Less lethal weapons in law enforcement

For decades, the only weapons law enforcement had at its disposal were lethal weapons and physical force using a wooden night stick or baton. New less harmful or less lethal weapons were needed due to the ever increasing violence in our communities and the demand for better crime control, especially after the widespread scrutiny of law enforcement after highly publicized use of force incidents such as the arrest of Rodney King in Los Angeles. Less lethal weapons are defined as weapons that are intended to incapacitate a subject without causing permanent injuries or death while also inflicting minimal damage on surrounding environments (Davison, 2009). They are often also known as ‘ non-lethal’ weapons, but this is a misnomer as no weapon can be completely non-lethal even when used properly and cautiously; moreover, any use of force by law enforcement can inherently involve a risk of death.

The use of less lethal weapons can have physical and mental effects on the individual being subjected to them. There are numerous factors concerning the environment and the subject when choosing the type of less lethal weapon to deploy.

Less lethal weapons use in law enforcement is vital as they frequently contend with subjects who have not yet committed a criminal act (as in the case of crowd control) or with mentally unstable subjects or those under the influence of an intoxicant. Officers must balance their use with what is accepted as reasonable force to avoid violating a subject’s civil rights while, at the same time, satisfying the public that the least amount of force necessary was used. Many subjects use the judicial process to challenge the use of less lethal weapons.

Some of the different categories of less lethal weapons available to law enforcement include: specialty impact munitions, distraction devices, chemical munitions, and conducted energy devices.

Specialty Impact Munitions

Specialty impact munitions (SIM) were used as early as the 1960s in American Law Enforcement. During this period, police used wooden baton rounds to quell riots and the first ‘ bean bag’ round was designed (BAE SIM, 2009).

The use of specialty impact munitions are intended to cause pain (the lowest expected response) and sometimes sufficient blunt trauma to disorient or incapacitate a subject (the maximum desired effect) (BAE SIM, 2009). Low energy specialty impact munitions are used for pain compliance, while high energy specialty impact munitions are used for incapacitation. Some degree of injury is expected to occur as it is necessary to achieve compliance or a momentary degree of incapacitation. The intent with specialty impact munitions is to minimize the amount of injury that is painful. In most instances, bruising is the only injury, but abrasions, contusions, lacerations, and fractures have occurred.

Specialty impact munitions can also have an immense mental effect on an individual often causing anxiety, fear, and/or panic. By pointing a firearm directly at a subject and firing a projectile, the subject may have the fear of actually having been shot by a firearm. The pain associated with the impact may reinforce this belief. Specialty impact weapons can also cause mental distraction in a subject as they cope with the physiological pain that the body

feels and also the perceived danger. If the subject panics, however, it could lead to less control as their fear may lead to the ‘ fight or flight’ response.

Specialty impact weapons include rubber balls, bean bags, foam batons, rubber batons, and wood batons which are usually encapsulated in either 12-gauge shotgun shells, 37mm rounds, 40mm rounds, or grenades (BAE SIM, 2009).

Specialty impact munitions can be used in a variety of situations. Police uses include perimeter control, temporarily incapacitating barricaded subjects, and subduing emotionally disturbed subjects. Correctional uses include performing cell extractions in correctional or prison settings, quelling riots or crowd management, and regaining control of areas.

There are several factors to consider when using specialty impact munitions including distance from the subject, impact areas, munitions selection, and delivery system.

Long range engagements may affect the accuracy of the specialty impact munitions. Additionally, the energy of the specialty impact munitions will decrease over distance and a sufficient amount of energy may not be available to incapacitate the subject rendering it ineffective. While, close range engagements with a subject increase the potential for incapacitation, they also increase the risk for serious injury such as penetration wounds and broken bones.

Distraction Devices

Webster's Dictionary defines distraction as the " state in which the attention is called in different ways; confusion; perplexity" and " that which diverts attention" (Distraction, n. d.). Distraction devices are a low explosive device that emit heat, light, and sound with the intent of distracting a potentially dangerous subject (BAE DD, 2009). They are also commonly called diversion devices, flash sound diversion devices, and referred to as a ' flashbang.'

Flashbangs were designed in a United Kingdom military facility in Porton Down as an experimental stun device called a stun grenade. They were first deployed in a 1977 hostage rescue mission in Mogadishu, Somalia. Law enforcement then became interested in them. However, the first distraction devices were inappropriate for law enforcement use due to several factors including: unreliable fuses, the long delay in detonation (friction type fuses had a 6-12 second delay), excessive noise level, metal fragmentation, and the cardboard containers became soft when exposed to moisture (BAE DD, 2009). Finally, a cost effective distraction device with container that was safe to ship and easy to handle was developed. The Los Angeles Police Department was the first department to explore the use of the flashbang in preparation for the 1984 Olympic Games (BAE DD, 2009).

Distraction devices have both a psychological and a physiological effect on the subjects they are used on. A psychological or mental distraction is one that effects how a subject thinks and reacts based upon human instinct, the chemical makeup of his nervous system, and learned behavior (BAE DD, 2009). The most common psychological distraction is confusion or making someone think that something has, is currently, or is going to occur even

though it is not the case (BAE DD, 2009). Another psychological distraction is the response to fear or their ‘ flight or fight’ response. Fear can cause trembling, sweating, dry mouth, and loss of fine motor control (bladder and bowel).

No other less lethal weapon has the potential to impact all of the body’s five senses like the distraction devices (Stanley, 2008). Physiological or physical distractions are distractions that the body just cannot control because when exposed to the appropriate stimulus, the sensory organs of the body react. Physiological distractions have three dimensions: visual effects, auditory effects, and equilibrium effects.

Exposure to intense light bleaches the retina and causes restriction of the pupil which, in turn, causes a subject to see white spots (much like the flash from a camera). A test conducted by the Arizona Department of Public Safety concluded that it could take up to two minutes for the pupil to return to normal size and ten to thirty minutes for restoration of normal vision (BAE DD, 2009).

The sound of distraction devices can be as loud as 174. 5 decibels. To put this in perspective, a lawnmower equals approximately 90 decibels; a chainsaw, 100 decibels; standing in front of rock concert speakers is equal to 120 decibels; and a gunshot or jet engine at 50 feet away is equal to 140 decibels (BAE DD, 2009).

Distraction devices affect equilibrium by disturbing the fluid in the ear canals which affects the subject’s balance.

The advantage of physiological distraction is that it will work every time. “ The combination of effects: sound, light, the smell and taste of smoke, along with the pressure wave of energy striking the skin is enough to cause a sensory overload for anyone in the immediate proximity of the blast” (Stanley, 2008). The disadvantages to physiological distractions are they require direct exposure and can vary in duration as sensory overload varies greatly from person to person and from device to device. Some subjects will show little or no effect, others may be merely disoriented, while still others can be frozen in pace for several seconds.

The three primary effects of a distraction device are: heat, light, and sound. The heat effect is the least damaging of the three. The heat produced from the explosion of the distraction device has a short duration (50 milliseconds), but can exceed 2000 degrees centigrade (BAE DD, 2009). The heat and flame (thermal incendiary) effect is usually seen as a bright flash or fireball at the instant of the explosion. The light generated is very intense and short of duration (less than 50 milliseconds) (BAE DD, 2009). The explosion from a distraction device creates a blast pressure wave which is the almost instantaneous creation of a volume of gas forcing the existing gases of the surrounding area out and away from the blast at high speed. It is essentially a powerful sound wave.

Distraction devices are available in two types: those that only produce sound and light (flashbangs) and those that also eject either projectiles or chemicals (projectile/chemical grenades) (Stanley, 2008). A flashbang is a thermal incendiary with a combustion capacity and fire potential. Its heat can exceed 2000 degrees centigrade but is short in duration. The light from

a flashbang also has a short duration but is intensely bright at six to eight million candelas. As a comparison, a typical law enforcement flashlight produces approximately 30, 000 candelas, while the light from a 35mm camera flash equals 50, 000 candelas (BAE DD, 2009). The sound (blast pressure) from a flashbang can cause injury. A primary blast almost always affects air-filled structures such as the lungs, ears, and gastrointestinal (GI) tract. Secondary blast pressure occurs when the action of the blast pressure wave reflects off surrounding surfaces. Soft or porous surfaces absorb the wave and decrease its reflection while hard or flexible surfaces enhance the reflection (BAE DD, 2009).

Distraction devices come in canister type, grenade (with rubber balls or pellets), and a 12-gauge cartridge (aerial diversion). The most common method of deployment is by hand. The officer properly grips and controls the device, then pulls the pin and deploys the device. A flashbang pole is used to deploy the device through a window. The least frequent method of deployment is launching or throwing as the officer cannot see where the device will initiate. This method is generally used outdoors as a crowd management tool.

The hazards of deploying distraction devices include the presence of children and the elderly, fire, and smoke. Children may become hysterical and can young infants can suffer hearing damage as their auditory system is still developing. Elderly people often have health problems that may be aggravated by the exposure to the distraction device or they may be bedridden and need help becoming ambulatory. A fire extinguisher should always be present when a distraction device is utilized in case a fire erupts.

Distraction devices emit smoke that creates tactical and health concerns as smoke may obscure the officers' vision and by-products of flash powder are not healthy to breathe.

Another potential hazard is secondary blast projectiles which can be created from the blast pressure. Rocks or other small objects on the ground easily become ballistic when a distraction device is thrown next to them. A flashbang pole deployed through a closed window can cause ballistic glass fragments.

Flashbang court cases are not abundant. They are challenged more in criminal court than in civil court. Civil cases include personal injury, property damage, death, negligent supervision, deliberate indifference, or civil rights violations.

The first court case concerning the use of distraction devices was Langford v. Gates, 43 Cal. 3d 21, 729 P. 2d 822 (1987). Langford claimed use of the flashbang device violated her 4th, 5th, 9th, and 14th Amendment rights because its use against residences constituted unreasonable force. The court did not issue an injunction against their use, citing in their ruling that flashbangs were used in more than 25 cases since 1984 and they presented no more than minimal risk of injury (Langford v. Superior Ct., 1987). Therefore, their use could not be accounted unreasonable. In Garcia v. Texas, 829 S. W. 2d 830 (1992), the defendant challenged his confession and his waiver of rights (BAE DD, 2009). He stated it was involuntary and violated his 5th Amendment because it was made after he was subjected to a forcible entry and a stun grenade. The Texas Court of Appeals upheld his conviction.

In civil action, a Wisconsin prisoner received $49, 000. in 2009 for the permanent harm he suffered after a flashbang grenade was thrown into his cell in an effort to subdue him (Foley, 2009). He experienced ringing in his ears for months afterward and now suffers from tinnitus.

Chemical Munitions

Chemical munitions, developed during World War I, that produce temporary effects of excessive tearing, closing of the eyes, and shortness of breath are commonly known as ‘ tear gas.’ Chemical munitions can be a good tool for law enforcement because when used correctly, they are effective, but their effects will dissipate quickly when a subject moves away from the contaminated area.

There are five purposes in the deployment of chemical munitions, including to: disperse, dislodge, distract, disorient, and detect (BAE CM, 2009). Chemical munitions are a primary means of dispersing violent crowds and dislodging barricaded subjects, but can also be used to help detect a barricaded subject’s location by forcing the subject to cough or make some other noise. When the chemical munitions fails to dislodge the barricaded subject, its continued application can tire the subject and potentially diminish his desire to fight or resist. Chemical munitions can also be used to visually impair subjects or limit their access where evidence (especially drugs) may be destroyed. Additionally, they can be utilized to mask the movement of specialized police tactical teams such as S. W. A. T. Protective masks that filter particulates and absorb gas vapors should be worn by law enforcement when some types of chemical munitions are utilized. The most common types of chemical munitions used by law enforcement are:

Cloroacetophenone (CN), Orthoclorobenzalmalononitrile (CS), and Oleoresin Capsicum (OC) (BAE CM, 2009).

Cloreacetophenone (CN)

CN was invented by German chemist Carl Graebe in 1869 and was used for training soldiers in the use of their protective equipment (BAE CM, 2009). Studies of CN revealed that although it had mild effects, it could still incapacitate a subject for a short period of time (BAE CM, 2009). This made it a good weapon for use against rioting citizens and barricaded subjects. CN is lighter than CS, but five times more toxic; however, it has milder physiological effects relative to CS and OC (BAE CM, 2009).

The physiological effects of CN include extreme tear production, voluntary closure of eyes, and mild stinging/burning of the eyes, mouth, throat, and nasal passages (BAE CM, 2009). Its psychological effects include some mental disorientation and confusion, as well as fear or panic due to the physiological effects.

The reaction time for CN is usually one to three seconds, but often varies depending on the ambient temperature and the mental state and physical condition of the subject. After exposure, the effects should dissipate 5-15 minutes after the subject is removed from the contaminated area.

Subjects under extreme influences of drugs and alcohol and mentally disturbed subjects are less likely to be troubled by the effects of CN. And animals that are exposed to CN suffer little, if at all (BAE CM, 2009).

CN is used by law enforcement is aerosol sprays and chemical dispensing grenades.

Orthoclorobenzalmalononitrile (CS)

Law enforcement in the United States began using CS in 1965 as an aid to disperse crowds and subdue barricaded subjects (BAE CM, 2009). It is currently the most used riot control agent by law enforcement.

CS is an irritant that causes a burning sensation to the moist areas of the skin, especially the eyes, mouth, throat, and nasal passages. The sensation is consistent with an instant sunburn (Stanley, 2008). Other physiological effects are excessive tear production and mucous discharge from the nose involuntary closure of the eyes, shortness of breath, feelings of suffocation, and sneezing and coughing. Psychologically, CS may cause disorientation and confusion. The subject may also experience anxiety, fear, and panic.

The reaction time for CS is usually 3-7 seconds but can vary depending on the chemical composition of the CS and the mental and physical condition of the subject. The after-effects usually dissipate 5-15 minutes after the subject is removed from the contaminated area.

CS is often blended with OC to increase its effectiveness.

CN and CS are available in solid (pellets or powder) and liquid form. For pyrotechnic use, or when the chemical agent is vaporized and carried by smoke particulates through the atmosphere, a granulated raw agent of CN/CS is combined with a fuel mix and then pressed into various sized pellets (BAE CM, 2009). Powder is made with micro-pulverized forms of CN or

CS mixed with Magnesium oxide and cabbosil (BAE CM. 2009). Munitions in the powder form are not pyrotechnic, making them ideal for indoor use. To convert CN or CS to a liquid form, it is pulverized into a very fine powder and then suspended within a liquid carrier (BAE CM, 2009). The most effective form of CN or CS is when it is mixed with a fuel mix and burned (pyrotechnic). The least effective form of carrier is a liquid as it tends to settle faster (BAE CM, 2009).

CN or CN can be delivered by hand deployment up to 50 yards and with a launcher for deployment more than 50 yards from the police line (BAE CM, 2009). Chemical munitions can be delivered by expulsion or blast devices that eject chemical agents into the atmosphere using a detonator, blasting cap, primer and powder, or CO^2 cartridges. Pyrotechnic is a delivery method where agents are released into the atmosphere by means of compressed slugs or pellets and a fuel mix that is then carried by smoke. Other delivery methods include fogging systems, aerosols, and liquids.

Oleoresin Capsicum (OC)

Oleoresin capsicum is oil and a resin extracted from the cayenne pepper plant (Chan et al, 2001). The first commercial OC product for law enforcement was developed in 1974 in a Florida home (BAE OC, 2009). OC use was then adopted by FBI special agents in 1990. Later that year, a violent subject who had been sprayed with an oil-based OC spray containing isopropyl alcohol was unintentionally set on fire after a conducted energy weapon was also deployed. This led the development of a safer, water-based OC product. The California Department of Justice conducted a two-year study documenting the se and effectiveness of two distinctively different OC

products (BAE OC, 2009). The study helped establish industry standards for selection criteria that are still in use today.

OC is an inflammatory where the desired result is to affect the respiratory system. Approximately 85% of the subjects contaminated with OC will move seeking fresh air (BAE CM, 2009). OC comes in both powder and liquid forms and is designed to stay airborne as long as possible. OC powder and liquid munitions are not as persistent as CN and CS and, therefore, may not be as effective, but it is easier to decontaminate a subject and clean and area that has been exposed to OC munitions (BAE CM, 2009). OC is also considered to be safer and less toxic than CN and CS (Chan et al, 2001).

The physiological effects of OC are a burning sensation of the upper respiratory system and exposed skin, inflammation of eyes and mucous membranes, and involuntary intermittent blinking or complete shutting of the eyes. The inflammation of the respiratory system causes a sensation of shortness of breath of feeling of suffocation which usually results in coughing. The psychological effects include anxiety, fear of the expected pain, and panic which may cause auditory exclusion where the subject doesn’t respond to verbal commands (BAE OC, 2009).

There is no standard reaction time for OC products because the reaction time relies on the subject’s mental state, the humidity, and the temperature.

OC can be delivered in a pepper fog, pepper spray, or pepper foam application. The pepper fog application has a range of 3-4 meters and is effective on single or multiple subjects. Less accuracy is needed due to its wider spray area. The disadvantage of the wider spray area is the potential

for users and by-standers being affected by the spray. Its range and effectiveness can also be reduced by high winds. Pepper spray or direct stream has a range of 5-7 meters and its delivery is similar to the stream of a water pistol. There is less of a possibility of user and by-standers being affected by the spray when delivered in this form. It also has a longer range and is less affected by wind. The direct stream delivery has a narrower spray area and requires more accuracy. It is not as effective as a fog pattern on multiple subjects. The foam spray pattern has a range of 3-6 feet and is used in climate-controlled environments such as courtrooms, hospitals, schools, and jails. It has better surface cohesion, reduced cross contamination, and causes virtually no respiratory difficulties. However, it does have a very limited range.

After exposure to OC, decontamination should encompass physiological as well as psychological effects. To provide physical relief, eyes should be flushed with water, exposed skin surfaces should be decontaminated, and the subject should be exposed to fresh air. For psychological effects, verbal rapport should be established with the subject and efforts should be made to calm and relax the subject (BAE OC, 2009). It can take from 15 minutes to one hour for the subject to recover from the effects of OC.

Liquids are released when the launched projectile breaks apart upon hitting a hard surface, thus releasing the chemical munitions.

There are many factors that should be considered before chemical munitions are deployed. Tactical considerations for outdoor deployment include: wind conditions, weather conditions, crowd make up, escape routes, terrain

surfaces, fire hazards, sensitive structures nearby (hospitals, schools), and counter-measures present (gas masks). When the chemical munitions are deployed indoors, there are different factors to consider such as entry/exit points, whether the power/water is on or off, the presence of hazardous materials, the subject's location, the location of weapons, the medical condition of subjects, and the subject's access to counter-measures (gas masks, etc).

Critics continue to claim that OC spray is not safe. A National Institute of Justice funded study of the safety and effectiveness of OC spray in three North Carolina jurisdictions concluded that the use of pepper spray contributed to only two of the 63 in-custody deaths with both of those involving people with asthma (NIJ, 2003). The other 61 deaths were caused by disease, drug use, positional asphyxiation, or a combination of these effects (NIJ, 2003). Another study by medical researchers at the University of California-San Diego found no evidence that the exposure to pepper spray alone did not pose a significant risk for positional asphyxiation (NIJ, 2003). They also recognized that the use of OC spray reduced the number of injuries to officers and suspects, as well as excessive use of force complaints against law enforcement (NIJ, 2003).

Conducted Energy Devices (CED)

Conducted energy devices (CED), or electronic control devices (ECD), affect the neuromuscular functions of the body. Their pulse mimics the electrical signals used within the body to communicate between the brain and the muscles. This stimulates the pulsed communication used within the nerves and interferes with communication to the muscles which causes the Central

Nervous System to be overwhelmed resulting in uncontrollable muscle contractions and temporary immobility (Steverson, 2007). CEDs are available to law enforcement in many different forms including handheld devices, belts, and shields.

Handheld devices

Most handheld CEDs are more commonly known as ‘ Tasers,’ even though Tasers are a brand of CED manufactured by Taser International. The Taser was invented in the 1960s by Jack Cover, a lead scientist at American Aerospace working on the Apollo Moon Landing Project (Taser, 2009). The name, Thomas A. Swift Electric Rifle (TASER) was derived from one of his favorite boyhood books (Taser, 2009).

The handheld CED uses compressed nitrogen to discharge two electric darts or probes that remain connected to the cartridge on the gun by a thin high-voltage insulated wire. The probes deliver electricity in 5-second bursts. CEDs deliver a high voltage, low amperage shock. In order for the shock to be delivered, both probes must connect with the subject to complete the circuit.

Although the probe deployments are more effective, the handheld CED also has a drive stun back up feature where it can be used without the cartridge as a stun gun. However, the drive stun does not usually result in incapacitation since it doesn’t have a significant impact on the central nervous system (Taser, 2009). It is used as a more as a pain compliance technique.

The handheld CEDs work well in enclosed environments and close quarters such as houses, jails, emergency rooms, and crowd control. Their cartridges have a range of 0-21 feet, 0-25 feet, and 0-35 feet (Taser, 2009). They have a good deterrent effect and unlike chemical munitions, decontamination is not a factor.

The effectiveness of handheld CEDs can be limited by loose or thick clothing, low nerve or muscle mass on a subject, or wire breakage.

Considerations must be made for increased deployment risk when activating handheld CEDs on subjects: in an elevated position (risk of falling), operating machinery, in flammable environments, in water (risk of drowning), obviously pregnant, and frail or infirmed.

There are also problems with becoming too reliant on CEDs. Some agencies found that officers relied so heavily on handheld CED use to gain compliance from a subject that they bypassed non-violent conflict resolution techniques, such as negotiations; consequently, agency policies were revised on its use. One Northwest Florida agency does not allow the use of CEDs on subject’s who merely refuse to comply (without physical resistance) with a verbal command.

One feature developed on Taser CEDs is the anti-felon identification system that uses small confetti-like tags laden with the cartridge serial number in every cartridge. Once the Taser is deployed, the area is sprayed with the confetti-like tags leaving the cartridge serial number behind. Since there are too many to retrieve them all, this leaves a record of who the spent cartridge was registered to. To help prevent overuse and intentional abuse of the

Taser, there is also a dataport that can be utilized to record the date and time of every trigger pull of the weapon.

Opponents of CEDs have repeatedly claimed that they are responsible for many in-custody deaths. However, a study by the Department of Justice concluded that " there is no conclusive medical evidence…that indicates a high risk of serious injury or death from the direct effects of CED exposure" (DOJ, 2008). Furthermore, their reported link to deaths in subjects suffering from ' excited delirium,' a syndrome characterized by agitation and psychosis, also has no foundation as those individuals are already unstable medically and at a high risk of mortality, even with medical intervention and the absence of CED deployment (DOJ, 2008).

Belts

Electronic stun belts became popular in 1994 when the Bureau of Prisons decided to use them in their medium and high-security lock-ups (Cusac, 1996). One brand of stun belt is the Remote Electronically Activated Control Technology (R. E. A. C. T.) belt manufactured by Stun-Tech, Inc. in Cleveland, Ohio (Staples, 1997).

Electronic stun belts that are strapped around a subject's waist are primarily used for prisoner escorts and transports. The stun belt is a 4-inch wide elastic band with two metal prongs powered by a battery that are positioned over the left kidney and activated by a remote control (Staples, 1997). Once activated, it sends a 50, 000 volt shock in 8-second bursts to the back muscles of the subject wearing the belt.

Their use can be advantageous to law enforcement personnel as they can be activated remotely. The officer can be as far 300 feet away from the subject when manning the control (Cusac, 1996).

Use of the stun belt in courtrooms settings has been shrouded in controversy. In Hawkins v. Comparet-Cassani, the stun belt was place on defendant Ronnie Hawkins after he was being difficult and acting up in the lock-up area of the courthouse (Hawkins v. Comparet-Cassani, 2001). Once in the courtroom, the defendant continued to act in a disruptive manner and made several statements out of order so the judge ordered the officers to activate the stun belt. The court concluded that " mere placement of the belt on a detainee raises serious questions going to the merits of the 4th Amendment and 8th Amendment claims" and also addressed that it had " the potential to compromise an individual's ability to participate in his or her own defense" (Hawkins v. Comparet-Cassini, 2001). In People v. Mar, 28 CAL. 4th 1201 (2002) the California Supreme Court ordered a new trial after the defendant, James Allen Mar, was unwillingly required to wear a stun belt during his trial (Ofgang, 2002). The court ruled that because of the nature of the device and its effect once activated, " requiring an unwilling defendant to wear a stun belt during trial may have significant psychological consequences that may impair" his ability to assist with his counsel and therefore violated his 6th Amendment right to counsel (Ofgang, 2002).

Shields

An electronic stun shield generates an electric shock that is only delivered when a subject touches the shield after it has been activates. Convex type electronic shields are used for crowd management or riot control and

concave type electronic shields are used for capturing a subject (Stanley, 2008). The convex shield is used to push subjects away, while the concave is used for pinning subjects preventing their movement (Staples, 2008).

Conclusion

In an effort to minimize the risk of death and serious injuries to officers and citizens and limit damage to the adjacent areas, law enforcement agencies have employed the use of less lethal weapons. Less lethal weapons are available in a variety of devices that cause distraction, pain compliance, and temporary immobility. Some are better suited for open areas or outdoor environment, while others work well in smaller, enclosed areas.

The use of less lethal weapons can cause physiological and psychological effects of varying severity. These effects lead to their success at being effective.

Although the use of less lethal weapons reduces injuries to subjects, it also increases scrutiny of law enforcement use of force and often the liability of court action.

Less lethal weapons come in a variety of devices that