



Photo: U.S. Forest Service, Southwestern Region, Kaibab National Forest

**STRUCTURAL OR WILDLAND:**

# **MITIGATING THE GROWING RISK OF HEARING LOSS**

A FIRECOM SPECIAL REPORT

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HEARING LOSS IS THE THIRD MOST COMMON CHRONIC PHYSICAL CONDITION IN THE UNITED STATES, AND IS MORE PREVELANT THAN DIABETES OR CANCER.

Firefighters have a lot to worry about beyond the immediate dangers that an emergency call might bring about. Structural firefighter hearing loss claims are on the rise due to exposure to loud sirens, air horns, and other loud equipment. The chainsaws, chippers and masticators wildland firefighters need to leverage often exceeds occupational exposure limits.

In any setting, the risks are high. What is your department doing to help prevent hearing loss on the job?

### STATISTICS DON'T LIE

The U.S. Centers for Disease Control and Prevention (CDC) states, "[Hearing loss is the third most common chronic physical condition in the United States, and is more prevalent than diabetes or cancer.](#)" CDC continues, "Occupational hearing loss, primarily caused by high noise exposure, is the most common U.S. work-related illness."

Without proper hearing protection, firefighters and EMTs are in danger of incurring hearing damage. There's no getting around the obvious need for attention-getting devices to clear the way through traffic and busy intersections, or for firing up a chainsaw to clear brush while battling a wildfire. But crews exposed to this level of noise may be at risk of permanent hearing loss.

[Siren noise, per the CDC, is rated as dangerously high.](#) Standing beside or near a standard siren rated at 120 dB is likely to result in "pain and ear injury." As a frame of reference, siren noise is listed at just below firecrackers (at 140-150 dB) and above close-proximity shouting or barking (110 dB). Anything rated at or above 80 dB with a duration of two hours may result in noise-induced hearing loss.

### IMPACTS OF NOISE - BEYOND HEARING DAMAGE

It gets worse. Did you know there's also a strong link between loud noise and high blood pressure and cholesterol?

The National Institute for Occupational Safety and Health (NIOSH) initiated a study estimating the prevalence of occupational noise exposure, hearing difficulty and cardiovascular conditions across multiple US industries and occupations. They found that 58% of hearing difficulty cases, 9% of high cholesterol cases, and 14% of high blood pressure cases among workers were linked to loud noise on the job. Our body's natural stressors click on in response to potential threats. And it takes a toll.

### GETTING A PROGRAM TOGETHER AT YOUR FIRE DEPARTMENT

Noise exposure and other health risks are real problems for firefighters. So now what? How do you tackle this to ensure firefighters are protected and the station isn't overrun with hearing loss claims? NIOSH suggests fire departments establish and maintain department-specific hearing loss prevention programs.

**RECOMMENDATION FROM NIOSH**

**Engineering and administrative controls to limit firefighters’ overall exposure to noise from equipment or in the work environment.** Fire departments should incorporate noise emission limits in their purchasing agreements for new equipment [Neitzel et al. 2012; Duffy et al. 1992; Tubbs 1991]. The “Buy Quiet” process recommended by NIOSH encourages a purchaser to compare the noise emission levels of different models of equipment and, whenever possible, buy the quieter model [Hayden 2012].

**WHAT TO CONSIDER**

**When choosing Hearing Protection Devices (HPDs), be sure you look at the Noise Reduction Rating (NRR) to ensure you’re covered.**

An NRR number represents how much noise is reduced by the proper use of a hearing protection device. In general, bigger numbers represent more noise reduction.



**USE OF COMMUNICATION HEADSETS DURING EQUIPMENT TRAINING ENSURES IMPORTANT INSTRUCTIONS ARE HEARD CLEARLY WHILE KEEPING DANGEROUS NOISES OUT.**

**RECOMMENDATION FROM NIOSH**

**Training about harmful noise levels from various tasks and equipment, the effects of noise exposure, and hearing loss** [Duffy et al. 1992].

**WHAT TO CONSIDER**

**Wear communication headsets during equipment training.** It’s the same reason trainees wear their turnout gear and SCBA’s while drilling; to nail their preparedness for an actual emergency.

Removing ear plugs to communicate negates their effectiveness, right? Using headsets ensures important instructions are clearly heard while keeping dangerous noises out.

**RECOMMENDATION FROM NIOSH**

**Training about appropriate hearing protection devices,** especially electronic devices designed specifically for fire fighters and that provide enhanced communication capabilities and block harmful noise.

**WHAT TO CONSIDER**

Earplugs or earmuffs reduce noise but introduce a communication barrier by making it difficult to hear and understand speech, alarms and warnings.

**Consider an all-in-one solution that addresses hearing protection as well as situational awareness, mobility and wireless communication.**





Photo: Jim Bartlett Team Rubicon/BLM for USFS

## OVERESTIMATING NOISE REDUCTION CAN LEAD TO INADEQUATE PROTECTION AND HEARING LOSS.

### RECOMMENDATION FROM NIOSH

**Individualized training on the proper use of hearing protection devices** using commercially available fit-test systems [Murphy et al. 2011]. Fit-testing allows for easy and accurate measurement of hearing protection effectiveness just as they are being used in the field.

### WHAT TO CONSIDER

**If a user doesn't follow proper procedures when fitting their HPD, the device won't reduce as much sound as the NRR rating implies.** Overestimating noise reduction can lead to inadequate protection and hearing loss.

### BOTTOM LINE

Permanent hearing loss is preventable. Mitigating hearing loss claims is manageable when you put the extra effort into creating a hearing loss prevention program. You'll keep everyone alert and aware, and protect the station from lost time and money.

### REFERENCES

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4. "Promoting Hearing Health Among Fire Fighters"; NIOSH Workplace Solutions. <https://www.cdc.gov/niosh/docs/wp-solutions/2013-142/pdfs/2013-142.pdf>



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