Effectiveness of Non-Lethal Weapons in Civil Policing:
Interim Report
Team B: Non-Lethal Weapon
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Abstract
The report will focus on the history, usage and future development of non-lethal weapons. We will provide recommendations on future usage by the UK Police forces.

1 Definition of Non-Lethal Weapons
To consider the use of Non-Lethal Weapons (NLWs) by the police one must first ascertain which weapons are so classified. The Association of Chief Police Officers (ACPO), preferring the term “less lethal” to “non-lethal”, defines it thus: “The term ‘less lethal options’ is employed to indicate weapons, devices and tactics, the design of which, is to induce compliance in pursuit of a legitimate aim by the Police without a substantial risk of serious or permanent injury or death to the subject on whom they are applied. In other words, the desired effect is to control and neutralise a threat without recourse to lethal use of force. Whilst the outcome may, on occasion, be lethal, this is less likely than as the result of the use of firearms.” This shift in terminology by the ACPO reflects that whilst these weapons have always been intended to be non-fatals the historical record shows that whichever non-lethal weapon you consider, there has always been fatalities associated with it.

2 History & Development
Aside from the baton, in use since the mid-nineteenth century, UK police forces did not begin to use NLWs until the late 1960s with the breakout of unrest in Northern Ireland. The most prominent early NLWs used were chemical irritants, in particular CS gas that was first used in 1969 during riots in Londonderry. The continuing troubles in Northern Ireland led to research for non-lethal projectiles as opposed to bullets. From the wooden bullets used by the Hong Kong Colonial Police, the British Army developed the idea of much larger rubber rounds designed to be fired from beyond stone throwing distance. Introduced in 1970, these rounds were still largely inaccurate and led to many injuries and deaths. The 1980s saw the introduction of these new non-lethal weapons into mainland Britain. Riots in Brixton saw rubber bullets deployed and in Toxteth, Liverpool CS gas was used by the police. In 1983 the ACPO introduced a Public Order manual including sections on the use and consequences of CS gas and baton rounds and included semi paramilitary tactics and training for use of said weapons. By 1986 all constabularies in England and Wales had access to these two weapons. Over the next 10 years British development was largely focussed on improving baton rounds making them both safer and more accurate whilst the UK Home Office Scientific Development Branch (HOSDB) increased ties with American manufacturers and bodies, particularly National Institute of Justice, who were doing the majority of the research into NLWs.

In 1996 the UK government approved the use of CS sprays; a device which fires a stream of liquid CS aerosol, for use by forces across England and Wales. In 2000 an inquiry was set up with the intention of finding an alternative to rubber bullets following advice from the Independent Commission on Policing in Northern Ireland. They recommended the production of two new projectiles, the Attenuating Energy Projectile (AEP), introduced 2005, and the Discriminating Irritating Projectile, which is still in development. In 2004 the Taser, an electroshock weapon used to incapacitate a person by removing muscle control, was made available to all police forces in England and Wales.

3 Laws & Guidelines Governing Police Usage of NLWs
The use of non-lethal weapons, like the use of all weapons, is strictly controlled in the United Kingdom and is subject to both national and international law. The United Nations Code of Conduct for Law
Enforcement Officials, which Britain has signed, has guidelines on acceptable levels of force in civil policing. The European Convention for the Protection of Human Rights and Fundamental Freedoms, cemented into UK Law by the Human Rights Act 1998, “makes it unlawful for a public authority [police etc] to act in a way which is incompatible with a Convention right”. Particularly relevant are Article 2, the right to life, Article 3, the prohibition from torture, inhumane or degrading treatment and Article 5, the right to liberty and security of the person. UK legislation pertaining to the use of NLWs includes the Firearms Act 1968, Terrorism Act 2006 and section 3 of the Criminal Law Act 1967 and section 117 of the Police and Criminal Evidence Act 1984.

Whilst the laws dictate the legal constraints of NLW usage it is the guidelines and procedures of the police forces that dictate how these laws are implemented in crime prevention and investigation. A number of ACPO manuals give guidelines and procedures on police use of firearms, including AEP, baton rounds and Tasers. The Officer Safety: HMIC Thematic Report discusses standard issue police kit including vests, CS sprays and batons and gives some operational advice to police. Less Lethal Technologies: Review of Commercially Available and Near-Market products for the ACPO, 2008 lists all weapon options to the police and discusses their relative merits. The ACPO guidelines require that authorised officers receive continuous training. These guidelines include instructions as to where to aim the weapon, on whom it can be used as well as risk assessments.

4 Statistical Analysis

Two aspects of the effectiveness of NLWs are being investigated using statistics. These are whether they reduce the level of force used in policing and whether they increase officer safety.

Data on the usage of batons, CS spray and Taser are being analysed to determine whether the introduction of NLWs has resulted in a higher level of force being used in situations where previously other methods would be used. If so, we will attempt to see if such force is warranted with respect to increased police safety, and compare this with the harm inflicted upon the suspects.

However, in the case of the Taser, due to the short period of usage, relevant statistics may be limited. We have found various sources already which will allow a reasonable level of analysis but more information is being sourced.

In order to judge the effectiveness of NLWs with regard to officer safety, we have obtained information regarding the number of assaults on police officers and police fatalities when faced with an arrest or violent situation. We will use this data by comparing statistics from before and after the introduction of CS spray and Taser. We will explore reasons for any trends that may emerge.

We have aimed to obtain the information we require from papers and studies that are available. These include reports by the Home Office, Independent Police Complaints Commission (IPCC), Association of Chief Police Officers (ACPO), Amnesty International and others. We have also requested raw data via the Freedom of Information Act.

5 Case Studies

Case studies will be considered in order to assess when NLWs are effective in different situations. Firstly, issues relating to public order are being investigated. It has been found that whilst water cannons and baton rounds have been in use in Northern Ireland, they have yet to be deployed in England. Instead, police generally use batons along with shields and protective equipment. After the Bradford riots in 2001, the Home Secretary David Blunkett suggested that other methods of riot control might have reduced the scale of criminal destruction and injury.

In September 2004, the Countryside Alliance staged a pro-hunting protest in Parliament Square, which resulted in the injury of 60 police officers and several protestors suffering from head injuries due to baton use. This lead to an IPCC report calling for a review of “the existing tactical options, with consideration being given to all equipment now available”. A thorough analysis of the Countryside Alliance demonstration, the UEF A Cup final riots in central Manchester in 2008 and situations in which NLWs have been used in Northern Ireland investigation will assess whether current methods of policing are the quickest and safest way of restoring public order.

Secondly, case studies regarding the usage of NLWs on individuals will be addressed. For example, two weeks after the introduction of CS spray in 1996, it was used on Ibrahima Scy whilst detained in an Ilford police station in East London. The subject was sprayed with CS, held down for 15 minutes and subsequently died.
In order to gauge the risk of fatality in Taser use, we will briefly look at the US and Canada, where Tasers have been used in policing for some years. This includes the effect of Tasers on drug users and the mentally ill.

6 Types & Testing

The more conventional types of less-lethal weapon are the Taser, pepper spray and rubber bullets.

The Taser causes involuntary muscular contraction, due to an electrical current passed through the body. As a result, use of the Taser in situations where there exists a “bomb-detector” button depress risk, has driven research into alternative electrical weapons. The University of Nevada, US, have been researching bioelectromagnetic weapons as a solution to this problem. They aim to be able to remotely stimulate the subject’s nervous system (using electrical impulses), inducing muscle release, rather than contraction. In fact, they note that such research has applications into human health therapy, as well as less-than-lethal weaponry.

Another main research interest is directed energy weapons. These are sub-millimetre wavelength electromagnetic weapons. The general idea is to heat a subject to intolerable levels, to get them to change position, using a directed beam of electromagnetic energy. Current technologies, mainly employed by the US army, have a range of 1km, with an ability of focusing on a single subject. These weapons tend to be Hmnvee-mounted, and entirely at the user’s discretion as to beam power/direction; with current research going into developing hand-held units.

Also being actively researched are acoustic weapons. A rather tame example is the Mosquito system, which made news headlines a few years ago, when it was deployed at a news-agents in Barry, Wales. It is a high-frequency sound emitter, placed in areas where subjects congregate and cause trouble. The idea is that only a subject below a particular age will have hearing good enough to be able to hear such high-frequencies. A less tame long range acoustic device is being developed, whereby a highly intensive sound wave is focused into a beam, causing pain and discomfort to subjects within the beam.

The testing of less-lethal weapons is done at various stages, including testing by the manufacturers to ensure functionality, testing by government-related bodies in order to recommend particular weapons for use by the police, and medical testing to specifically identify potential health risks to subjects. The results of these tests are important, not only for recommending the most effective and reliable models, but also to identify situations under which certain weapons should not be used. The Home Offices Police Scientific Development Branch (PSDB) test and recommend weapons for use by the police forces in the UK. One of the more well-known less-lethal weapons, the Taser, has been tested extensively by the PSDB in recent years. Testing of such a device comprises of several classes of test, including reliability, effectiveness, and physical handling.

Reliability testing includes tests on the battery life, and how performance is affected by a low battery. The durability is tested by, for example, dropping the weapon from a height onto a hard surface and observing any adverse effects to functionality. Extreme temperatures are also imposed on the weapon.

The effectiveness of the weapon is tested by firstly looking at the accuracy of projectiles, such as the barbs from the Taser, how they diverge during flight, and whether these are accurately represented by the Taser’s laser sight. Clothing penetration is tested, including body armour, as a Taser’s barbs must at least attach themselves to the subject’s clothing, if not directly to the skin. The electrical output of each Taser is measured, including the waveform, voltage, current, and power output over time, to compare effectiveness on the subject. Potential issues that may reduce the effectiveness of the weapon are also tested. For example, where a Taser’s barbs connect to the subject’s clothing, rather than skin, there exists an air gap between the barbs and the subject over which the electricity must arc in order to affect the subject. Dangers to the subject are also considered, for example by considering a subject covered in a flammable substance (such as those found in CS gas) and testing for ignition due to the Taser.

The physical handling of the weapon is tested in trials conducted using a group of police officers. During such trials, factors such as ease of use, training requirements, and maintenance of the weapons are evaluated. Also, deployment issues are considered, such as the mobility, repeat usage/reload time, and the effect of the environment (e.g. space and lighting) on the usage of the weapon.