

# Firefighters — damping flames, saving lives, developing tinnitus

BY ROBERT M. WINSTON

*I have been a firefighter for 33 years. I usually write about wildland and wildland/urban interface firefighting. Writing about tinnitus is quite different for me. I am no authority on the subject. But I do suffer from chronic, severe tinnitus and noise-induced hearing loss caused by exposure to loud sirens, air horns, diesel motors and other loud noises germane to the fire service.*

*I began noticing a low level of tinnitus around 1980. In 2000, the level spiked dramatically, spiraling me down into a pit of depression. I could not sleep or eat; I stayed in bed with sweats and shaking spells; I lost strength and considerable weight. My wife held me in her arms, trying to comfort me, and still I thought I was going to die. An empathetic doctor prescribed drugs for my depression, but they made my tinnitus worse. Then a clinician in Connecticut helped save me. Thanks to Tinnitus Retraining Therapy (TRT), excellent counseling, support from my family and some prayer, I now consider myself a most fortunate "tinnitus survivor." With this article, I hope to inform first responders and readers in general about this often preventable and insidious malady called tinnitus.*



## Tinnitus is not a quiet day of fishing

I've learned a great deal about tinnitus over the years — how it can be of little consequence to some and debilitating to others. "It [tinnitus] can be like a gorilla on one's back," says Randy L. Tubbs, Ph.D., who recently retired from the Hazard Evaluation and Technical Assistance Program at the National Institute for Occupational Safety and Health (NIOSH), an arm of the Centers for Disease Control and Prevention. "When people think of hearing loss and partial deafness, they immediately think about a quiet world that they will be forced to live in. In some cases, that cannot be further from the truth.... The loss of hearing does not equal a quiet day of fishing during our retirement years. It can be a screaming inside our heads that never stops." (Personal conversation, 9/21/2000)

## No escaping the sources of tinnitus

I've learned that tinnitus can worsen because of continuous or intermittent loud noise, excessive alcohol consumption, caffeine, nicotine, aspirin and certain other medications. And the sounds and stress inherent in the fire service! The very nature of firefighters' work is fertile ground for the development of tinnitus. Once diagnosed, firefighters find their tinnitus difficult to treat and often worsening. This was my reality.

**Biorhythm disruption.** A firefighter's biorhythms are constantly in flux because our sleep patterns are continually broken. Even when sleeping during a night shift, we do not benefit from a restful sleep. This negatively affects our body's need for rest and rejuvenation.

**Increased adrenal levels.** The adrenal levels of on-duty firefighters spike throughout their shift. They constantly anticipate the next emergency. Levels shoot up when responding to the alert bell, and even higher at the incident site itself. This "fight or flight syndrome" significantly affects our nervous systems. According to researchers Alpini and Cesarani, a model based on individual reactions to stress factors could explain tinnitus as an alarm signal telling the patient that something potentially dangerous and threatening to their sense of balance is happening. And the longer the exposure, the harder it is to turn off the alarm, their tinnitus.<sup>2</sup>



*A rule-of-thumb is that if you have to shout to talk to someone near you, the environment probably exceeds acceptable noise levels.*

**Noise.** Besides fire alarms, truck engines, sirens and horns, less obvious sources of potentially damaging noise in a firefighter's life include:

- Apparatus and power tools, especially when operated inside a structure where decibel sounds cannot readily dissipate or be absorbed
- Radio volumes cranked up so loud that firefighters or other emergency personnel must struggle to hear other sounds central to their work
- The momentary high-impact, high-decibel noise of steel forcible-entry tools hitting each other
- Smoke and fire alarms continually blaring in buildings, emitting sounds so loud they distort portable radios, putting firefighters at risk
- Sounds outside a fire or other emergency incident that pump operators and incident commanders (ICs) are subjected to, such as incoming emergency vehicles, motors running at high RPMs and loud radio chatter
- Fire stations situated near a busy road or expressway, a bus stop, medical center or hospital emergency services

## Recognizing the need for protection

Thankfully, tinnitus is being recognized more and more for what it is and what it can do to firefighters in terms of physical and psychological damage. The ravages of tinnitus are a recognizable risk – one that is difficult to protect firefighters from – that the fire service cannot ignore.

In September 1992, The Federal Emergency Management Agency (FEMA) and the United States Fire Administration (USFA), in concert with the International Association of Firefighters (IAFF), produced a document titled, "Fire & Emergency Service Hearing Conservation Program Manual." It recognizes and outlines a program to reduce noise-induced trauma from proximity to sirens, air horns, loud motors and other loud noises associated with our emergency services.

The manual states that noise is probably the most underrated health hazard affecting fire and EMS

personnel. It identifies tinnitus as a result of occupational noise exposure, which is often associated with hearing loss. The causes of hearing loss are irreversible and incurable. And they are preventable.

## Recommendations

Another agency to weigh in on the risk of noise to firefighters is the National Fire Protection Association (NFPA), which publishes *NFPA 1500, Standard on Fire Department Occupational Safety and Health Program*. To comply with these standards, a fire department must provide hearing protection for all firefighters riding in apparatus that subjects them to noise levels above 90 decibels. For those firefighters that must listen to the on-duty radio, NFPA 1500 recommends the use of earmuffs with built-in speakers and volume controls for radio and intercom communications. The program also advocates for monitoring noise sources, audiometric testing, engineering controls that reduce noise and hearing protection devices.<sup>3</sup>

Though NIOSH recommends that workers and others in loud environments not be exposed to sounds over 85 decibels (dB) over an eight-hour period, firefighters will always be exposed to sounds far beyond this threshold and technology must meet their needs for protection.

A career of saving lives should not be "rewarded" with a life of inescapable tinnitus. The warning is clear: **STOP THE NOISE!** ☹☹☹

## Resources

<sup>1</sup> Based on Winston R, Boston District Fire Chief-Retired. A Warning! Ever Heard of Tinnitus? *Firehouse Magazine*, Nov. 2000:36 and Hearing Damage and Tinnitus in Emergency Responders. *Firehouse Magazine*, Feb 2003:90; Cygnus Publishing.

<sup>2</sup> Alpini D, Cesarani A. Tinnitus as an Alarm Bell: Stress Reaction Tinnitus Model. *ORL J Otorhinolaryngol Relat Spec*.2006;68(1):31-6; discussion 36-7. 16514260 [PubMed].

<sup>3</sup> The National Fire Protection Association, *NFPA Standard 1500, Standard on Fire Department Occupational Safety and Health Program*, 2002 edition. Chap 7: 7.16.