recently revised its best practices guideline for baseline review/ management. This document serves as an excellent guideline for professional reviewers of hearing conservation programs (NHCA, 2013).
- Retest/confirmation of STS and time-frame. If the annual audiogram shows an STS, a hearing retest may be performed within 30 days of that test (multiple retests allowed, but not necessarily recommended). If the retest does not confirm the STS, then the case need not be recorded. If the retest confirms the STS, then the case, if work-related, must be recorded within seven calendar days of the retest. If a retest is not performed, then the case (again, if work-related) must be recorded within seven calendar days.
- **Results of subsequent testing.** If later audiometric testing performed as part of the hearing conservation program indicates that the STS is not persistent, then the employer may erase, or line-out, the recorded entry.
- Determination of work-relatedness. In the 1904.10 final rule, OSHA stressed the importance of case-by-case review, and stated that hearing loss work-relatedness must be determined according to specifications of section 1904.5. If an event/exposure in the workplace caused or contributed to the shift in hearing or "significantly aggravated" a previously existing hearing loss, then the case is recordable. The National Hearing Conservation Association has published guidelines to assist professional reviewers with determining work-relatedness (NHCA, 2011). Former CAOHC Council member Dr. Peter Rabinowitz published an article in *Update* outlining important steps in determining work-relatedness, as well as responsibilities of the OHC and the Professional Supervisor (Rabinowitz, 2005).
- Forms. OSHA's recordkeeping forms (300, 301, and 300A) designate a separate column for recording hearing loss as an illness.

- State plans. All state-run OSHA plans are required to follow the federal rule for recording OHL. In the states of Oregon and Washington, STS age-adjustments are allowable when calculating potentially recordable shifts in hearing. STS age-adjustments are not allowed in these states, however, for purposes of complying with state noise and hearing conservation program requirements.
- Applicable industries. Certain industries are not covered under the general industry hearing conservation amendment 1910.95 (construction, agriculture, oil and gas drilling, etc.), but these businesses are included under 1904. If such employers conduct audiometric testing programs, then the hearing loss recordability provisions of 1904.10 apply.

And a final note: It is important to remember that OSHA's recordkeeping requirements in no way change a company's obligation to maintain an effective hearing conservation program for their noise-exposed workers. In particular, all employees showing STS should continue to receive appropriate follow-up, whether the shift in hearing is recordable or not. Although compliance with recordkeeping rules is important to the ultimate goal of tracking incidence of work-related hearing loss across industries, employers should not allow recordkeeping concerns to detract from their hearing loss prevention efforts.

Example Protocol for Recording Occupational Hearing Loss on the OSHA 300 Log

If at any step a "no" is encountered, the process ends and the case is **not** recorded on the Log

Step 1	Compared to the baseline or revised baseline audiogram as defined by 1910.95, is there an STS in either ear (age adjustments allowed)? If yes, continue to step 2.
Step 2	Is the average hearing level on the current hearing test at 2000, 3000, and 4000 Hz in the same ear greater than or equal to 25 dB HL (no age adjustments)? If yes, continue to step 3.
Step 3	Is the STS confirmed upon retest within 30 days? If yes, continue to step 4. (<i>Note: if a retest was not conducted within 30 days, also continue to step 4.</i>)
Step 4	Has a qualified healthcare professional determined that the shift in hearing is more likely than not caused or aggravated by workplace noise? If yes, continue to step 5. (Note: if the cause of the STS is not clear or not determined, then the employer should accept work-relatedness by default and continue to step 5.)
Step 5	Record the case in the "hearing loss" column (M)(5) on Form 300 within 7 days of test or retest.

REFERENCES/ADDITIONAL READINGS:

OSHA regulations & interpretations, guidelines, and best practices

NHCA (2011). Guidelines for Recording Hearing Loss on the OSHA 300 Log, National Hearing Conservation Association, approved by the Executive Council on April 26, 2011. Available at www.hearingconservation.org.

NHCA (2013). Guidelines for Audiometric Baseline Revision, National Hearing Conservation Association, approved by the Executive Council on February 20, 2013. Available at www.hearingconservation.org .

OrOSHA (2012). Oregon Administrative Rules, Chapter 437, Division 1, Recordkeeping and Reporting, 437-001-0700 (11)(b): Occupational Hearing Loss Recording Criteria.

OSHA (2001). Occupational Injury and Illness Recordkeeping and Reporting Requirements, Occupational Safety and Health Administration, *Federal Register*, Vol. 66, Number 13, January 19, 2001.

OSHA (2001). OSHA Rule on Recordkeeping for Workplace Injuries to Go into Effect as Scheduled, Occupational Safety and Health Administration, National News Release USDL: 01-201, June 29, 2001.

OSHA (2001). Occupational Injury and Illness Recording and Reporting Requirements: proposed delay of effective date; request for comments, Occupational Safety and Health Administration, Docket No. R-02A, *Federal Register*, Vol. 66, Number 128, pages 35113-35115, July 3, 2001.

OSHA (2001). Occupational Injury and Illness Recordkeeping and Reporting Requirements, Occupational Safety and Health Administration, *Federal Register*, Vol. 66, Number 198, 52301-52304, October 12, 2001.

OSHA (2001). OSHA, National Association of Manufacturers Settle Differences on Recordkeeping Rule, Occupational Safety and Health Administration, Trade News Release, November 16, 2001.

OSHA (2002). Agency to Issue Final Rule on Recording Hearing Loss, Occupational Safety and Health Administration, Trade News Release, June 28, 2002.

OSHA (2002). Occupational Injury and Illness Recordkeeping and Reporting Requirements; Final Rule, Occupational Safety and Health Administration, *Federal Register*, Vol. 67, 44037-44048, July 1, 2002.

OSHA (2002). Occupational Injury and Illness Recordkeeping and Reporting Requirements; Proposed Delay of Effective Dates/Request for Comment, Occupational Safety and Health Administration, *Federal Register*, Vol. 67, 44124-44127, July 1, 2002.

OSHA (2002). OSHA Recordkeeping Form to Include Hearing Loss in 2004, Occupational Safety and Health Administration, Trade News Release, December 16, 2002.

OSHA (2002). Occupational Injury and Illness Recordkeeping and Reporting Requirements; Supplementary Information, Occupational Safety and Health Administration, *Federal Register*, Vol. 67, No. 242, 77165-77170, December 17, 2002.

OSHA (2003). Interpretation letter dated 5/8/03 from Richard E. Fairfax, Director, Directorate of Enforcement Programs to Linda Ballas, regarding audiogram baseline revision.

OSHA (2003). Interpretation letter dated 8/14/03 from Richard E. Fairfax, Director, Directorate of Enforcement Programs to Joan E. Piosa, regarding STS retests.

OSHA (2004). Interpretation letter dated 3/4/04 from Frank Frodyma, Acting Director, Directorate of Evaluation and Analysis, to Carl Sall, regarding timeframe for retests, line-outs, and application of 1904.10 to the construction industry.

OSHA (2005). Interpretation letter dated 9/9/05 from Richard E. Fairfax, Director, Directorate of Enforcement Programs to Laurie Wells, President of NHCA, regarding audiometric baseline revision.

OSHA (2007). Interpretation letter dated 8/29/07 from Keith Goddard, Director, Directorate of Evaluation and Analysis to Theresa Schulz, CAOHC Chair, regarding audiometric reviewer qualifications.

Rabinowitz, P. (2005). Determining when hearing loss is work related, *Update*, Council for Accreditation in Occupational Hearing Conservation, Vol. 17, issue 3.

WISHA (2007). Washington Chapter WAC 296-27-01113 Recording criteria for cases involving occupational hearing loss.

Background/Regulatory history (from CAOHC Update)

Megerson, Susan Cooper (2001). Update on hearing loss recordability: OSHA call for comments, *Update*, Council for Accreditation in Occupational Hearing Conservation, Vol. 13, Issue 2.

Megerson, Susan Cooper (2002). OSHA's final rule for recording occupational hearing loss, *Update*, Council for Accreditation in Occupational Hearing Conservation, Vol. 14, issue 3.

Megerson, Susan Cooper (2003). Amendments to OSHA's final rule for recording hearing loss, *Update*, Council for Accreditation in Occupational Hearing Conservation, Vol. 15, issue 1.

Susan Cooper is Hearing Conservation and Regulatory Liaison for CavCom, Inc. She has over twenty years experience as a consultant in occupational hearing conservation and as a CAOHC Course Director. Susan is an ASHA-certified audiologist, former president of the National Hearing Conservation Association and former chair of CAOHC. She may be reached at susanc@cavcominc.com.

Rewind

САОНС UPDATE

Spring 2001

Hard to Test Workers

By Linda Frye, COHN-S/CM MPH RN Representative of the American Association of Occupational Health Nurses

As an OHC 1 have been challenged by some workers during the audiometric procedure. 1 am sure many of you have your own stories to share as well. Employees who already suffer from hearing loss such as those with tinnitus or a sensorineural hearing loss such as presbycusis frequently arrive for testing with a heightened level of anxiety. Individuals who have difficulty hearing are often times self-conscious or embarrassed and they may "act out" in order to conceal the truth. Let's take a few minutes to consider the hard to test worker's perspective and alternatives that might help us as OHC's accomplish our objectives.

Hard-to-test workers have often had a negative experience during testing. This might be due to being in the booth for extended periods of time, or frustration because they have difficulty distinguishing the audiometric tones from the sounds they hear in their head. If such an employee presents with an "attitude" and is greeted by an OHC with an "attitude" because of the employee's reputation for being difficult to test, you can imagine the outcome is not going to be the desired one. Over the years I, and other OHCs I know, have developed

a few tricks for getting the best results during audiometric testing, even under difficult circumstances. These tips are not based on research and may not be appropriate in every situation, but I hope you will find them helpful. If you have others that you want to share please contact me through the CAOHC office and we will pass them on to you in future UPDATE newsletters.

Testing Tips For the Hard-To-Test Employee: 1. When a worker becomes difficult to deal with, try to pause

- before responding and look at things from their perspective. Perhaps they have had a bad day at work or they are concerned about the job while they are away for the testing. 2. Remember that not everyone will test well with a
- microprocessor. I suggest that you test an occasional employee using the manual mode to maintain your skills. If you have an agitated worker who does not test well in the microprocessor mode and you as the OHC are not comfortable and efficient in switching to the manual mode, the testing process will not go smoothly. It is essential for all OHCs to remain very familiar with the manual testing procedure. Unfortunately, some employers believe that when they purchase a microprocessor that they don't need a trained OHC such as those who attend a CAOHC approved course and become CAOHC certified.

3. If an employee has a chronic problem such as tinnitus and

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needs to be tested manually, mark their audiogram "test nanually" to avoid wasted time and frustration next time

CAOHC update

4. If a listener has tinnitus, it's often helpful to use a "pulsed" tone rather than a continuous tone for testing (listeners

- often report that there is less tendency for the pulsed tone to "blend in" with the tinnitus).
- When you have a known difficult employee to test and you have more than one OHC in your department, match the employee with the OHC who has the best rapport right from

6. Keep in mind that management has the ultimate responsibility for the hearing conservation program. Should you encounter a worker who is disrespectful or non-compliant in spite of your best efforts to accommodate them, stop the testing process and call the appropriate management contact for

7. Avoid leaving a worker in the testing booth for extended

periods of time during the manual testing procedure. After a reasonable time period (e.g. 10 minutes) allow the worker to come out of the booth to rest, have a drink of water, etc. before proceeding. For those of us who have been tested ourselves, you know that after awhile you begin to hear your own heart beat and are afraid you will miss a tone if you

Those who wear hearing aids must remove them before testing. For those of us dependent on reading glasses, it can be frustrating to be told to read without them. Now imagine being told to hear without your hearing device. Be sure to 8. explain what, why, and when to win support for the testing procedure. Point out beforehand that the test will not be valid with the hearing aid in place because of possible acoustic feedback for example; remind them that the purpose of the test is to find out about their hearing, not their hearing aid. Then, share the results in a positive way with the worker

after they have put the hearing device back on. 9. If the only reason for your interaction is to "get the test done"

you may be missing the big picture. Inspiring workers to be proactive managers of their own health and well being will

have far reaching benefits. I remember a saying that goes something like, "Isn't it great

to love what you're doing and doing what you love." Sometimes ittakes a difficult worker to remind us what and why we are doing what we do. Being an OHC is a privilege I value and I hope you

Do you have experience with hard-to-test workers? Send feel the same way, too. your advice to CAOHC, and we'll share it with other OHCs.

To celebrate CAOHC's 40th Anniversary, we are presenting a special section called Rewind. This section will appear within our social media outlets and-online newsletter, Update. Rewind will feature articles from previous issues of Update that contain information relevant for today's readers. As a follow-up to each article, a discussion thread will be started that invites readers to comment on the featured Rewind article.

Rewind back to 2001, when Linda Frye, COHN-S/ CM MPH RN wrote the article Hard to Test Workers. Are the issues in this article still relevant? Are there new issues that make workers hard to test? How do you deal with hard to test workers? Tell us by going to our Facebook page and continuing this discussion...



Moving On....



The CAOHC Council said farewell to two outstanding women this year. Mary McDaniel (representing ASHA) and Diane DeGaetano (representing AAOHN) moved on from their duties as CAOHC Council members in November 2012 and May 2013, respectively. The CAOHC Council and community were fortunate to have both women as leaders.

Mary McDaniel began volunteering with CAOHC as a guest of the Council in October 2002. During her 10-year term, Mary played an integral role in several key Council initiatives as a Course Director (CD) and a Professional Supervisor of the Audiometric Monitoring Program workshop instructor. As an instructor and committee member, Mary was instrumental in the redesign of the CD and PS course curricula and the PS exam.

Mary was also deeply involved in the standardization of the OHC exam, which will be launched in 2014. Mary, along with fellow committee chair Diane, led the charge to ensure this process was vetted by stakeholders of our component organizations, CDs, PSs and OHCs outside of the CAOHC Council.

Mary spent her last few years on the Council as a member of the Executive Committee as Vice-Chair, Chair and Past Chair. Mary was a dynamic, organized and thoughtful volunteer leader. During her tenure as Chair, several new initiatives were started, and the Noise Measurement online course was completed.



Moving In....

As Mary McDaniel and Diane DeGaetano leave the council, CAOHC welcomes two new representatives. Pamela Gordon duPont and Elaine Brown were recently appointed to serve as CAOHC Council Members representing the American Speech-Language-Hearing Association (ASHA) and the American Association of Occupational Health Nurses (AAOHN), respectively.

Pamela Gordon duPont, MS, CCC-A, CPS/A, is President and Founder of Gordon Hearing Conservation, Inc. Ms. duPont has been a CAOHC Course Director since 1977 and was a professor at the University of Connecticut Graduate School Of Communication Disorders. Pam began her term during our November 2012 council meeting in Phoenix, AZ and since has become an instructor for the Course Director workshop and serves on the Course Director Committee. She is also reviewing both the Noise Course and the new website. We welcome her keen eye and attention to detail.

Elaine Brown, RN, BS, COHN-S/CM, COHC, is an Occupational Health Nurse – North American Seeds at the Fortune 500 Company: Monsanto where she has worked as the onsite certified occupational Left:Mary M. McDaniel, AuD CCC-A CPS/A Served as: CAOHC Chair, Professional Supervisor & Course Director instructor, Co-Chair OHC Certification Task Force

Right:Diane S. DeGaetano, BSN, RN, COHN-S, FAA Served as: Committee Chair for Marketing & Co-Chair for OHC Certification Task Force

We will miss Mary's input on the Council, but we know she will never be far, and her words will always ring in our ears: "Work to build and strengthen your team, keep the bar high and strive for excellence. CAOHC...there is no equal!"

Diane, another dynamic leader, needed to resign before her 10-year term expired due to the demands of her full-time job. As chair of the Marketing Committee, Diane launched 2 new CAOHC promotional brochures, spearheaded the CAOHC website and logo redesign, which will launch in October, and was an integral participant in the Marketing Strategic Planning Retreat.

In addition to her role on the Marketing Committee, Diane was also committed and passionate about the standardization of the OHC exam. Diane and Mary led a task force through the sometimes tedious OHC job task analysis, item writing, beta testing and cut-score processes.

Although Diane is no longer on the Council, she is still active in Council projects and will continue to do so as much as time allows. Diane often said that CAOHC was her work family, and family always stays connected.

On a personal note, I had the opportunity to work with both of these passionate and committed women. Both Mary and Diane made me proud to be part of this organization. Thank you. You will be missed.

Left: Pamela G. DuPont, MS CCC-A CPS/A Term: May 2013–May 2018

Right: Elaine J. Brown, RN BS COHN-S/CM COHC Term: November 2013–November 2018

hearing conservationist (COHC) since 1992. Ms. Brown served as an exam item writer for the American Board of Occupational Health Nurses. Based on this experience and the recommendation of her Course Director, Tom Thunder, Elaine also served as an item writer for CAOHC's standardized OHC Exam. She has also served a Director of the North Central Region of AAOHN. Since coming on the Council Ms. Brown has been involved with the new OHC standardized exam and participated in the Professional Supervisor focus group conducted earlier this summer. Ms. Brown will begin her term as a CAOHC Council member at the November 2013 meeting in St. Paul, MN. As a certified OHC, she brings a unique perspective to the Council.

Both Pam and Elaine will serve as Council members for up to five years, with an opportunity to renew their term. Both will collaborate in leadership decisions with the full Council to continue CAOHC's effort to promote the conservation of hearing by enhancing the quality of occupational hearing conservation programs throughout the nation. The time, dedication, and motivation provided by those who serve as council members is critical to the success of CAOHC and greatly appreciated by the council leadership and staff.



Noise Annoyance and Public Health

By: Karen Daneu, College of Public Health, University of Nebraska Medical Center, Omaha, NE

Introduction

As one of our five senses, hearing contributes significantly to our appreciation of the world around us. Many sounds perform an important function in our daily lives, but some sounds may be considered annoying or unwanted. For example, a barking dog, a leaf blower, or a snoring partner may be unpleasant to listen to, and may produce an unhealthy response in listeners.

As the urban population grows and cities become 24-hour hubs of activity, the impact of noise and its effect on public health may increase as well. Noise has been studied extensively since the 1960s, with multiple evaluations conducted in locations around the globe, including the United Kingdom, Sweden, Canada, New Zealand, India and Serbia.

To protect communities, governments have leveraged policy actions in order to mitigate the adverse outcomes of environmental noise. For example, in 1972 the United States passed the Noise Control Act, establishing a national policy to protect Americans from noise that threatened the health and welfare of communities. In 1987 the International Organization for Standardization (ISO) published a standard, ISO 1999, "Acoustics- Determination of occupational noise exposure and estimation of noise-induced hearing impairment" which outlined exposure limits for worker noise. Sound can be measured in decibels (dB), using the A- weighting scale (dBA) that is commonly associated with human hearing. Everyday sounds might include a whisper, measured at 30 dB(A), a lawn mower measured at 90 dB(A) and a music concert that might range from 100-110 dB(A). ISO 1999 recommends hearing protection above 85 dB(A) level (Passchier-Vermeer and Passchier 2000).

However, in spite of legislation and standards, noise exposure remains a significant health risk. To quantify the effects of noise, extensive research has been conducted around the world, including studies on traffic, aircraft, trains, occupational noise and wind turbines. Questionnaires have been administered in order to evaluate how noise annoyance should be measured. Studies have also attempted to quantify noise annoyance in terms of economic detriment (Gjestland 2007). The impact of noise may be studied by quantifying the amount of hearing impairment, annoyance/irritation factor, sleep disturbance, human performance, stress, anxiety, and other health effects.

Direct Noise Effects on Health

The most direct relationship between noise and human health has been verified through loss of hearing (i.e., Noise-induced Hearing Loss, NIHL). Noise-induced hearing loss has been studied extensively, and research supports that workers exposed routinely to noise levels above 85 dB(A) have corresponding problems with communication - they cannot fully hear conversations because of the cumulative effects of hazardous noise exposure in their workplace. This may lead to reduced productivity, workplace injuries, and even fatalities. In one case, misunderstood verbal directions led a worker to fall to his death. In a recent study, Singh et al. (2009) discovered that laborers exposed to noise above 85 dB(A) frequently do not wear (or have not been provided) personal protective equipment (Prasanna Kumar et al. 2008). With laborers exposed to high levels of heat, stress and noise control measures, the duration of noise exposure and other environmental factors exacerbate effects of noise annoyance (Singh et al. 2009). Noise-induced hearing loss can be directly attributed to industrial noise, but making an association with a non-auditory health condition is a more challenging task.

Non-Auditory Effects of Noise on Health

One rationale used to link noise to non-auditory health effects is noise annovance. Annovance results in stress that has been linked to problems with sleep, performance, cardiovascular health, and mental health status. These conditions may be increasingly detrimental to children, elderly individuals, and others predisposed to anxiety stress. Noise annoyance has been measured by way of questionnaires, often attempting to determine the amount of noise interference, ability to control (reduce or eliminate) noise, and the level of danger the survey respondent perceives during the episode of annoying noise. Laboratory studies have measured the amount of sleep EEGs, blood pressure, catecholamines, reaction times, and memory (Stansfeld and Matheson 2003). There may be a component of bias-some individuals make their livelihood in the field of aviation, and may be less inclined to complain about noise annoyance (Hume 2010). The often cited work "Noise Exposure and Public Health" includes a table identifying the long-term effects of noise exposure and the classification of the evidence as sufficient, limited or lacking (Passchier-Vermeer and Passchier 2000). Most of the data associated with noise annovance are subjective in nature.

Noise and Annovance. There have been multiple studies investigating noise annoyance and exposure to transportation, including aircraft, traffic, and rail noise. One study measured the response to a reduction in road noise when traffic was redirected, but the results were inconclusive and suggested the need for further investigation (Stansfeld et al. 2009). Another study investigated the coping mechanisms of individuals subjected to chronic noise in Beirut, Lebanon. Study participants reported increased consumption of sweets, caffeine, and nicotine (tobacco use) in order to cope with the exposure to chronic noise. Certainly, the increased consumption of these products could become the source of other health conditions, or may even amplify the anxiety resulting from noise annoyance. Respondents then used a fan, TV or radio to mask the unwanted noise when trying to fall asleep (Fooladi 2012). It has been reported that high frequency noise is more annoying than low frequency noise (Stansfeld and Matheson 2003). Furthermore, cardiac surgery patients in Intensive Care Units reported noise annovance related to various clinical instruments and procedures. Such reports of noise annoyance might adversely affect patient rest and recuperation (Hsu et al. 2010).

Noise and Sleep Disturbance. Sleep is often considered a quality of life issue. When people go to sleep they expect to be undisturbed. Night noise exposure, even at low levels, has been associated

with annoyance and sleep disturbance (Blum et al. 2004; Marks and Griefahn 2007; Jakovljevic et al. 2006). If noise exposure occurs during periods of sleep, it may increase blood pressure, heart rate and body movements, while resulting in decreased quality of life. These findings prompted the World Health Organization (WHO-Europe) to produce night-time guidelines for airport operations (Hume 2010).

Noise and Academic Performance. Noise leads to distractions that may interfere with your ability to perform academically. The 2003 Noise Health Journal reported on three studies of children's academic performance and the effect of airport noise in Los Angeles, Munich, and London. This report shows a clear link between chronic noise, impaired reading and attention (Matheson et al. 2003). The 2001-2003 Road Traffic & Aircraft Noise & Children's Cognition & Health (RANCH) Project determined the effect of traffic and airport noise on children's reading comprehension for students situated near three airports: Amsterdam's Schipol, Madrid's Baraja, and London's Heathrow (Clark et al. 2006). Children exposed to noise had decreased reading comprehension when compared to children who were unexposed, which was evident within one year of data collection. Children in the Munich study were observed in two different noise conditions. In addition to the cognition tests, the children's urinary cortisol levels and levels of epinephrine and norepinephrine were examined. Overnight levels in children near the old airport were high. After the airport was moved, the children near the new airport exhibited high levels of epinephrine and norepinephrine. The researchers suggested follow-up tests to analyze long-term cardiovascular outcomes (Passchier-Vermeer and Passchier 2000).

Noise and Cardiovascular Disease. The Hypertension and Exposure to Noise around Airports (HYENA) study (Jarup et al. 2008) resembles research discussed above. The HYENA study analyzed data collected from 6000 participants living near one of six major European airports in order to assess the short-term effects of aircraft noise at night. The authors reported that night-time aircraft noise, and 24-hour traffic, increased hypertension. Hypertension is associated with myocardial infarction, stroke, and cardiovascular disease. The HYENA study, and similar research conducted in Sweden (Bluhm and Eriksson 2011) showed a statistical relationship between noise and cardiovascular disease that previous studies had not. In addition to NIHL, noise annoyance, sleep disturbance, cognitive performance, and cardiovascular health, there are additional non-auditory health effects that are not fully understood and warrant further investigation.

Conclusion

These studies highlight that community noise is not a new concern, but will continue to be a problematic health issue. As more data are collected, we might resolve challenges presented by study bias and confounding variables. In the meantime, hearing conservationists should provide increased education to the workforce, as well as the general public, about issues pertaining to noise exposure and noise annoyance. We should make every effort possible to mitigate community noise and improve the health of our citizens.

References

Bluhm G, Eriksson C. 2011. Cardiovascular effects of environmental noise: research in Sweden. Noise Health 13(52):212-6.

Bluhm G, Nordling E, Berglind N. 2004. Road traffic noise and annoyance--an increasing environmental health problem. Noise Health 6(24):43-9.

Clark C, Martin R, van Kempen E, Alfred T, Head J, Davies HW, et al. 2006. Exposure-effect relations between aircraft and road traffic noise exposure at school and reading comprehension: the RANCH project. Am J Epidemiol 163(1):27-37. Epub 2005 Nov 23.

Fooladi MM. 2012. Involuntary and persistent environmental noise influences health and hearing in Beirut, Lebanon. J Environ Public Health 235618. Epub 2011 Oct 13.

Gjestland T. 2007. The socio-economic impact of noise: a method for assessing noise annoyance. Noise Health 9(35):42-4.

Hume K. 2010. Sleep disturbance due to noise: current issues and future research. Noise Health12(47):70-6.

Hsu SM, Ko WJ, Liao WC, Huang SJ, Chen RJ, Li CY, et al. 2010. Associations of exposure to noise with physiological and psychological outcomes among post-cardiac surgery patients in ICUs. Clinics (Sao Paulo) 65(10):985-9.

Jakovljević B, Belojević G, Paunović K, Stojanov V. 2006. Road traffic noise and sleep disturbances in an urban population: cross-sectional study. Croat Med J 47(1):125-33.

Jarup L, Babisch W, Houthuijs D, Pershagen G, Katsouyanni K, Cadum E, et al. 2008. Hypertension and exposure to noise near airports: the HYENA study. Environ Health Perspect.116 (3):329-33

Marks A, Griefahn B. 2007. Associations between noise sensitivity and sleep, subjectively evaluated sleep quality, annoyance, and performance after exposure to nocturnal traffic noise. Noise Health 9(34):1-7.

Matheson MP, Stansfeld SA, Haines MM. 2003. The effects of chronic aircraft noise exposure on children's cognition and health: 3 field studies. Noise Health 5(19):31-40.

Passchier-Vermeer W, Passchier WF. 2000. Noise exposure and public health. Environ Health Perspect108 Suppl 1:123-31.

Prasanna Kumar GV, Dewangan KN, Sarkar A, Kumari A, Kar B. 2008. Occupational noise in rice mills.Noise Health 10(39):55-67.

Singh LP, Bhardwaj A, Deepak KK, Bedi R. 2009. Occupational noise exposure in small scale hand tools manufacturing (forging) industry (SSI) in Northern India. Ind Health 47(4):423-30.

Stansfeld SA, Haines MM, Berry B, Burr M. 2009. Reduction of road traffic noise and mental health: an intervention study. Noise Health 11(44):169-75. Stansfeld SA, Matheson MP. 2003. Noise pollution: non-auditory effects on health. Br Med Bull 68:243-57.

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