August 28, 2019

Honorable Members of the Committee
Joint Committee on Public Safety and Homeland Security
State House
24 Beacon Street
Boston, Massachusetts 02133

Re: S. 1417 (Firearm Suppressors)
Position: Support

Honorable Members of the Committee:

My name is Knox Williams. I am the President and Executive Director of the American Suppressor Association (ASA), a non-profit organization which advocates on behalf of the firearm suppressor community. I write you today to express our support of S. 1417, a bill which seek to legalize the possession of suppressors in Massachusetts. It is a common-sense step that aligns with the 42 states where private suppressor ownership is currently legal, and the 40 states where hunting with a suppressor is allowed. If enacted, prohibited persons will continue to be barred from possessing these hearing safety accessories.

In order to fully understand suppressors, it is imperative that you hear them for yourself. We have hosted several educational suppressor demonstrations alongside the Gun Owners Action League in recent years. We would happy to do so again for any Massachusetts legislators or law enforcement officers at any time of your choosing.

Suppressor Basics

The terms "silencer" and "suppressor" refer to the same thing – a muffler for a firearm. Contrary to popular belief, no tool will ever be able to make a gunshot silent. Outside of the context of shooting, nothing will even be able to make them quiet. Guns are simply too loud.

On average, suppressors reduce the noise of a gunshot by 20 – 35 decibels (dB), roughly the same sound reduction as earplugs or earmuffs. Even the most effective suppressors on the market, on the smallest and quietest calibers (.22 LR) reduce the peak sound level of a gunshot to around 110 – 120 decibels. To put that in perspective, according to the National Institute for Occupational Safety and Health (NIOSH), that is as loud as a jackhammer (110 dB) or an ambulance siren (120 dB).

When a gun is fired, a controlled explosion of gunpowder propels the bullet through the barrel. Once the bullet exits the barrel, these hot gases are rapidly released into the atmosphere. The result is the muzzle blast, one of several primary noise sources associated with a gunshot. This is also the only noise source that suppressors abate.

Suppressors work by trapping and disrupting these gases, allowing them to slowly dissipate. It is the exact same science behind automobile mufflers, which should come as no surprise considering the muffler was invented by the same man who invented the firearm suppressor.

So why would anyone want a suppressor? In two words: hearing protection. Firearms are so loud that any exposure to unsuppressed gunshots without adequate hearing protection can instantly cause permanent hearing damage.

Hearing Conservation

According to Dr. William W. Clark, the Director of the Washington University School of Medicine's Program in Audiology and Communication Sciences, "the most serious threat to hearing comes from

recreational hunting or target shooting".[1] This is in large part because many people choose not to use traditional hearing protection devices.

Multiple studies have found that between 70 to 80% of hunters never wear earplugs or earmuffs, and nearly half of all target shooters don't consistently wear traditional hearing protection.[2] Thus, it should come as no surprise that for every five years of hunting, hunters become seven percent more likely to experience high frequency hearing loss.[3]

In 2011, the Centers for Disease Control and Prevention (CDC) was commissioned to assess the level of noise exposure for federal government agents at an outdoor shooting range. The scientists assigned to the study found that "the only potentially effective noise control method to reduce students' or instructors' noise exposure from gunfire is through the use of noise suppressors that can be attached to the end of the gun barrel. However, some states do not permit civilians to use suppressors on firearms."[4]

In a similar study from 2014 on noise exposure at shooting ranges, NIOSH recommended, "if feasible and legally permissible, attach noise suppressors to firearms to reduce peak sound pressure levels." [5]

In March, 2017, the National Hearing Conservation Association's Task Force on Prevention of Noise-Induced Hearing Loss from Firearm Noise stated that "using firearms equipped with suppressors" is one of "several strategies [that] can be employed to reduce the risk of acquiring NIHL and associated tinnitus from firearm noise exposure." [6]

Sound Pressure Levels (SPLs)

Sound pressure levels are measured on a logarithmic scale, meaning that they increase in a nonlinear fashion. Every 3 dB increase doubles the sound pressure level; every 10 dB increase raises the SPL by a factor of 10. This means that 3 dB is twice as loud as 0 dB, the lowest threshold of human hearing. 10 dB is 10 times more intense, and 20 dB is 100 times more powerful. The following table illustrates the relationship between dB levels and the logarithmic scale:

Decibel Levels:	0	3	6	9	12	15	18	21	24	27	30	(+3)
Logarithmic Scale:	1	2	4	8	16	32	64	128	256	512	1024	(x2)

The National Institute for Occupational Safety and Health established recommended exposure limits (REL) for occupational noise exposure in 1998. Per the NIOSH REL, workers can safely expose their ears to 85 A-weighted decibels (dB[A]) for an eight-hour time-weighted average in a given day. The REL utilizes the equal-energy rule, so "for every 3-dB increase in noise level, the allowable exposure time is reduced by half. For example, if the exposure level increases to 88 dB(A), workers should only be exposed for four hours. Alternatively, for every 3-dB decrease in noise level, the allowable exposure time is doubled, as shown in the table below."

Average Sound Exposure Levels Needed to Reach the Maximum Allowable Daily Dose of 100%

Time to reach 100% noise dose	Exposure level per NIOSH REL
8 hours	**85 dB(A)**
4 hours	**88 dB(A)**
2 hours	**91 dB(A)**
60 minutes	**94 dB(A)**
30 minutes	**97 dB(A)**
15 minutes	**100 dB(A)**

Sound pressure levels of suppressed gunshots begin to register around 110 dB for .22 Long Rifle, the smallest and quietest rimfire caliber that Boy Scouts use to earn the Rifle Shooting Merit Badge. At 110 dB the NIOSH recommended exposure limit is 1 minute and 29 seconds. As the size and power of calibers increase, so too do SPLs. At 130 dB, the SPL of the quietest suppressed .45 caliber pistol, the NIOSH REL is 0.8789 seconds. For reference, nail guns typically register around 100 dB, giving the SPL of a suppressed .45 caliber pistol roughly 1,000 times more energy.

According to Dr. Michael Stewart, Professor of Audiology at Central Michigan University, "[t]he level of impulse noise generated by almost all firearms exceeds the 140 dB peak SPL limit recommended by OSHA and NIOSH." For this very reason, he goes on to state that "it is not surprising that recreational firearm noise exposure is one of the leading causes of NIHL [Noise Induced Hearing Loss] in America today."[3]

The SPL of most unsuppressed rifles and pistols range between 160 to 185 dB. At these levels, even earplugs and earmuffs are often incapable of providing complete protection. Suppressors should be used in conjunction with traditional hearing protection, not in lieu of. After all, suppressors don't eliminate the noise; they reduce it to safer levels.

The fact that a sound level equal to a jackhammer is somehow safer illustrates just how loud guns really are. We don't tell people to stop wearing seatbelts if their car has airbags. The same principle applies to suppressors: the best way to protect your hearing is by using a suppressor while wearing traditional hearing protection devices.

Bipartisan Support

In 2013, Montana Governor Steve Bullock (D) held the common misconception that suppressors could silence a firearm, which led him to veto suppressor hunting legislation in his state. However, once he became properly educated on the issue, he reversed course and urged the Montana legislature to legalize their use in the field. In a letter to the Speaker of the House from March, 2015, he wrote:

> "The public perception of suppressors as the same thing as silencers, where the assassin quietly dispatches his victim, no longer holds true. Suppressors mitigate the sound of a shot, but do not silence it. The use of suppressors for hunting, when hunters cannot wear ear protection because they need to be aware of their surroundings, can help protect against hearing loss. This is especially true for our younger hunters, even those who are not actually hunting but are accompanying their parent in the field.
>
> I understand the concerns regarding the risks of increased poaching and do not take this lightly, but other states have not found this to be the case."

Gov. Bullock's change of opinion wasn't ideological, it was educational. Unlike many firearms issues, pro-suppressor reform has received a tremendous amount of bipartisan support across the country. In the past three years, three Democratic Governors have signed standalone pro-suppressor bills into law - Gov. Steve Bullock (MT) in 2015, Gov. Peter Shumlin (VT) in 2015, and Gov. Maggie Hassan (NH) in 2016.

Laws and Regulations

Suppressors have been federally regulated since the passage of the National Firearms Act of 1934. In order to purchase a suppressor, prospective buyers must live in a state where suppressors are legal, send in an application including fingerprints and passport photos to the ATF, pay a $200 transfer tax, notify their Chief Law Enforcement Officer (CLEO), and wait an indeterminate amount of time for the ATF to process the application. As of today, wait times typically range from 5 to 18 months.

In 2011, the year that the American Suppressor Association was formed, there were 285,000 lawfully obtained suppressors in circulation in the 39 states where they were legal to own. A mere 22 states allowed their use while hunting. Since then, three states have legalized suppressor ownership and 18 states have legalized the use of suppressors by hunters. Today, over 1,650,000 suppressors are owned by law-abiding citizens in the 42 states that allow suppressor ownership.

The way Massachusetts law is currently drafted, only federally licensed suppressor manufacturers can possess suppressors in the state. This legislation will have a direct impact on in-state manufacturers, including Yankee Hill Machine, headquartered in Easthampton, Smith and Wesson, headquartered in Springfield, and Sig Sauer, who has over 80 employees who commute to work in New Hampshire from Mass.

Public Safety

The use of suppressors by criminals is virtually nonexistent. According to a white paper titled "*Options to Reduce or Modify Firearms Regulations"*, by Ronald Turk, former Associate Deputy Director and Chief Operating Officer of the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), "silencers are very rarely used in criminal shootings. Given the lack of criminality associated with silencers, it is reasonable to conclude that they should not be viewed as a threat to public safety".

Most criminals are not interested in suppressors because they do not actually silence a gunshot. According to Ralph Clark, the CEO of ShotSpotter, the law enforcement tool that helps police identify and localize gunshots in cities and urban areas, suppressed gunfire can still be detected by their technology. Suppressors also add length and weight to their host firearm, which make them inherently harder to conceal.

Furthermore, criminals know that using a suppressor in the commission of a crime will carry stiff State and Federal penalties. At the Federal level, using a suppressor in the commission of a crime carries a 30 year mandatory prison sentence. Very few laws are more punitive than this.

In conclusion, for any interested legislators or law enforcement officers, we would be happy to host an educational suppressor demonstration in Massachusetts at any time of your choosing. Thank you for your time and consideration. On behalf of the sportsmen and women in Massachusetts, I respectfully ask for your support of S. 1417.

Sincerely,

Knox Williams

Knox Williams
President & Executive Director
American Suppressor Association

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[1] Clark WW. (1991) Noise exposure from leisure activities: a review. J Acoust Soc Am 90(1):175–181.
[2] Wagner A, Stewart M, Lehman ME. (2006) Risk patterns and shooting habits of recreational firearm users. In: Abstracts of the National Hearing Conservation Association Annual Conference 2006, Tampa, Florida. NHCA Spectrum 23(Suppl. 1):28.
[3] Stewart M, Foley L, Lehman ME, Gerlach A. (2011) Risks Faced by Recreational Firearm Users. Audiology Today, March-April:38–52.
[4] Chen L, Brueck SE. (2011) Noise and Lead Exposures at an Outdoor Firing Range — California. Health Hazard Evaluation Report HETA 2011-0069-3140:5.
[5] Brueck SE, Kardous CA, Oza A, Murphy WJ. (2014) Measurement of Exposure to Impulsive Noise at Indoor and Outdoor Firing Ranges during Tactical Training Exercises. Health Hazard Evaluation Report HETA 2013-0124-3208:14.
[6] Murphy S, Meinke DK, Flamme GA, Murphy WJ, Finan DS, Lankford, JE, Tasko SM. (2017) NHCA Position Statement: Recreational Firearm Noise. NHCA Task Force on Prevention of Noise-Induced Hearing Loss from Firearm Noise: 1.