

## Hearing Loss In Law Enforcement

Hearing loss in law enforcement is becoming a big and costly issue. More law enforcement personnel are retiring early due to hearing loss than ever before, and departments are paying millions in disability every year because of on the job hearing loss.

Hearing is a powerful asset in situations where an officer might need to communicate or localize sounds. However, officers are exposed to hazardous noise which can compromise their hearing every day. The primary source for this hazardous noise is firearm discharge in the forms of noise and concussive force which damage hearing both in the short term and the long term. In the short term, firearm discharge causes flinch response and momentary disorientation which can create vulnerabilities in the field. In the long term, firearm discharge will eventually cause tinnitus and hearing loss, even with standard double protection for the ears. In a 10-year study of 20 officers, over 75% reported significant hearing loss as well as tinnitus even while using double protection.

According to a 2003 NIOSH Health and Hazard Evaluation Report, “A serious health risk exists for officers because the noise levels and concussive force produced by their firearms put them at risk for occupational hearing loss.”

The concussive force from an explosion travels on a wave called a shock wave. A shock wave is a front where the leading side is highly positive pressure, or blast overpressure (BOP), and the trailing side is the under pressure. The real danger lies in the instantaneous change of overpressure to underpressure not giving the human body time to equalize pressure. To further clarify, blast overpressure and a shock wave are NOT the same as sound pressure. The damaging effects of a sound pressure wave are easily mitigated through commonly used ear protection devices. BOP and shock wave cannot be mitigated through ear protection as both travel right through the body, devastating any cavity organs filled with gas, i.e. the sinuses, ear canal, lungs, heart. Continued exposure to BOP events will cause a cumulative effect which, over time, will cause damage such as ruptured eardrums, tinnitus, hearing loss, pain, vertigo, stress and heart conditions.

According to Chul-Hee Choi, author of “Mechanisms and Treatment of Blast Induced Hearing Loss”, in the Korean Journal of Audiology, “The effects of blast on the human body are determined by a variety of factors: distance from the blast, orientation towards the blast, environmental features resulting in reflection and resonance of the blast wave, power of the blast itself, and patient’s previous trauma history.”

In a blast overpressure comparison study conducted on a 10.5 inch barrel M4 rifle, blast overpressure using an A2 muzzle brake measured at 4 inches from the blast source reached a staggering 12.9 psi. It’s important to note that the threshold level for rupture of the eardrum is about 5 psi. “The eardrum is only half an inch from the brain, so whatever hits the eardrum is going to hit the brain such as pressurized shock wave.” - Air Force Lt. Col. Dr. Michael Xydakis.

## **Cost of Long-Term Health Risk**

Beyond the terrible human cost of tinnitus and hearing loss, there is a massive financial burden that goes along with hearing disorders. In a recent audit of the VA's treatment facilities as many as 1.6 million returning veterans are being treated for hearing disorders, more than all other complaints combined. The cost of providing basic care for these hearing disabilities was a staggering \$1.4 billion dollars, according to a 2010 report by the US Department of Veterans Affairs benefits data report. A 2014 report by CBC News also relates a three-fold spike in compensation cases for ex-Royal Canadian Mounted Police to a rise in hearing related complaints. Unsurprisingly, both the US and Canada's VAs ranked their top three conditions treated as: 1) Tinnitus, 2) Hearing Loss, and 3) PTSD.

In addition, a recent settlement in the UK awarded officers the equivalent of \$212 million USD to retroactively cover treatments of hearing related disorders. There is no reason to believe that the US is immune to this kind of litigation.

In 2011, a New York Times Article read "Ban on Hearing Aids is Forcing Out Veteran New York City Police Officers." This was published after former officers Daniel Carione and Jim Phillips were forced to retire while using department issued hearing aids that went against strict NYPD hearing test policy. After a 5-year legal battle, Ofc. Carione was conditionally reinstated to active duty if he could pass a hearing test using the aid. Ofc. Phillips remained retired from NYPD. Both men were awarded back pay, benefits, and seniority for the time they were involuntarily retired. In addition, the City also agreed to make additional payments of \$200,000 and pay all legal fees in the case.

From a department leadership perspective, it behooves Chiefs and Sheriffs to also think about the risks. What costs will departments be charged, with regards to workers' compensation coverage or officers' disability payout?

The most immediate and efficient way to solve this issue is a suppressor. Suppressors drastically reduce noise levels and prevent BOP, providing protection to your officers during training and in the line of duty. Suppressors will prevent departments retiring officers early and paying disability for the remainder of their lives. Idaho Suppressor Works suppressors are titanium, sealed and are direct thread. No training or on duty maintenance is required for this device.

**For more information on Idaho Suppressor Works contact Melissa or Kevin at  
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