POLICY OPTIONS FOR AMMUNITION-BASED GUN CONTROL STRATEGIES

Cadet John W. Stanford
Class of 2008
United States Military Academy
West Point, New York 10996

ABSTRACT

Gun control is always a sensitive topic in political debate, but most policies focus on controlling guns themselves. Policies that focus on controlling ammunition receive less attention, but have much potential to reduce violent crime. This paper evaluates three ammunition-based gun control measures. The first policy alternative is ammunition marking, which consists of putting serial numbers on bullets so that law enforcement agencies can remove them from the bodies of homicide victims and trace them to the owner. The second policy alternative is ballistic fingerprinting, which is based on the idea that firearms leave distinctive "fingerprints" on bullets and that these "fingerprints" can be collected in a database and used to solve crimes. The third policy alternative is banning dangerous types of ammunition. This policy is based on the idea that certain types of ammunition are too dangerous to be in the hands of civilians and should be banned from civilian use. After evaluating the strengths and weaknesses of each of these options, the final recommendation is to implement an ammunition marking system.

INTRODUCTION

In the 20th century, worldwide proliferation of small arms has become a significant problem. Even in America, with its strong tradition of protecting citizens' right to bear arms, there has been a need to control small arms.

There are many arguments for and against gun control because there are both advantages and disadvantages to gun control measures. It is a complex issue. Gun control measures seek to keep dangerous weapons out of the hands of those who intend to use them to harm others. At the same time, these measures seek to retain the ability of the average law-abiding citizen to defend himself against other individuals and, in extreme cases, against the government.

The armed citizen is seen by different people in different lights. To some, he is the poster child of democracy since power ultimately comes from the ability to apply force, through violence if necessary. To some, he is a dangerous threat to stability because he can apply force through violence at will against the interests of society.

Gun control arouses heated debate and raises complex issues. An interesting possibility that has received little attention focuses less on gun control and more on ammunition control.

There are several possible policy options for ammunition control. Options evaluated in this paper are ammunition marking, ballistic fingerprinting, and banning dangerous types of ammunition.

These options raise questions. How will society react to these measures if implemented? What are the technological barriers to implementing these policies? How would they affect the economy? What are the political ramifications? This paper explores these issues and others. This paper focuses on policies for America, but also uses examples from other countries and draws conclusions that may be applicable to other countries.

POLICY ALTERNATIVES: AMMUNITION MARKING

Ammunition marking is a very promising option for ammunition-based gun control measures. The basic premise of ammunition marking is that ammunition manufacturers would mark their ammunition with unique serial numbers and retailers would keep track of who bought what ammunition. This information would be collected in a large database, and law enforcement personnel could use this information to match crime scene bullets with the people who bought them.

Ammunition marking is a policy alternative that itself has a wide range of policy alternatives. Each alternative has its advantages and disadvantages.

The first issue is how specific the markings will be. The specificity of the markings can range from marking each individual round with a unique serial number to having only one unique serial number for a lot of 10,000 rounds. This choice involves a trade-off because marking each individual round with a unique serial number allows law enforcement agencies to be very precise in tracking ammunition, but it requires many more serial numbers and takes more time and money in the manufacturing stage, making the ammunition more expensive. Marking large quantities of ammunition that are sold together with unique

serial numbers is less expensive, faster, and easier. However, bulk marking reduces law enforcement agencies' ability to track ammunition precisely because the larger the group of rounds with the same marking, the more likely that the group will be divided between the manufacturing facility and the end user.

The second issue is whether to mark only the bullet, only the casing, or both. Marking the casings is beneficial because it doesn't affect the ballistics of the bullet, and the casing is not damaged in the process of firing. However, a criminal could collect the casings after the crime. Some firearms, such as revolvers, do not eject casings. Marking the bullet is beneficial because it is always left at the scene of the crime. However, the bullet is usually damaged when it hits the target, which could make any markings unreadable. Marking both would be more expensive and time-consuming.

The third issue is whether to mark the ammunition itself or just the containers. The advantage to marking only the containers is that it is very inexpensive and easy. The technique prints a barcode on every box of ammunition sold and uses that barcode to track the ammunition. The disadvantage is that only marking the containers would not be very useful to law enforcement. The criminal rarely takes the ammunition container to the scene of a crime and more rarely leaves it there. There are a few situations in which this system might be useful. For example, if a murder suspect buys a certain kind of ammunition the day before a murder and cannot account for how the ammunition was used, barcoding might serve as evidence against him. Another disadvantage is that even though printing a barcode on boxes of ammunition would be very inexpensive, implementing a computer system to track it would be expensive. Overall, there is very little value to marking only containers, although it is still an option.

POLICY ALTERNATIVES: BALLISTIC FINGERPRINTING

Ballistic fingerprinting is another ammunition-based gun control measure that has several advantages and disadvantages over the other measures.

Ballistic fingerprinting is based on the fact that when a bullet is fired from a firearm, the firearm leaves unique marks on both the bullet and the casing [5]. This mechanical fingerprint is caused by minor flaws in the gun bores that result from imperfect tooling used to create the rifling [6]. The system basis is since all firearms already are marked with serial numbers, guns would be test fired before being sold to the consumer and the bullets and casings would be analyzed for the mechanical fingerprint of the firearm [5]. This information would be matched to the serial number and owner of the firearm in a large database that law enforcement personnel would be able to access [5].

At a crime scene, police could recover bullets and/or casings, determine the mechanical fingerprint, use the database to match the mechanical fingerprint to a weapon, and link the weapon to its owner. The advantages and disadvantages of this system are explained in subsequent sections.

POLICY ALTERNATIVES: BANNING DANGEROUS TYPES OF AMMUNITION

Another ammunition-based option for gun control is banning ammunition that is deemed to be especially dangerous. This course of action focuses primarily on armor-piercing ammunition that could be used against police. There are two premises for this course of action. The first premise is that some types of ammunition have legitimate sporting or self-defense purposes and other types do not have legitimate purposes and essentially are designed for breaking the law. The second premise is that if they can identify the types of ammunition that have no legitimate self-defense or sporting purpose, legislators can ban this ammunition and reduce firearm-related crime. Viability of this argument is assessed in subsequent sections.

There are several advantages and disadvantages to this type of policy. One of the main advantages is that this policy is relatively easy to implement. It only requires that federal or state legislators pass a law banning certain types of ammunition. Finding political support to pass this kind of law is a separate issue. The actual process of implementing a ban is relatively simple because it does not involve developing new technologies or building new databases.

One of the main disadvantages is that this system does not give law enforcement personnel any help in solving violent crimes. Another disadvantage is that it only reduces firearm-related crime against those wearing body armor. These issues and others are explored in subsequent sections.

SOCIAL

There are several social implications of these ammunition control measures to consider when selecting a course of action.

Social issues associated with ammunition marking are closely related to political issues. Americans have a long-standing tradition of having the right to bear arms, as given by the Second Amendment. Even if not misused by the government against citizens, this legislation most likely will be perceived that way. In general, Americans have limited trust in government and are likely to view an increase in control and surveillance as an infringement on both their right to bear arms and their right to privacy. The average American does not want the government to know how much ammunition he is buying, when he is buying it, etc. This is a major societal issue that must be overcome if ammunition marking is implemented by the government.

Ballistic fingerprinting involves fewer social issues than ammunition marking. In fact, the average firearm owner probably would notice almost no difference. Whereas ammunition marking involves the government recording information about the customer with every ammunition purchase, ballistic fingerprinting requires only one set of data to be collected per firearm. The data is not collected from the purchaser of the firearm, but from the manufacturer before it is sold. This makes a ballistic fingerprinting system feel less invasive to the average American, making the system more socially acceptable.

Legislation to ban dangerous types of ammunition focuses on banning armor-piercing handgun ammunition that could be used to render body armor ineffective. There are some groups that would consider this type of legislation an infringement on citizens' right to bear arms, but the more important issue is the segment of the population that this legislation protects. This legislation protects only people who wear body armor, who are mostly law enforcement officials. This option is too narrow. Effective ammunition control measures need to reduce all forms of firearm-related violent crime, not just violent crime against police officers.

TECHNOLOGICAL CONSIDERATIONS: AMMUNITION MARKING

The technological question associated with ammunition marking is simple: is it technologically feasible to mark every round of ammunition with a unique serial number? Although simple to state, this question is not easy to answer. There are several reasons for this that will be discussed in the following sections.

Enough Serial Numbers?

The first question is whether there would be room on each bullet or casing for a unique serial number. Opponents of ammunition marking often argue that there are simply too many rounds of ammunition manufactured each year for each one to have a unique serial number.

On 30 June 2006, Richard Patterson made a statement to a UN conference on small arms in which he asserted that "[i]n the US alone more than 8 billion rounds of ammunition are produced annually. There simply isn't enough room on the bullet or case to hold a serial number that large." [2] This is not true. There is enough room on each bullet and case for a unique serial number if both numbers and letters are used. The combination of 10 numbers and 26 letters gives 36 possibilities for each character of the serial number. A nine-character serial number would have 36^9=101,559,956,668,416 possibilities. Dividing by 8 billion, this number becomes 12,695, meaning that with a nine-character serial number there would be enough for each round manufactured in the United States to have a unique serial number for the next 12,695 years.

There is enough room on each bullet and case for a nine-character serial number as shown in Fig. 1.
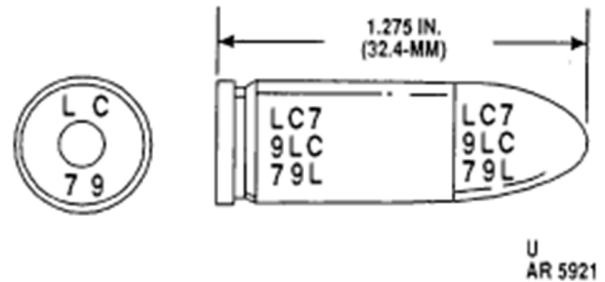

Figure 1. Caliber .45 Ball Cartridge [3]

Figure 1 shows a caliber .45 cartridge. This schematic comes from the Army technical manual on this ammunition. The nine-character serial numbers do not appear in the manual, but were added for this paper. The numbers and letters stamped into the back of the case do, however, appear in the original schematic. Since these numbers are stamped into the case, it is possible to mark the case with numbers and letters that are at least this small.

The same serial number could be used on different types of ammunition without losing the ability to uniquely identify each round. For example, the serial number LC7-9LC-79L could appear on a unique .45 round and a unique .223 round. Each manufacturer could register with a federal agency such as the Bureau of Alcohol, Tobacco, and Firearms and be given a range of serial numbers with which to mark its ammunition. The German and Brazilian militaries already require that the 5.56 x 45mm ammunition they purchase be marked with a ten-digit code that identifies the manufacturer, year and month of production, lot size, and a unique lot identifier. [1]

There is physically enough room on the bullet and case for each round manufactured to have a unique serial number. This is true of the ammunition manufactured in the US and may be true of worldwide production.

Destruction of the Bullet

Another question is whether the serial number would still be readable after the bullet is fired. Bullets are damaged upon impacting a target. The extent of damage varies based on the design of the bullet. Bullets that are designed to inflict the most damage, such as hollow points, typically experience the most damage. This poses a problem with ammunition marking because when the bullet is damaged, the serial number could become unreadable.

A company called Ammunition Coding System (ACS) has developed a solution to this problem. The ACS method of marking ammunition uses a laser engraving system to mark the bullet and inside of the casing with a serial number that is unique to each box of ammunition sold [4].

According to ACS, the system can accommodate over 21 quadrillion unique bullet serial numbers and the serial numbers can be read with as little as 20% of the bullet intact [4]. Figure 2 shows a bullet that is marked using the ACS marking system. As can be seen in the picture, the codes are visible with a simple magnifying glass or the naked eye.

Figure 2. Bullet Using the ACS Marking System [4]

The ACS marking system is very promising. Of the three aspects of ammunition marking discussed in the policy alternatives section, ACS seems to offer the optimal options in each area. ACS does not mark each individual bullet, but marks them in small enough groups that it is possible to identify the buyer. ACS marks both the bullet and the casing as well as marking both the rounds and their box since the serial numbers on the bullets can be paired with the barcodes on the boxes. ACS is practical and affordable. ACS is the most promising system in ammunition marking and is discussed further in other sections.

TECHNOLOGICAL CONSIDERATIONS: BALLISTIC FINGERPRINTING

Along with social considerations, technological considerations are perhaps the most important aspect of ballistic fingerprinting. Based only on economic and political aspects, ballistic fingerprinting seems to be very promising to help law enforcement officials solve violent crimes. However, there are technical issues that bring to question whether or not the system would work.

Changing the Barrel

The first issue is that the barrel of many firearms can be interchanged easily. Since the serial number of the firearm typically is engraved only on the receiver, changing the barrel would give the same weapon a new ballistic fingerprint.

As an example, the serial number is stamped into the lower receiver of the AR-15. Therefore, the lower receiver is consider to be "the weapon" according to the law. Every other part of the rifle is considered a replacement part and

can be bought and sold without any kind of legal oversight. This includes the barrel, which is the part that produces the ballistic fingerprint.

It is also easy to change the barrel on an AR-15 without any special tools. The only tools required are a vise, action block, and armorer's wrench. A vise is available at any hardware store and an action block and armorer's wrench are obtainable from most firearm manufacturers. For example, DPMS, a popular firearm manufacturer located in St. Paul, MN, sells action blocks for $39.95 and armorer's wrenches for $33.95 [10].

Most firearms have barrels that are as easily-interchangeable as the ones on AR-15s. Many handguns such as the Beretta 92F, the civilian version of the M9, have barrels that can be changed without any tools. Uncertainty of the ballistic fingerprint of a weapon with an easily changeable barrel would render the ballistic fingerprint database useless.

Barrel Wear

The second technical issue is that the ballistic fingerprint of a weapon changes over time even without changing the barrel. This is a common argument posed by skeptics, such as the National Rifle Association (NRA), of the ballistic fingerprinting system [5].

All machines experience wear with use. Rifling in the barrel of a firearm can be worn down through repeated firing. Army field manuals recognize this fact. For example, FM 3-04.140 (Helicopter Gunnery) identifies barrel wear due to "[g]aseous action, propellant residue, and projectile motion" [11] as one of the main factors affecting the ballistics of helicopter guns. FM 23-10 (Sniper Training) specifies that snipers should keep a log of all rounds fired through their rifles because the barrels must be replaced every 5,000 rounds [12].

Even if a criminal who commits a violent crime using a handgun is not smart enough to change his ballistic fingerprint by changing the barrel, the fingerprint will still change over time through repeated firing.

One possible counterargument is that most criminals who commit violent crimes do so shortly after buying the firearms. In this case there would be insufficient time for the ballistic fingerprint to change. This is very possible since most criminals probably do not spend a significant amount of time at the shooting range working on their shooting skills. The best way to settle this debate is for law enforcement agencies to collect statistics on the amount of time and/or ammunition expended between the times a criminal purchases a gun and uses it to commit a crime.

TECHNOLOGICAL CONSIDERATIONS: BANNING DANGEROUS TYPES OF AMMUNITION

A third major option is banning certain dangerous types of ammunition. Current laws that ban armor-piercing ammunition are based on the construction of the bullet

rather than its performance because bullet construction standards are easier to enforce [13]. However, there are problems with this system.

The first major problem is that the bullet and the powder that propels it both contribute to performance. A system to ban specific ammunition based on bullet construction does not account for the velocity at which the bullet leaves the muzzle of the firearm or at which it strikes the target. The velocity of the bullet matters because higher velocity means higher kinetic energy. Increased velocity leads to greater increase in kinetic energy than increased mass, as shown in Eq. (1).

$$KE = \tfrac{1}{2}mv^2 \qquad (1)$$

Kinetic energy affects bullet performance when striking a hard target such as steel. Since mass and energy are conserved, rapid deceleration upon impact converts the kinetic energy to heat and pressure [17]. Patrick Sweeney, a firearms-expert, describes the effect as "an instantaneously-applied welding or cutting torch" [17]. No matter the bullet material (i.e., no matter what the mass term in the kinetic energy equation is), if the velocity term is low, the "welding or cutting torch" will have little heat and pressure. At very high velocities, even bullets that were not designed to pierce armor (i.e., hollow points) will penetrate a heavy steel plate [6].

The purpose of making armor-piercing bullets from a different type of material is to prevent the bullet from expanding [6]. If the bullet does not expand, then the "cutting torch" applies heat and pressure to a smaller area on the target, which leads to better penetration. Current law bans bullets that are made entirely from one of a combination of seven materials: tungsten alloys, steel, iron, brass, bronze, beryllium copper, or depleted uranium [14]. It also bans bullets that have a full jacket that comprises more than 25% of the weight [14]. It is possible to design a bullet that would have the same armor-piercing effect that does not fall under this ban. A ban-compliant armor-piercing bullet would require a significant amount of a dense, hard metal other than the seven listed and either be only partially jacketed or have a thin, light jacket.

After H.R. 3121 passed, Rep. Mario Biaggi said that the intent of the legislative body was achieved without any compromise in police safety [13]. This statement is questionable. According to the NRA, there was a "four-year battle" from 1982 to 1986 over the final form that this law would take [13]. If it were possible to achieve the legislature's intent while also making an enforceable law, the debate should not have taken four years. It appears that some technological effectiveness of the law was sacrificed in favor of enforceability. This issue is discussed further in the political section.

ECONOMIC

Economic considerations must be considered when evaluating possible courses of action.

Ammunition marking is the most problematic from an economic standpoint. The National Rifle Association asserts that ammunition marking will cause "[t]he cost of ammunition to soar, for police and private citizens alike" [16]. On the other hand, the company that created the ammunition coding system insists that "the entire ACS process can be implemented without dramatically increasing the purchase price to the end user" [4]. Based on their interests, organizations have different perceptions of the economic impact of ammunition marking. The exact economic impact is unknown, but there is much potential for cost in this system. Whether or not ammunition manufacturers and retailers can manage to work around these economic issues and still provide the consumer ammunition at a reasonable price is yet to be determined.

The economic impact of ballistic fingerprinting is minimal. There are minor costs for creating a database, training personnel on how to collect ballistic data, and developing and maintaining facilities for the ballistic fingerprinting tests. However, there are no major long-term costs that would significantly impact the price consumers pay for firearms. Ballistic fingerprinting should not impact the price of ammunition. Economically, this course of action has the fewest problems.

Banning dangerous types of ammunition has limited economic impact. When the current legislation banning "cop killer" bullets was introduced, Kopsch, Turcus, and Ward ammunition targeted by the legislation was "virtually unknown ammunition" according to the NRA [13]. Since the new law banned a type of ammunition that was not in widespread use, the economic impact was minimal. However, if a ban extends to new types of ammunition that are in widespread use, ammunition manufacturers could be forced to undergo costly restructuring of their businesses. This could negatively impact the ammunition industry but only in the short-term. Once the ammunition industry adjusts and complies with the new laws, there would be no ongoing effects. Although its implementation has not caused major economic problems so far, banning selected ammunition has potential to cause short-term problems if extended too far.

POLITICAL

The political dimension is a key consideration when comparing policy options for gun control. Some of the options seem very promising from a social, technological, and/or economic standpoint, but have political problems that make them unworkable.

Ammunition Marking

Ammunition marking raises the issue of privacy. This policy requires the government to keep a database with

information on who is buying ammunition, when they are buying it, from whom they are buying it, what kinds of ammunition they are buying, which specific rounds they are buying, etc.

There are legitimate concerns that this database could be used for the wrong purposes. For example, people might fear that the government would use this database to identify people who purchase larger amounts of ammunition, then subject those people to some level of surveillance by law enforcement agencies.

In addition, the purpose of the Second Amendment is to maintain the power of citizens to protect themselves against an oppressive government through force if necessary. It is hard to imagine this scenario in the modern day since the US government is currently very good about respecting the rights of its citizens. However, if the relationship between civilians and the government ever again becomes strained as in the years before the American Revolution, the government could easily misuse the ammunition marking system. Since it would have 100% accountability of all ammunition bought and sold in the US, the government could use this database to identify which specific people have the means to resist through force and target those people.

However, one counterargument to this concern is the federal government already keeps a registry of all firearms in the US in accordance with US Code, Title 26, Section 5841. This code mandates the establishment of the National Firearms Registration and Transfer Record, which includes the serial number of the firearm, the date of registration, and the person who owns the firearm [9]. Since the government already has accountability of firearms, there is little reason not to allow the government to take accountability of ammunition as well.

One possible way to mitigate registry concerns is to limit this kind of legislation to the states. Americans traditionally trust state and local governments not to abuse their power more than they trust the federal government. It would be challenging to implement this kind of system below state level. Therefore, state-level implementation seems most appropriate, especially since day-to-day law enforcement is typically the responsibility of the state.

Despite long-range fundamental issues, the ammunition marking system is a very good option from the standpoint of short-term, immediate politics. It gives law enforcement agencies a way to solve firearm-related crimes with only minimal impact on the consumer.

Several states have begun working on implementing ammunition marking systems. There is currently (as of March 2008) a bill in the Connecticut legislature that would require all ammunition sold in the state to be coded by 1 January 2010 [7]. If the bill becomes law, the Commissioner of Public Safety would have the responsibility to establish and maintain a database that includes the date of sale of the coded ammunition, the name of the purchaser, the purchaser's driver's license number, the date of birth of the purchaser, the unique identification number of the ammunition sold, and any other information that the commissioner deems appropriate [7]. Businesses will have to keep records of ammunition sales going back three years [7].

Connecticut is not the only state introducing this kind of legislation. On 26 February 2008, Missouri State Senator Bray introduced a bill that would require all ammunition sold in Missouri after 1 March 2009 to be coded [8]. The bill would require the Department of Public Safety to maintain a database with the same information that the Connecticut bill would require [8].

The ammunition marking system appears to be very politically workable as an immediate, practical way to help law enforcement personnel solve violent crimes. It holds enough promise that state legislatures in Connecticut and Missouri already are working on legislation that would implement such a system.

Ballistic Fingerprinting

Ballistic fingerprinting probably has the fewest political problems of the three systems. This course of action has the smallest impact on the individual consumer. There still would be a national registry of firearms. The only difference would be that it would include more information about each firearms than just the serial number, owner, and date of registration. It also would include information about the ballistic fingerprint. The average consumer would not notice a difference.

Another advantage is that costs are low. Low costs always make courses of action more politically feasible because the government has only limited resources with which to work.

Overall, there are very few political barriers to implementing a ballistic fingerprinting system. The main barriers to this system are technological and social.

Banning Dangerous Types of Ammunition

Banning dangerous types of ammunition is not particularly problematic from a political standpoint, but still poses challenges.

There already has been political action on this issue. In 1986, Congress passed H.R. 3121, which banned the sale of armor-piercing ammunition [13]. U.S. Code defines armor-piercing ammunition as

(i) a projectile or projectile core which may be used in a handgun and which is constructed entirely (excluding the presence of traces of other substances) from one or a combination of tungsten alloys, steel, iron, brass, bronze, beryllium copper, or depleted uranium; or
(ii) a full jacketed projectile larger than .22 caliber designed and intended for use in a handgun and whose

jacket has a weight of more than 25 percent of the total weight of the projectile. [14]

This definition focuses on the bullet's construction rather than performance. According to the National Rifle Association, Congress originally wanted to pass a ban that focused on performance rather than construction, but law enforcement agencies such as the Federal Bureau of Investigation, Bureau of Alcohol, Tobacco, and Firearms (BATF), and Secret Service warned that this would be impractical and unenforceable [13]. This led to a construction-based ban after a four-year debate over what form the final bill would take [13].

Although this is a good solution, there are several problems. First, the intent of the law was to ban bullets based on performance (i.e., the ability to pierce armor). Since it received resistance from law enforcement agencies, Congress was forced to adopt a construction-based approach that did not satisfy the original intent completely. Methods of constructing new types of armor-piercing bullets from different materials could be developed, in which case they could circumvent this law.

The second issue is that this is only a limited solution to mitigating violent crime. The law helps protect those wearing body armor, but the average citizen does not wear body armor. The law protects police officers, which is a great step forward. However, the public will demand that its lawmakers find a way to reduce violent crime against regular civilians. The current law does not do much in this regard.

Interestingly, the BATF and the NRA both seem satisfied with this legislation. The NRA's website cites a BATF study that concludes that "existing laws are working, no additional legislation regarding such laws is necessary" [15]. Politically, this legislation is a step in the right direction but it is only a partial solution because it reduces firearm-related crime only against police officers and does little to protect the average citizen.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the best course of action seems to be ammunition marking. Socially, ammunition marking will encounter some opposition because Americans will feel that it is intrusive. However, if it can use the firearm registration database responsibly, the government can use an ammunition registration database responsibly and protests of gun control opponents will be outweighed by the increase in the number of firearm-related crimes that police are able to solve using this system.

Technologically, there are no significant barriers to ammunition marking that already have not been overcome. ACS has developed an effective and affordable system that is ready for implementation.

Economically, the ammunition marking system will have significant one-time costs. After the database is built

and ammunition factories buy the equipment needed to implement this system, there will be few ongoing costs. This initial investment is well worth the potential decrease in violent crime.

Politically, there are some very vocal opponents of this system. However, some states' legislatures are implementing an ammunition marking system. If this system succeeds in these states, other states may find it easier to pass similar legislation.

Like all courses of action, ammunition marking has its advantages and disadvantages but the overall cost-to-benefit ratio makes this course of action very promising.

REFERENCES

[1] Kahaner, Larry, 2007, *AK-47: The Weapon that Changed the Face of War*, John Wiley and Sons, Inc., New York.

[2] United Nations. "United Nations Conference to Review Progress Made in the Implementation of the Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects." 2006. Available from <http://www.un.org/events/smallarms2006/pdf/arms060630 saami-eng.pdf>; Internet: accessed 20 February 2008.

[3] US Army. *TM 43-0001-27: Army Ammunition Data Sheets, Small Caliber Ammunition*. 1994.

[4] Ammunition Coding System. "Ammo Coding: About Us." 2007. Available from <http://www.ammocoding.com/index.php>; Internet: accessed 6 March 2008.

[5] Jacobs, James B., 2002, *Can Gun Control Work?*, Oxford University Press, Inc., New York.

[6] Rinker, Robert A., 1998, *Understanding Firearms Ballistics*, Morris Publishing, Kearney, NE.

[7] Connecticut General Assembly. "Bill Status: S.B. No. 603." 2008. Available from <http://www.cga.ct.gov/asp/cgabillstatus/cgabillstatus.asp?s elBillType=Bill&bill_num=603&which_year=2008&SUB MIT1.x=0&SUBMIT1.y=0&SUBMIT1=Normal>; Internet: accessed 7 March 2008.

[8] Missouri Senate. "Senate Bill No. 1200." 2008. Available from <http://www.senate.mo.gov/08info/pdf-bill/intro/SB1200.pdf>; Internet: accessed 7 March 2008.

[9] US Code, Title 26, Section 5841. Government Printing Office. 2008. Available from <http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=browse_usc&docid=Cite:+26USC 5841>; Internet: accessed 8 March 2008.

[10] DPMS, Inc. "Online Store." 2008. Available from <https://www.dpmsinc.com/store/>; Internet: accessed 8 March 2008.

[11] US Army. *FM 3-04.140: Helicopter Gunnery*. 2003.

[12] US Army. *FM 23-12: Sniper Training*. 1994.

[13] National Rifle Association-Institute for Legislative Action. "History of Federal Ammunition Law." 1999.

Available from <http://www.nraila.org/Issues/FactSheets/Read.aspx?ID=55>; Internet: accessed 10 March 2008.

[14] US Code, Title 18, Section 921. Government Printing Office. 2008. Available from <http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=browse_usc&docid=Cite:+18USC 921>; Internet: accessed 10 March 2008.

[15] National Rifle Association-Institute for Legislative Action. "'Armor-Piercing Ammunition' and 'Plastic Gun' Non-Issues." 2000. Available from <http://www.nraila.org/Issues/FactSheets/Read.aspx?ID=25>; Internet: accessed 10 March 2008.

[16] National Rifle Association-Institute for Legislative Action. "'Encoded Ammunition'/Bullet Serialization." 2008. Available from <http://www.nraila.org/Issues/FactSheets/Read.aspx?id=227&issue=005>; Internet: accessed 10 March 2008.

[17] Sweeny, Patrick, 2005, *The AR-15*, Gun Digest Books.