

# The THRESHOLD

A T K GROUP PUBLICATION DEVOTED TO OCCUPATIONAL HEARING LOSS PREVENTION AND PROGRAM MANAGEMENT

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## Hearing Loss Dangers Of Recreational Firearms Use

Many use firearms recreationally in hunting and target practice activities. It is well known that unprotected (and even protected) use of firearms and other explosive devices cause temporary and permanent hearing loss.

Firearms produce significant impulse noise. The higher the gun caliber of, the higher the sound level output. Depending on the caliber of the gun, large bore guns can produce impulse sound pressure levels as high as 174 dB! The spectrum of impulse noise is generally mid to high frequency broadband energy with a rise time of two milliseconds.

We all have a "critical level", that when reached, will inflict permanent and irreversible damage to the cochlea's outer hair cells. Research indicates that once an individual exceeds their unique critical level of unprotected noise exposure, loss will occur; this often only requires one or two unprotected guns shots to damage the cochlea. Impulse noise below the critical level can or will produce the same effect over time.

The environment of firearms discharge makes a significant difference on sound level pressures.

Discharging a firearm under an open air covered shelter (with a tin roof for example) may increase the intensity of a gun discharge by 6 dB.

Many shooters implement a muzzle brake on large caliber guns to lessen "kick back"; muzzle brakes may increase sound pressure levels by 11 dB.

Reflective surfaces add to sound pressure levels as well.. A shooter discharging a gun next adjacent to concrete wall to his/her right will receive additional reflective energy to the cochlea.

### **Some facts About Firearms Exposure:**

-80% of hunters *do not* use hearing protection.

-50% of recreational firearm users report Tinnitus (ringing in the ears)

Numerous retail hearing protection devices available for hunting and general firearms applications.

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## Hearing Loss Dangers Of Recreational Firearms Use (CONTINUED)

Most devices provide a broad band “peak clipping” operation to reduce the detrimental effects of impulse noise. Additionally, many devices may aid in the awareness of approaching game which is a common complaint of hunters and reason why hearing protection is not used.

Appropriate use of hearing protection is an important practice both on and off the job!

## 2015 “Occupationally” Determined Hearing Loss Statistics

In 2007, The Bureau of Labor Statistics (BLS) reported that 14% of potentially occupationally related hearing loss events were deemed occupationally related. Of the vast number of determinations performed by T K Group, 17% of cases reviewed were deemed occupationally related. This figure falls in line with national statistics.

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The Threshold is written by Robert Williams, A.u.D.

## 2015 “Occupationally” Determined Hearing Loss Statistics (CONTINUED)

As a service to our customers, T K Group provides Work Relatedness Determinations when a potentially OSHA Recordable Hearing Loss Even is sustained. When such events occur, an “Extended Questionnaire” may be obtained on our website ([www.tkontheweb.com](http://www.tkontheweb.com)); once completed, the form may be emailed to [determinations@tkontheweb.com](mailto:determinations@tkontheweb.com). The case will be reviewed and a determination will be emailed to the site contact.

## OSHA To Increase Fine Amounts For Civil Penalties In Beginning August 2016

OSHA’s maximum penalty for serious violations is set to *increase* from \$7000 to **\$12,471**.

Hearing Loss Prevention Program (HLPP) compliance (or lack thereof) is a significant source of OSHA citations. T K Group reminds all to closely monitor and document all HLPP procedures. T K Group has numerous resources to assist you in this regard. Please contact T K Group for additional information.

## OSHA To Delay Rule For Tracking Workplace Injuries And Illnesses

Initially set to begin August 10, 2016, OSHA has delayed implementation of Recordable tracking Rule to November 1, 2016 in order to allow additional time and guidance to employers. Taken directly from the OSHA website, the pending rule is as follows:

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## OSHA To Delay Rule For Tracking Workplace Injuries And Illnesses (CONTINUED)

"The final rule revises OSHA's regulation on Recording and Reporting Occupational Injuries and Illnesses (29 CFR 1904). The new rule requires certain employers to electronically submit injury and illness data to OSHA that they are already required to keep under OSHA regulations. The content of these establishment-specific submissions depends on the size and industry of the employer.

In order to ensure the completeness and accuracy of injury and illness data collected by employers and reported to OSHA, the final rule also:

1. requires employers to inform employees of their right to report work-related injuries and illnesses free from retaliation;
2. clarifies the existing implicit requirement that an employer's procedure for reporting work-related injuries and illnesses must be reasonable and not deter or discourage employees from reporting; and
3. incorporates the existing statutory prohibition on retaliating against employees for reporting work-related injuries or illnesses."

T K Group will provide additional updates when warranted.

## What It Means To Be CAOHC Certified

CAOHC (The Council For Accreditation In Occupational Hearing Conservation) is the governing body that certifies and recommends “best practice” procedures for Occupational Hearing Conservationists (OHCs). All T K Group OHCs are required to gain CAOHC certification. Additionally, T K Group provides CAOHC certification classes for outside contractors (i.e nurses, industrial hygienists, etc).

The following is the CAOHC course curriculum developed and taught to provide our high level of service.

### **Hearing Conservation**

- Understands the mission of CAOHC and its significance to your role as an OHC
- Understands the relationship of hearing conservation regulations and compliance to best practices
- Understands the elements of a hearing conservation program
- Understands the auditory effects of noise
- Can identify potential sources of hazardous noise in both occupational and non occupational work settings
- Understands the impact of hearing loss, tinnitus and associated disorders on quality of life, along with the social and psychological consequences
- Can list the professional disciplines and their role in hearing conservation programs
- Understands the historical background of hearing conservation and the role CAOHC has played in establishing best practices
- Detect the prevalence of noise-induced hearing loss (NIHL) in different populations

### **Anatomy, Physiology, and Diseases of the Ear**

- Can identify the major parts of the ear and describe their function
- Understands the relationship between tinnitus and noise induced hearing loss
- Can differentiate between a normal audiogram and audiogram configuration which is typical for noise induced hearing loss
- Can identify the typical symptoms associated with various types of hearing loss
- Understands medical conditions that can cause hearing loss
- Can identify other disorders of the ear and the associated types of hearing loss (i.e. conductive, sensory)
- Understands other types of audiogram configuration (Continued Page 6)

# What It Means To Be CAOHC Certified

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## **Hearing and the Physics of Sound**

- Understands the definition of frequency (Hz)/pitch and its relationship to noise measurement and hearing threshold data
- Understands and can explain thresholds and how they apply to a hearing conservation program
- Understands the definition of intensity (dB)/loudness and its relationship to noise measurement and hearing threshold data
- Understands sound by its temporal characteristics (intermittent, steady state, impulse/impact)
- Understands sound weighting scales and how they apply to a hearing conservation program

## **Federal and State Regulations Related to Occupational NIHL**

- Understands federal hearing conservation regulations, (i.e. OSHA, MSHA, FRA, and DoD) and can describe how they differ in application
- Understands how state and local regulations apply in contrast to the federal regulations

## **Audiometer and Testing Environment**

- Understands when use of manual audiometry testing is needed
- Can identify the parts and functions of the different settings on a manual audiometer
- Understands the process of performing a pure tone air conduction threshold hearing test
- Understands the variables that affect the reliability and validity of the hearing test
- Understands the steps necessary to rule out equipment malfunction
- Understands audiometer calibration requirements
- Understands and perform a functional check for an audiometer
- Understands the advantages and disadvantages of using a microprocessor versus a manual audiometer
- Can identify the appropriate ambient noise standards for the testing environment (Continued Page 7)

# What It Means To Be CAOHC Certified

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## **Audiometric Techniques and Testing**

- Understands an audiogram in terms of frequency/pitch (Hz); intensity/loudness (dB) and configuration
- Understands the challenges associated with audiometric testing and the procedures for dealing with these challenges
- Can identify the components and understand the importance of an aural history exam
- Understands the benefit and importance of performing an otoscopic screening

## **Audiometric Review and Evaluation**

- Understands the limitations of the OHC as they relate to the review, referral and counseling process
- Can identify problem audiograms for Professional Supervisor review
- Can calculate a standard threshold shift (STS) with and without using age correction

## **Noise Measurement and Control**

- Understands the meaning and importance of action levels and permissible exposure levels (PEL)
- Understands the purpose of noise measurement and control strategies related to the overall hearing conservation program
- Understands the types of instrumentation used to measure noise & the circumstances in which they would be used
- Understands the meaning and importance of time weighted average (TWA)

## **Hearing Protection Device (HPD) Fitting**

- Understands and can explain the rationale for using hearing protection
- Understands Noise Reduction Rating (NRR) and its relation to actual attenuation
- Understands the proper selection of a variety of HPDs, (i.e. foam and per-molded earplugs, semi-insert devices, and earmuffs)
- Understands the importance of proper fitting techniques for HPDs to ensure an adequate fit
- Understands and can explain care and maintenance of HPDs
- Can identify strategies to motivate workers and management to use HPDs regularly and effectively (Continued Page 8)

## What It Means To Be CAOHC Certified

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- Understands the various methods of fit verification for HPDs

### **Counseling and Training**

- Can identify the required training components
- Can provide several different training methods for hearing loss prevention within the workplace (i.e. face-to-face training, on-site posters, hearing protection distribution station, etc.)
- Can provide ongoing training, education and motivation to improve compliance within the hearing conservation program
- Can incorporate motivational strategies or simple incentives to encourage compliance
- Understands the importance of conducting comprehensive employee hearing protection training program on a regular basis

### **Recordkeeping and Hearing Conservation Team**

- Can document and maintain accurate employee records
- Understands the role of the Professional Supervisor within the Hearing Conservation Program team

As you can see, our teams are well prepared to serve you, our valued client.