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**A Briefing Note on the State of Tasers in Canada:
A Select Review of Medical and Policy Review Literature**

Prepared for: The Canadian Association of Police Boards

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March 30th, 2008

Background:

The Conducted Energy Device (CED) has been in use by Canadian law enforcement agencies throughout Canada since 2001.¹ Initially touted as a completely risk free substitute for lethal-force, the taser draws great appeal as it has the ability to incapacitate subjects from a distance thereby limiting injury to both officer and the intended target. Most agencies within Canada have been training and arming their emergency task forces and frontline supervisors based on the available information. The main results reported by police have been quicker de-escalation of situations involving aggressively resistant persons, less injuries for those engaged (both officer and subject) and typically a proportionate reduction in the use of alternatives – namely standard issue firearms.

However, the device has been embroiled in controversy recently as the media have reported on more reports of deaths proximal to its use in Canada as well as the United States. Moreover, there is growing public concern over the possibility of misuse, namely that the taser is used too early in encounters thus cutting off the opportunity to diffuse via verbal confrontation. The latest round of controversy concerning the device's safety and appropriate use in Canada was sparked by an incident at Vancouver's International Airport in late 2007 where a man died nearly immediately after being shocked. Not only has this event unsettled public oversight bodies and policymakers in Canada as well as internationally, but it has also galvanized opposition to the device's increased dissemination to additional officers in Canada's police services.

¹ Please note that due to the accepted interchangeability of these terms, taser, stun gun will frequently be used as alternates.

Two sides to the debate have emerged. Advocates of the device (namely the main manufacturer, Taser International Inc.) maintain that tasers are safe when used appropriately.² They point to the reduced amount of injuries to both officers and persons taken into custody as evidence of the device being an invaluable contribution to law enforcement. Excited Delirium, they say, is the real culprit behind the number of deaths occurring each year.³ Critics, on the other hand, charge that a lack of a medical consensus, coupled with a “tase first, talk later” mentality raise significant problems. They point to incidents such as the Vancouver Airport and others where tasers are deployed indiscriminately without much thought to less lethal alternatives. With respect to persons experiencing ED, they fear that these individuals are now more at risk in the absence of a set policy in place to guide responding officer’s actions. The ultimate conclusion is that, with no unanimous consensus on the device’s safety, a complete moratorium is the best option.⁴

In early 2008, CED use across Canada remains more controversial than ever. Two questions likely capture the essence of the issue. First, what is the medical consensus surrounding the effects of tasers on humans? And second, are tasers being used appropriately by law enforcement officers across Canada?

² Appropriate use is still somewhat of an ambiguous term. It often depends on whose perspective you are using to judge the level of appropriateness. Also vitally important is the amount of information available regarding the context in which it was used. Nevertheless, appropriate use is generally termed to mean use in a way that precludes intentional cruel or unusual punishment or situations where no or very minimal use of force is required (verbal confrontation).

³ Excited Delirium (ED) refers to “A state of extreme mental and physiological excitement, characterized by extreme agitation, hyperthermia, euphoria, hostility, exceptional strength and endurance without apparent fatigue.” Morrison and Sadler, 2001 in Sgt. Darren Laur. Victoria Police Department, British Columbia, Canada. 2004. *Excited Delirium and its Correlation to Sudden and Unexpected Death Proximal to Restraint: A Review Of The Current and Relevant Medical Literature*. Prepared for the Canadian Police Research Centre (CPRC). http://www.cprc.org/tr/tr-2005-02_e.pdf: 39.

⁴ Amnesty International Canada. 2007. *Canada: Inappropriate and Excessive Use of Tasers*. AMR 20/002/2007. London: United Kingdom: 18-20.

2008 will likely see a continuing trend in medical, scientific and field research aimed at answering these questions. Reviewing the current research yields an increasing amount of studies monitoring changes in blood content levels, heart rhythms and acidosis levels in the blood of swine post-use. Recently, human volunteers have begun to be used in order to assess the possibility of negative effects in varying circumstances.⁵ A growing interest in the condition of ED has spawned further research that might provide more information on the physiological and psychological determinants of these episodes. As it stands, however, the majority of studies still rule out tasers as being the primary cause of the 300 or so deaths that have occurred throughout North America since the introduction of tasers.

One major concern is that the current stack of medical research is not enough to base solid policy on. Significantly, in January 2008 the Chief of the Toronto Metropolitan Police Service William Blair stated that “[i]n the hands of a properly trained officer, properly directed, supervised and accountable for its use, [tasers] can save lives...” This quote offers a glimpse of the rationale working frame of reference for police agencies. However, there is a public concern that this reasonable view is not translating into the due consideration sought on the street. Taking the RCMP as an example, the assertion in Chairman Kennedy’s 2007 interim report regarding taser creep has no doubt augmented these fears. For the public, questions of accountability and proper oversight loom large.

Purpose:

At the request of the Canadian Association of Police Boards, this note will attempt to summarize a sample of recently conducted research on the medical effects of tasers as well

⁵ Research in this area remains controversial given the limitations of the kinds of experiments that can be run for ethical considerations (mentally handicapped persons being subjected to tests, repeated taserings of individuals)

as review the state of taser-governance throughout Canada. In order to accomplish this, the paper will highlight conclusions of the recent medical research, review conclusions and recommendations made by a series of public reports starting in 2005 and finally, place these findings within the context of Police Boards and the issues they will likely face on a reoccurring basis. Citations from research and policies produced by bodies in the United Kingdom, the United States and Canada will be used throughout the report. It is the goal of this report to compliment the existing taser knowledge of board members in order for them to make the best informed decisions possible.

Summary of Medical Research:

To date, the amount of research conducted on tasers is neither scarce nor in ample supply. Researchers were initially interested in discovering how likely taser cycles (5 second burst) caused ventricular fibrillation (VF) among test subjects (namely swine).⁶ Experimentation typically involves designing computer generated humans and mimicking the effects of taser

⁶ Experiments have typically "involved pigs because pigs possess a ratio of heart size to body weight similar to humans, their coronary artery distribution resembles ours, and they are also susceptible, like humans, to ventricular fibrillation (where the heart's electrical activity becomes irregular)." (BCOPCC, 2005: 22).

shock, shocking drug-induced swine while monitoring the reaction in their chest cavities or simple comparisons based on the known parameters of the heart's ability to withstand electric shock and the rate at which electric charge travels. In all, this research is being conducted in various countries and has either been publicly funded or been provided funds by Taser International Inc (in the United States).

Nevertheless, research has not yet proven conclusively that tasers are linked to death.

Additional studies have begun to be conducted on human volunteers. As well, past police and medical records are being used to get a better understanding of the effects of the device. Research is continuing to look at different possible links between taser application and irregularities such as abnormal heart rates, increased pH levels, increased acidosis and other changes that might lead to more dangerous imbalances. Experiments have included mixing a range of variables: size, ages, sex, length of shocks, different areas of the body, different intervals as well as a branching away from a narrow focus on cardiac implications to other areas (such as potential respiratory complications) in an effort to yield more conclusive results.

With special respect to ED, research reveals that there are multiple causes making it difficult to discern a primary or between several contributing factor post-mortem. The reality that these subjects are being investigated after they have died makes a conclusive autopsy difficult at best.⁷ The fact that similar cases show up in reports outside the law enforcement community going back to the mid-19th century reflect that this peculiarity is not limited to restraint by taser.⁸ Nevertheless, the condition's relation with taser will continue to grow as it is estimated that between 50 and 125 people die in similar circumstances within North America

⁷ Discussion with Chris Lawrence, Ontario Police College. March 10th, 2008.

⁸ Laur, 2004: 5.

every year.⁹ What is known is that ED is caused by a multitude of complex factors and thus should be classified as a medical emergency no matter the underlying cause.¹⁰ More extensive research into the causes ED and in-custody deaths are of growing interest for law enforcement agencies and laypersons alike.¹¹

In terms of what has actually been taken from the research, recommendations generally caution against use in situations where the electric charge is hazardous, excessive use as well as application on sensitive areas of the body.¹² One recently completed taser study highlighted “the importance of the anatomic site where the probes penetrate and the total duration of cycles, as well as the need to assist individuals who are hit when they fall. It should also be borne in mind that there will be greater risk of injury to an important structure if a probe hits the neck, face, head or genitals. The risk will be all the greater if the subject is not a large person (child, thin individual) because the skin shield will not be as thick.”¹³ Finally, it is fairly clear that the risk of medical complications rise as taser applications are extended as beyond the initial 5-second charge.

A critical reading of some of the literature reveals several future challenges. On the whole is the challenge of providing immediately relevant information for policymakers. For one, there are certain limitations on the validity of these experiments. Such experiments will

⁹ Ibid. More specifically within Canada, the limited data that has been recorded suggests that on average 8 people die every year in custody proximal to restraint with about 75% of those dying either at the scene of the arrest or on the way to the hospital.

¹⁰ Ibid: 39. Moreover, several policies now mandate that medical emergency response teams be notified when a taser has, or will be, deployed as close in time to the deployment as possible.

¹¹ Both Dr. Christine Hall of the Calgary Health Region as well as Mr. Chris Lawrence of the Ontario Police College have interests in this field and further research is currently underway. Subcommittee on Public Safety, Enquiry into the safety of tasers.

¹² Significantly, the 2005 CPRC study noted that due to the lack of research independent of the manufacturer’s information, police agencies were at a disadvantage in terms of basing policy on widely accepted and expert-reviewed research findings.

¹³ Standing Advisory Subcommittee on the Use of Force. 2007. *Analysis and Recommendations for a Quebec police practice on the Use of Conducted Energy Devices*. Government of Quebec: 26.

never be able to entirely reproduce scenarios that occur “on the ground”. Ethical considerations are a main imperative - shocking those unaware that they are going to be shocked, inability to give consent in the case of mentally handicapped individuals and the use of illegal narcotics. Also, taser research is inherently bound up with ongoing research into in-custody deaths. Finding ways of integrating this research into the current work being carried out requires careful comparison. Finally, while various conclusions have been reached regarding cardiac effects of tasers on swine there is still disagreement over the applicability of these results in the academic community.¹⁴ In spite of this, research will continue so long as reports surface of deaths proximal to taser use.

Review of Medical Research and Associated Literature (post-2005)¹⁵:

A 2005 study conducted by the Canadian Police Research Centre (CPRC) in conjunction with the Canadian Association of the Chiefs of Police (CACCP) produced the following conclusions:

- Definitive research or evidence does not exist that implicates a causal relationship between the use of CEDs (i.e., tasers) and death
- Existing studies indicate that the risk of cardiac harm to subjects from a CED is very low.
- ED, although not a universally recognized medical condition, is gaining increasing acceptance as a main contributor to deaths proximal to CED use.
- The issue related to multiple CED applications and its impact on respiration, pH levels, and other associated physical effects, offers a plausible theory on the possible connection between deaths, CED use, and people exhibiting the symptoms of ED.

At the end of 2007, another review came to the conclusion that “...the risk of death directly caused by CEDs is extremely low where the devices are used on an individual who does not present any risk factors” and that “there is currently no research or evidence

¹⁴ Pippin John J. 2006. *Taser Research in Pigs Not Helpful*. Journal of American College of Cardiology. Vol. 49, No. 6: 731-732.

¹⁵ What follows is brief sample of the medical and academic literature available on the effects of taser deployment on subjects in a controlled environment. It should be noted that while this section strives to as complete and comprehensive as possible, it may not be complete in its breadth. This review is current to March 5th, 2008.

establishing a causal relationship between the use of a CED and the death of a person who has been exposed to it.”¹⁶ Despite these conclusions, it should be noted debate over certain matters is still ongoing within the academic community.

Medical Research:

**Evaluation of Taser Devices
Police Scientific Development Branch,
Home Office, United Kingdom
2005**

As a follow up to a 2002 report, this report was commissioned by the Association of Chiefs of Police (ACPO) to address concerns regarding use of the older M26 model and compare it to the newer X26 model. This study concluded that “*the risk of a life-threatening event arising from the direct interaction of the currents of the X26 Taser with the heart, is less than the already low risk of such an event from the M26 Advanced Taser*”.¹⁷

**Supplement to HOSDB Evaluations of Taser Devices: a collection of medical evidence and other source material
Police Scientific Development Branch,
Home Office, United Kingdom
2006**

This supplement is a collection of source material used in the compilation of the two HOSDB studies completed in 2002 and 2005. Several of the reports listed in its appendix cover the conclusions arrived at by a number of UK-based studies. Not one found a causal link between CED use and signs of cardiac arrest or ventricular defibrillation. However, notes were made of the limits and applicability of these studies – the usefulness of swine/guinea pig models, applicability of software-generated effects to humans in real-life, potential longer term effects of taser exposure, various voltages and amperes used and whether CED was the sole cause of abnormal cardiac arrhythmia.

Authors: Gary M. Vilke and Theodore M. Chan
Title: Less Lethal Technology: Medical Issues
Source: Policing: an International Journal of Police Strategies and Management. Vol. 30
No. 3,
2007, pp. 341-357.

¹⁶ Quebec, 2007: 20, 25.

¹⁷ 2005: 60-61.

This purpose of this article was to review the medical implications of three common less-lethal technologies in use today: blunt projectiles (baton or asp), oleoresin capsicum (OC) spray and CEDs. The authors found no evidence supporting a causal relationship between CEDs and the incidence of in-custody deaths. In this review, the authors based their conclusions on research conducted by Jauchem *et al* (2005), Ho *et al* (2006) and Chan *et al* (2007), each of them dealing with experiments either on humans or swine which included various types of blood, cardiac and respiratory monitoring. Aside from the conclusions based on this review, the authors noted that: (a) effects of CEDs on neurological functions are unknown; (b) there may be risks to with subjects with pacemakers or underlying cardiac disease and (c) uncertainty still predominates with respect to prolonged or recurrent applications.

Researchers: Levine, Saul A. MD, *et al*.

Title: CARDIAC MONITORING OF HUMAN SUBJECTS EXPOSED TO THE TASER

Source: The Journal of Emergency Medicine, Vol. 33, No. 2, pp. 113–117, 2007

The objective of this study was to evaluate rhythm changes during CED deployment on human volunteers. At the time of this study, human studies had not yet looked at continuous cardiac monitoring immediately after a shock. A total of 105 subjects were used. The results found that those exposed to a brief shock from the taser developed significant increases in heart rate but not to a point where there were indications of potential cardiac problems or irregularities. Limitations included a small sample size, known capacity of monitoring equipment might have not reported all changes, selection bias in the form of all the subjects being resting adults and finally a lack of post-testing monitoring that might have resulted in important observances.

Researchers: Vilke, Gary M. *et al*.

Title: Twelve-lead electrocardiogram monitoring of subjects before and after voluntary exposure to the Taser X26.

Source: American Journal of Emergency Medicine (2008) 26: 1 – 4.

Publish information: Received 27 December 2006; accepted 3 January 2007.

This study evaluated cardiac rhythm changes in 32 healthy volunteers during application. Volunteers were supported on either side, shocked via alligator clips and monitored both pre and post device activation. The type of monitoring allowed the researchers to document cardiac activity during these times. While their study did not produce any adverse results limitations of their research included: (a) not being able to continuously monitor the individuals thus missing changes immediately following taser activation, (b) their population did not mimic the population tasers are likely to be used against and finally (c) only short, 5-second activations being used. Despite highlighting the need to study more prolonged shocks, the researchers regarded their findings as indicating the taser to be safe for use against healthy, drug free individuals.

Researchers: Webster, John G. *et al.*

Title: Taser Dart-to-Heart Distance That Causes Ventricular Fibrillation in Pigs.

Source: IEEE Transactions on Biomedical Engineering, Vol. 54, No. 3, March 2007.

To help answer the question, "Can the EMD directly cause VF?," these researchers used dart-to-heart distances known to cause Ventricular Fibrillation in pigs for the X26 Taser, and compared with skin-to-heart distances in erect humans. At a certain point of impact, the study found that the dart to heart distance in pigs was 17 mm. Using these findings, they concluded that since average skin to heart distance in pigs is 45 mm whereas humans are only 30 mm, there was more risk for humans as the maximum threshold for VF (adding the length of the taser darts) is 33 mm. However, the probability of a dart on the human body landing in the 1 cm over the ventricle in order to cause VF is 0.000187 (based on the dart hit location data available). Moreover, this probably decreases if the dart approaches the heart at an angle. They concluded stating that necessary, but not sufficient, conditions for direct electrocution of the heart are 1) dart landing in a small frontal region over the heart suggested by our results, and 2) cardiac arrest of the subject shortly after Taser firing suggested by the literature. They recommended that coroners should confirm these conditions before placing tasers as contributing causes of death. Furthermore, these results encourage taser training to be carried out on the back, avoiding the front of the torso. (507)

Authors: Ho, Jeffrey D. *et al.*

Title: The State of Current Human Research and Electronic Control Devices (ECDs).

Source: European Working Group: Non-Lethal Weapons, 4th European Symposium on Non-

Lethal Weapons, May 21-23, 2007. Stadthalle Ettlingen, Germany.

In a series of presentations, these practitioners discuss taser research in general. There is consideration of the media's role in shaping public perception. They caution against associating CEDs with subject deaths simply because the device was activated prior to the death (questionable logic). Their summary of the research includes attempts to establish a link between ECD use and cardiac physiology (the initial fear that tasers might electrocute those they were activated upon), cellular physiology (contribution of ECD to instances of ED via increases in blood pH or other acidosis), altered physiologic states (mimicking as much as possible those instances of taser use where the subject is suffering from ED or other agitated states – physical exhaustion, intoxication, acidosis) without much success. Moreover, they review research being conducted on respiratory physiology that now suggests subjects are able to breathe during ECD application, a new area not previously tested. They highlighted the fact it is being conducted in "worst case scenario" conditions (ECD probes placed across chest, 15 second shocks either continuous or intermittent) on human volunteers. In sum, the authors' message was that none of these studies show a clear causal connection between ECD application and conditions associated with sudden death among subjects.

Authors: Dhanunjaya Lakkireddy, et al.
Title: Do electrical stun guns (TASER-X26) affect the functional integrity of implantable pacemakers and defibrillators?
Source: European Society of Cardiology, *Europace* (2007) 9, 551-556.
Publish Info: Received 21 December 2006; accepted 8 March 2007; online publish 9 May 2007.

The aim of this study was to determine the effects of 5 second CED deployment on the integrity of implantable pacemakers and defibrillators using sixteen such devices implanted within swine's chests. The average pacing thresholds, sensing thresholds, pacing impedances, and other measurement-indicators of the implanted monitoring device were similar before and after the shocks. No other indications of immediate or future malfunction were demonstrated. The study concluded that pacemakers and other similar devices were not affected by the tested standard 5 second shocks.

Authors: Bozeman W.P., et al.
Title: Injury Profile of Electrical Conducted Energy Weapons
Source: *Annals of Emergency Medicine*, Vol. 50, No. 3. September 2007

The first large independent study describing the incidence and severity of injuries associated with CED use. Police and medical records of six US law enforcement agencies over the past 2 years were collected and analyzed to determine the amount of incidents that had resulted in mild, moderate, or severe injuries (based on a priori definitions). Out of the 597 suspect files reviewed 99.5% had no injuries or mild injuries only post-CED use.

Summary of Publicly Commissioned Studies, Reviews and Reports:

Within the policy realm, attempts to synthesize the medical research in order to draw out a coherent and informed direction for policymakers have been ongoing. Policies currently in place entail stipulations regarding how the weapon should be deployed, under which circumstances and additional considerations. It is clear however that the initial classification of the taser as "non-lethal" was detrimental to its positioning both within police policy and in accurately presenting the device to the greater community.¹⁸ The main consequence of this

¹⁸ As opposed to how they are typically distinguished now as "less than lethal" uses of force. This initial sort of classification implied that the device was completely risk-free. On the contrary, several studies have urged policymakers to consider a range of issues such as the disputed effects of repeated cycling, fall-induced injuries or injuries from excessive musculoskeletal contractions and the uniqueness

has been the reaction that tasers are being used increasingly in situations that do not adequately warrant their use or what has been termed usage creep.¹⁹ Despite this initial complication, attention has now shifted towards a focus on how these concerns are being dealt with in terms of training and accountability policies and measures. **More recently, the reviews commissioned by governments at all levels have taken a stricter approach to evaluating these policies.**²⁰

Some reports, such as those issued by Amnesty International, have called for a complete moratorium until more conclusive medical studies are conducted and confirmed.²¹ Other reviews favour a restriction of the use of CEDs to situations fulfilling a set of predetermined circumstances. It is likely that a wide range of opinions exist due to the reality that there lacks one consistent framework for evaluating CEDs in the field.²² Indeed, the general nature of these studies calls for clearer and more consistent policies both with respect to use as well as use of force recording procedures.²³ Taking a broad view, these reports depict a reoccurring theme favouring adoption of stricter usage guidelines.²⁴

of cases with persons exhibiting signs of ED. Discussion with Steve Palmer, Executive Director, Canadian Police Research Centre. March 10th, 2008.

¹⁹ Complaints against the RCMP, Interim Report, 2007: 26.

²⁰ On Nov 23, 2007 an article in the National Post named 10 reviews into matters relating to use of the tasers (2 - British Columbia, 3 - Federal (RCMP, Public Safety Committee, Canada Border Services Agency), 1 - Nova Scotia, 1 - Quebec, 1 - New Brunswick, 1 - Royal Constabulary of Newfoundland). www.nationalpost.com/todays_paper/Story.html?id=115994. Accessed Feb 28th, 2008. As of March 10th, 2008 at least 2 of these had finished. Notably, the CACP has called on the CPRC to update its findings and recommendations from its 2005 study. That study is due out 2009.

²¹ Amnesty International Canada, May 2007.

²² Aspects under contention include who can carry/deploy a taser, length and content of training times, circumstances in which a taser is prohibited, defining at which point active resistance has been reached among other factors.

²³ Many of the calls for improved oversight have been warranted as minor, yet important limitations such as data corruption and lack of standardized terms of use make data analysis and comparison problematic.

²⁴ As part of a conference call with Mr. Chris Lawrence, Ontario Police College and Mr. Steve Palmer, Executive Director, Canadian Police Research Centre, March 10th, 2008.

Moves like this however remain controversial among law enforcement agencies. As stated elsewhere, implementing a specific operations policy would likely create issues with officers' ability to judge a situation to warrant CED use.²⁵ **The reality is that by restricting officers' ability in this way might discourage its use in situations where it would have likely saved lives.** This sentiment rests on the realities of policing – that any situation may go from requiring verbal intervention to lethal force in a matter of seconds. Despite the anti-taser character of recent news reports, it is unclear at this point whether or not police departments across Canada will curtail use or drastically change policy after additional reviews have been completed.²⁶

Review of CED Policy Reviews, Guidelines, (post-2005)²⁷

The CACP-sponsored CPRC taser study offered the following points for consideration by policymakers when constructing CED policies for their respective agencies:

- The use of CEDs is related to a decrease in the use of lethal force in some jurisdictions and it is also related to substantial decreases in police officer and subject arrest-related injuries.
- While originally marketed and accepted as an alternative to lethal force, the use of CEDs have grown to include incidents where intermediate (but not lethal) weapons should be used.
- Although each use of force incident needs to be judged separately, for the most part the increased use of CEDs in non-lethal incidents is appropriate.
- **Police services and their governing bodies and agencies should give thoughtful consideration to developing CED usage reporting procedures, forms, or databases.**

²⁵ BCOPCC Report, 2005: 22.

²⁶ Vancouver Police Department amended their policy in 2006 in response to an allegation of excessive force in 2005 however have no plans to further amend the policy in response to the events in 2007 (Open letter from the Vancouver Police Board, dated January 2008). However policy changes might not be necessary to curtail taser use as Ottawa police officers reduced their use of taser substantially over the course of 2007 (OPS Use of Force Report 2007).

²⁷ It should be noted that while several reviews have occurred, what follows is a brief selection to highlight emerging themes that are increasingly common across several bodies.

- **It would be unwise and counter-productive for any police service or government body to develop policies and procedures that explicitly specify in what kinds of circumstances a CED may or may not be used.**
- Notwithstanding the above print, police officers need to be aware of the adverse effects of multiple, consecutive cycles of CED on a subject; deploying a CED on a subject's head, neck, genitalia; deploying a CED where a person can fall from a height; and deploying a CED on a subject where is known to the officer that the subject has flammable substances on their clothing or on their person, or are standing in or near obvious flammable/explosive substances conditions such as a puddle of gasoline or a natural gas leak.²⁸

In addition to these recommendations, the study also included a section on “CED Accountability”. In it, the authors outlined several areas that policymakers should be aware of in order to maximize their capacity to evaluate taser usage.²⁹ In all, governing policy is very much present yet remains somewhat unrefined in several regions due to the taser still being in its initial stages of implementation for several forces across Canada.

Review of CED Policy Review Reports and Studies:

United States

**TASER WEAPONS: Use of Tasers by Selected Law Enforcement Agencies
Report to the Chairman, Subcommittee on National Security, Emerging Threats and
International Relations, Committee on Government Reform, House of Representatives
United States Government Accountability Office (GAO),
May 2005.**

This study sought to provide information on (1) the policies and procedures related to the issues of “use-of-force” training, operations, and safety for selected law enforcement agencies that have purchased and used tasers and (2) federal, state, and local laws that specifically address tasers. The report found that although policies

²⁸ It was also noted two apparent problems, that agencies were completely reliant upon manufacturer's claims regarding their safety and that this lack of globally accepted safety parameters was responsible for reducing authorizing agencies' ability to fully evaluate the net benefits of tasers and how they should be deployed. 2005: 33-34.

²⁹ These included developing a use of force databases, standard care and preparation policies to ensure the devices meet manufacturer's specifications prior to deployment, ensuring there are software issues with downloading the data CEDs are able to record, ensure “drive stun” uses of CEDs are carefully considered as the majority of complaints with respect to excessive use of CEDs originated from use in this mode. Ibid: 28-29.

are in place, significant degrees of variance exist amongst forces. For example, with respect to where tasers are placed on the Use-of-Force Continuum, some agencies allow the device to be used against uncooperative persons while others restrict its use to subjects that are actively resisting. The report concluded by stating that despite the variance in policies, every agency agreed that training was critical to ensuring that the officer would be able to make the best choice regarding appropriate taser deployment.

**International Association of Chiefs of Police (IACP); 2005.
ELECTRO-MUSCULAR DISRUPTION TECHNOLOGY: A Nine-Step Strategy for Effective Deployment³⁰**

This executive brief was produced by the International Association of Chiefs of Police in order to assist law enforcement executive in selecting, acquiring and using CED technology. It focuses more on the management of the technology than the technology itself. Their Nine-steps include: build a leadership team (assemble a team of experts that bring a range of perspectives to the value CEDs bring to the force in question), place CED on the use-of-force continuum, assess the costs and benefits of using CED, identify the roles and responsibilities of CED deployment, engage in community outreach, develop policies and procedures for CED, create a comprehensive training program for CED, use a phased deployment approach for CED, assess CED and determine next steps.³¹ The stated goal of implementing this type of step by step strategy is to “develop policies and procedures that reflect public safety priorities and provide clear and concise instructions for using this less-lethal force option”.³²

**Cronin, James M. and Joshua A. Ederheimer.
Conducted Energy Devices: Development of Standards for Consistency and Guidance. U.S. Department of Justice Office of Community Oriented Policing Services and Police Executive Research Forum. Washington, D.C., 2006.**

This report drew on the experience of several agencies in the United States law enforcement community such as the Executive Police Research Forum to develop a series of national policy guidelines and a CED glossary of terms. This report spanned 2 years and consulted with several parties, including law enforcement agencies throughout the United States and research groups in Canada and Great Britain. The guidelines it produced were based on the background research to date as well as two national surveys to help identify major issues. The guidelines produced covered **training**

³⁰ Though the report refers to EMDT or Electro-Muscular disruption technology, CED is used in its place to remain consistent.

³¹ It should be noted that several police agencies in Canada undertook a trial version deployment of CEDs before equipping higher ranking officers. Examples include Toronto Metropolitan Police Service, the RCMP, and the Victoria Police Department in British Columbia.

³² 2005: 3.

issues (identifying in which scenarios deploying a CED is most appropriate), **operational issues based on research to date** (stop to assess situation after a single 5-second cycle, do not use a taser around flammable liquids or gases, attempting to limit use to active resistant behavior as opposed to passive resistance, avoid targeting neck, head or genitalia) and **governance issues** (stand-alone CED policies should be created to fit with Use of Force policies, reviews should be conducted regularly of CED use, all incidents involving CED discharge should be accounted for in a use-of-force report).³³ The glossary featured in the report offers comprehensive definitions that state or municipally based US law enforcement agencies might use to replace or modify their own policies.³⁴

Canada

Taser Technology Review: Final Report
Office of the Police Complaints Commissioner in conjunction with the Victoria Police
Department, British Columbia.
OPCC File No. 2474
June 2005

Compiled alongside the 2005 CPRC study, this review's final report arrived at many of the same conclusions as the CPRC study. Moreover, based on the available medical research and literature at that time, the study strongly recommended that whenever possible officers limit the amount of cycles discharged against individuals whether in probe or stun modes.³⁵ There were also several medical studies reviewed including a PACE study (2005), Human Effects Center of Excellence or HECOE study (2005), Air Force Research Laboratory study (2005). This report was focused more on consolidating knowledge surrounding the use of taser and suggesting frameworks for training. With special respect to development of policy the report states "the reasonableness of any use of force will always be determined by the situational factors".³⁶

RCMP Use of the Conducted Energy Weapon (CEW): Interim Report
Commission for Public Complaints Against the Royal Canadian Mounted Police
Dec 11, 2007

At the request of the Minister of Public Safety, this interim report was released late 2007 along with recommendations for immediate implementation.³⁷ At the core of the report was the charge that CEDs are being deployed in situations that could have been diffused by other, less lethal uses of force or communication. The Commissioner claims

³³ This report included a total of 52 guidelines for developing CED policy. 2006: 23-29.

³⁴ Despite it being quite detailed and concise, care should be given to ensure terms designed for US agencies are transferrable to a Canadian context.

³⁵ BCOPCC, 2005: 12.

³⁶ Ibid.

³⁷ As outlined in the *RCMP Act*, the commission cannot implement its recommendations. That power is reserved for the Commissioner of the RCMP via the Minister of Public Safety.

the device being placed too low on the use of force continuum is the responsible factor, making it accessible for use against subjects defined as simply resisting.³⁸ The Commissioner made recommendations including the establishment of a national use of force coordinator and a migration of CEDs up the use of force continuum to “assaultive or aggressive behavior” to better govern its deployment. General conclusions advocated for policy changes around training, management and usage in order to ensure more judicious and effective use.

Analysis and Recommendations for a Quebec police practice on the Use of Conducted Energy Devices
Standing Advisory Subcommittee on the Use of Force
Government of Quebec, Dec 2007.

Late 2007 the Subcommittee was charged with a mandate to “identify all relevant elements that should be included in a Quebec police practice on the use of conducted energy devices.”³⁹ This report is actually the start of the Subcommittee’s work on developing a framework for the use CEDs in Quebec. Areas that the report looked at included use of force placement, a review of the available medical literature and an analysis of operational, management and training components of CED use. The report asserted that developing a single policy would not be prudent as the officer’s judgment at the time of deployment is most important and will remain central to use of force considerations. In its final conclusion the report firmly linked the appropriate use of taser to the circumstances in which it might be deployed. It further concluded with a set of recommendations concerning these three components of CED largely aligning them with the police practice 2.1.1 (where Quebec’s general use of force framework is laid out).

Conducted Energy Device (CED) Review
Nova Scotia Department of Justice, Government of Nova Scotia
March 8th, 2008

The product of the first phase of a two phase province-wide review in Nova Scotia, this report compiled a list of local and cross-jurisdictional research on CED use and policy data in Nova Scotia as well as from around the country. It noted CED policies regarding training, use and governance are not uniform across the province or country, that the times Nova Scotia officers used the taser was fairly few compared to the number of calls they responded to and that there were few deaths or injuries per deployment since 2005 (2 out of 222 uses). The final conclusion was that there were great advantages – namely versatility – to using the device however that those same advantages were often what might cause it to be over-relied upon in everyday settings.

³⁸ It should be noted that RCMP CED policy currently distinguishes between assaultive behavior and passive resistance when defining a resistant individual.

³⁹ Quebec, 2007: 1.

Although the report did not issue direct recommendations for policy development, the report outlined the following considerations for policy makers:

- The adequacy of current training programs in addressing the use of the CED in the context of a force continuum and establishing appropriate qualification standards for certification and recertification.
- Whether there should be operational procedures that clearly outline conditions of CED deployment and the extent to which the government should be involved in establishing such procedures.
- The adequacy of current oversight and accountability mechanisms.
- Where there is a mechanism for evaluating policy on an ongoing basis that it respond to new research regarding all aspects of the impact of CED use.

Police Boards and their Roles: Considerations

In Canada, policies governing the training, use and recording of tasers appear to be inconsistent across the country. Some jurisdictions require more or less training hours (albeit due to different training programs), others dictate quite stringently who is authorized to carry a taser and the steps that must be taken before it is deployed. In its essence, and in light of these inconsistencies, the findings from these reports make explicit the need for “good” taser policies. The arguments on both sides are valid; police want the advantages the taser offers and the public demands that their use be tempered with the appropriate checks and

balances. The challenge for police boards that this ultimately brings is how best to fulfill the oversight mandate regarding accountability that they are charged with.

What follows are some considerations based on both the available medical literature and usage reviews.

Trends in Medical Research

Despite there being no causal link yet established between taser activation proximal to deaths in individuals, a unanimous consensus remains elusive. Research is still ongoing. However, research has moved away from simple monitoring of swine and humans post-CED application to attempt to mimic as much as possible events surrounding taser deployment in real life. This includes testing on humans who are intoxicated, physically exhausted, respiratory effects and other factors. It is likely future reports by agencies in Canada as well as the United States and the United Kingdom will examine these in greater depth.

This research presently points to multi-factored causes of a subject's death that tasers may contribute little to, if any. It is imperative that mechanisms for oversight evolve along with new research that is being conducted. Bodies such as the Canadian Police Research Centre, Police Executive Research Forum's Center on Force & Accountability (US) and Police Scientific Development Branch of the Home Office (UK) are constantly reviewing research findings to augment the stock of knowledge that is present. As it becomes available, new methods should become evident.

Lack of Public Awareness and Education

It has been speculated that much of the public's fears originate from (a) misguided notions respecting how tasers actually work, (b) the actual number of taser deployments resulting in

injury and the relationship to subject's in a state of ED and, (c) the number of encounters involving taser usage versus those compared to the total number of encounters. In the first instance, CEDs work on basic principles of electric circuitry that might not be immediately obvious to the average layperson. Portrayal in the media can easily bias a view towards CEDs being more lethal than they really are. Several documented studies have now revealed a very small relationship between taser application and injury.⁴⁰ Finally, several forces report huge differences in the number of calls responded to where tasers play no part versus when they do.⁴¹ In all cases, the former greatly exceeds the latter. In sum, though specific fears vary, they generally centre on a few common misperceptions that often left unchallenged in everyday media.

Depiction of CEDs in the Media

It is easy to believe that portrayal of CEDs in the media is almost unequivocally negative.⁴² News stories often contain partial facts, leading statements and incomplete information. Nevertheless, it is the national and local outlets that are the sources of news for the majority of the Canadian populace regarding CEDs. Boards should be aware of the general criticisms present throughout the media in order to best prepare to field citizens' concerns and questions. Moreover, boards should take a critical approach to any reports that are coming

⁴⁰ In Nova Scotia's recent study, the taser was deployed 222 times from 2005 to 2007 there only being 2 complaints and 1 death (from yet to be determined causes) attributed to its use.

⁴¹ The latest example of this is in the Nova Scotia review of CED policy which stated that "In 2007, for example, of the 340,380 calls for service to police, CEDs were deployed in only 178 incidents or 0.05% of the total interactions." (2008: 31).

⁴² A brief review of major newspaper headlines in the United States, Canada, United Kingdom and Australia turns up a general, reoccurring pattern of "Man gets stunned with taser while resisting police" or as well, "man dies from stun gun shock". The unifying factor with all these stories is the minimal amount of context provided to the reader, leaving one to wonder about extenuating factors that led to the taser being deployed as well as potential medical complications afflicting the victim at the time of altercation.

from special interests, ensuring that their information is accurate and reported using methods consistent with the facts available about CEDs.⁴³ Critical examination of all unscientific material is imperative before arriving at any ultimate conclusions.

Governance Framework

As unique as tasers are, they do not require police boards to reinvent the wheel in terms of oversight mechanisms and conventional accountability frameworks. In fact, it is probable that their monitoring will fit easily into existing use of force monitoring, reporting and policy modification practices. They share similarities even if limited to tasers taking up a significant portion of the police budget. **However, this can only be the case if the existing oversight institutions are already firmly in place.**⁴⁴ For instance, a solid, complimentary relationship with the Chief and upper management is essential. Without this, feedback from the service to the board is incomplete and leaves the board with a lack of capacity to carry out their role properly. It goes without saying that the proper reporting mechanisms need to be instated in the forces for any oversight to take place. Transparency is crucial to be able to ably respond to public inquiries and suspicions.

Balance between Governance Framework and Operational Policy

On January 18, 2008 Chief William Blair of the Toronto Metropolitan Police Service was quoted stating “tasers, in the hands of a properly trained, adequately supervised officer with the right

⁴³ For example, the 2007 Amnesty International Report cited over 300 deaths associated with taser deployment. However, their data collection and analysis includes in-custody deaths where subjects never actually came into contact with the taser, only challenged. This example reveals the potential to skew results based on bias or predetermined perceptions, even notwithstanding the scientifically-proved limitations of the device.

⁴⁴ Phone discussion with Fred Biro, Executive Director, Peel Regional Police Services Board, March 18th, 2008.

accountability and oversight mechanisms in place have the capacity to save lives".⁴⁵ If the sentiment behind this quote is applied to law enforcement agencies across Canada, the taser will likely continue to be a tool available to officers in everyday duty. With expanding access and increasing use, there will likely be flare ups from the public whenever a fatality or injury occurs proximal to the use of taser. A lack of accurate information coupled with a reliance on the media as the sole source of information, these flare ups will likely result in ongoing pressure to define more and more precisely when a taser should and should not be deployed.

This fear of usage creep places a classic problem in front of those mandated with ensuring accountability. Principal-agent scenarios are ubiquitous throughout law enforcement as policy can never entirely dictate action, most especially in policing. In several cases, it has been argued this would actually prove to be detrimental to good policing. As stated elsewhere, dictating a strict set of procedures will likely be counter-productive to achieving maximum effectiveness as usage is almost completely contingent upon the mix of circumstances present when an officer arrives on scene.⁴⁶

However, policy still matters. There is good reason for demanding that the judgment regarding whether use is appropriate or not should be based on facts that policies should reflect as much as possible.⁴⁷ Therefore, police boards can play a major role in bridging this gap (i.e., using oversight to measure how well the policies put in place by management are affecting the desired outcomes). By working collaboratively with their service's management, boards can help to ensure (a) training and policies are consistently and regularly updated with the latest independently-verified information, (b) monitoring is adequate enough to

⁴⁵ Globe and Mail National Newspaper. Accessed January 20th, 2008.

⁴⁶ In its 2005 report, the CPRC stated "... that it would be unwise and counter-counter-productive for any police service or government body to develop policies and procedures that explicitly specifies in what kinds of circumstances a CED may or may not be used." 27.

⁴⁷ Ibid.

inform those responsible for policy about how these devices are being used and, (c) those making operational policy are keeping up to date with surfacing medical literature and future research that might offer more insights into in-custody deaths.⁴⁸

Conclusion:

It is hoped that this report will contribute to the development of Canadian Association of Police Boards (CAPB) on matters relating to tasers. After reviewing only a small portion of the amounts of literature available it appears that tasers are a more effective and less dangerous option in circumstances that would otherwise call for more lethal or injury-prone uses of force. The primary advantage, incapacitation of subjects from a distance, is significant. Proper training and constant reassessment of the quality of techniques and concepts for evaluating situations prior to the use of any force are crucial. Nevertheless, for reasons stated earlier in this paper, controversy surrounding their use in law enforcement will undoubtedly continue. Therefore it is crucial that those bodies charged with fulfilling oversight functions inform themselves as much as possible and insist that their agencies have at the ready accurate and sufficient answers and policies to reassure the public these devices are being deployed in situations that appropriately warrant their use.

⁴⁸ This can be achieved by referring regularly to published documents by public institutions in Canada, the United States and the United Kingdom.

Works Cited

Amnesty International Canada. 2007. *Canada: Inappropriate and Excessive Use of Tasers*. AMR 20/002/2007.

London: United Kingdom.

Biro, Fred. Executive Director, Peel Regional Police Services Board. Telephone discussion on March 18th, 2008.

Bozeman WP, et al. 2007. Injury Profile of Electrical Conducted Energy Weapons. *Annals of Emergency Medicine*, Vol. 50, No. 3.

Palmer, Steve *et al.* 2005. *Review of Conducted Energy Devices*. Canadian Police Research Centre. TR-01-2006.

Prepared for the International Association of Chiefs of Police. Ottawa.

Commission for Public Complaints Against the Royal Canadian Mounted Police. 2007. *RCMP Use of the*

Conducted Energy Weapon (CEW): Interim Report.

Cronin, James M. and Joshua A. Ederheimer. 2006. *Conducted Energy Devices: Development of Standards for*

Consistency and Guidance. U.S. Department of Justice Office of Community Oriented Policing Services

and Police Executive Research Forum. Washington, D.C.

Department of Justice, Government of Nova Scotia. 2008. *Conducted Energy Device (CED) Review*.

Dhanunjaya Lakkireddy, et al. 2007. *Do electrical stun guns (TASER-X26w) affect the functional integrity of implantable pacemakers and defibrillators?* European Society of Cardiology, *Europace* 9, 551-556.

Ho, Jeffrey D. The State of Current Human Research and Electronic Control Devices (ECDs). European Working Group: Non-Lethal Weapons, 4th European Symposium on Non-Lethal Weapons, May 21-23, 2007. Stadthalle Ettlingen, Germany.

International Association of Chiefs of Police. 2005. *ELECTRO-MUSCULAR DISRUPTION TECHNOLOGY: A Nine-Step Strategy for Effective Deployment*.

Laur, Sgt. Darren. 2004. *Excited Delirium and its Correlation to Sudden and Unexpected Death Proximal to Restraint: A Review Of The Current and Relevant Medical Literature*. Victoria Police Department, British Columbia, Canada. Prepared for the Canadian Police Research Centre (CPRC). http://www.cprc.org/tr/tr-2005-02_e.pdf.

Lawrence, Chris. Use of Force Trainer, Ontario Police College. Telephone discussion on March 10th, 2008.

Levine, Saul A. MD, *et al*. Cardiac Monitoring of Human Subjects Exposed to the Taser. *The Journal of Emergency Medicine*, Vol. 33, No. 2, pp. 113-117, 2007.

Ottawa Police Service. 2007. *Annual Use of Force Report – 2007*. Made available to public on February 19th, 2008.

Pippin John J. 2006. *Taser Research in Pigs Not Helpful*. *Journal of American College of Cardiology*. Vol. 49, No. 6: 731-732.

Police Scientific Development Branch. 2005. *Evaluation of Tasers*. Home Office, United Kingdom.

_____. 2006. *Supplement to Home Office Scientific Development Branch Evaluations of Taser Devices: a collection of medical evidence and other source material*. Home Office,

United Kingdom

Standing Advisory Subcommittee on the Use of Force. 2007. *Analysis and Recommendations for a Quebec police practice on the Use of Conducted Energy Devices*. Government of Quebec.

Standing Committee on Public Safety and National Security. 2008. Minutes from No. 18, 2nd session of the 38th Parliament. Accessed via www.parl.gc.ca, March 5th, 2008.

United States Government Accountability Office. 2005. *TASER WEAPONS: Use of Tasers by Selected Law Enforcement Agencies*. Report to the Chairman, Subcommittee on National Security, Emerging Threats and International Relations, Committee on Government Reform, House of Representatives, United States government.

Victoria Police Department. 2005. *Taser Technology Review: Final Report*. Prepared in conjunction with the Office of the Police Complaints Commissioner, British Columbia. OPCC File No. 2474

Vilke, Gary M. *et al.* 2008. *Twelve-lead electrocardiogram monitoring of subjects before and after voluntary exposure to the Taser X26*. *American Journal of Emergency Medicine* 26: 1 – 4.

_____. 2007. *Less Lethal Technology: Medical Issues Policing: an International Journal of Police Strategies and Management*. Vol. 30 No. 3, pp. 341-357.

Webster, John G. *et al.* 2007. *Taser Dart-to-Heart Distance That Causes Ventricular Fibrillation in Pigs*. *IEEE Transactions on Biomedical Engineering*. Vol. 54, No. 3.