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A Review of Police Trials of the CS Aerosol Incapacitant

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Foreword

In March 1996, the police service began a six-month period of operational trials of the CS aerosol incapacitant. This followed work by the Home Office Police Scientific Development Branch on the police requirement for an aerosol incapacitant and advice on the currently most suitable product.

Nearly 4,000 police officers in 16 forces were issued with the incapacitant spray. The trials were closely monitored to assess the use made of the spray, the impact on injuries and assaults, and the views of police officers and the general public. This report presents the findings.

In August 1996, the Home Secretary announced his support for any Chief Officer wishing to issue CS to officers on the beat. This report will help Chief Officers reach their own decision about the merits of the CS aerosol incapacitant.

S W BOYS SMITH
Director of Police Policy
Home Office
November 1996

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We would like to thank the very many individuals and organisations who assisted in some way or other during these trials.

The Authors

Egmont Kock is a partner in Deloitte & Touche Consulting, and Bernard Rix a partner in TRAC Consulting.

Executive summary

The primary objective of these trials was to assess the suitability and effectiveness of the CS incapacitant as an item of police defensive equipment. The research involved sixteen forces, namely Avon & Somerset, Cambridgeshire, Cleveland, Dorset, Durham, Dyfed-Powys, Greater Manchester, Kent, Leicestershire, Merseyside, Metropolitan, Northumbria, North Yorkshire, West Mercia, West Midlands and West Yorkshire. A total of 3818 officers carried CS in the sixteen forces participating in the trials. The activities of a further 3122 officers in control locations were monitored to identify changes caused by carriage of CS in trial sites.

Training

Training of police officers in the use of CS began in Spring 1995, but was suspended following an incident during training. This incident is described in the body of this report. Training subsequently restarted in February 1996, with CS being issued for carriage by officers from Friday 1st March 1996. This report hence covers incidents between 1st March and 31st August 1996, the full six months of the trial period.

Overall, trainees felt that the CS training courses were good. The feedback from courses held in 1996 was more favourable than for courses held in 1995, with 99% of trainees stating that their questions on CS had been satisfactorily answered. However, there was inconsistency about the warnings officers gave before spraying CS. Most officers were trained to shout a warning before spraying CS. In many cases, this audible warning is enough in itself to give the officer control of the situation. Officers in some forces were trained not to shout a warning. Hence, in some forces, there were occasions where CS was sprayed where a verbal warning may have made this unnecessary.

Operational use of the CS spray

Officers in trial areas reported 726 incidents where CS was drawn and used, 28 where both baton and CS were drawn and used, and 381 where CS was drawn but not used. This suggests that, on average, an officer carrying CS will draw and use it once every 32 months. The overwhelming majority of incidents where CS was drawn were public disorder or domestic disputes, with CS use primarily being to defend the officer, a colleague or a member of the public.

Where sprayed, CS typically took effect within five seconds. However, in close to one in ten incidents, CS did not have any effect. Officers had been warned in training that, in some cases, CS would not have an effect on those sprayed.

Injuries to police officers

There was little difference between trial and control locations in the risk officers experienced of sustaining injury requiring hospital attention. Officers in trial areas were slightly less likely than those in control areas to sustain other, more minor injuries; moreover, many of these other injuries in trial areas appear to be related to CS spray cross-contamination, for which the symptoms were pain or discomfort to the eyes, and a burning sensation to the skin. Officers indicated that such cross-contamination was, in their view, a small price to pay for the additional feeling of safety that CS carriage brought.

Data on assaults on police officers shows a mixed picture. Officers' perceptions are of a marked reduction in assaults in trial locations versus control locations, and a sense that CS spray greatly improves their safety. Whilst this is supported by data from Incident Report Forms (completed by officers themselves), force data on formal reports of assaults shows little difference between trial and control sites.

Injuries to subjects

Although the numbers are small, the data suggests that CS spray no more frequently caused injuries needing hospital treatment for subjects than did the police baton. When the much higher usage of the CS spray is taken into account, the risk of such injuries for each CS use is relatively much lower. This may explain police officers' views that CS represents a lesser use of force than the police baton.

Although this data shows that the risk of injury from CS use is less than for baton use, the information presented in this report shows that CS is not used (nor was it ever intended that it be used) as a replacement for the baton. This might suggest that using CS results in a net increase in the number of injuries to subjects. It is important to recognise, however, that injuries also occur during physical struggles with police officers (where officers make no use of available police equipment), and it may be that use of CS reduces this type of injury to subjects. Information on subject injuries sustained in these circumstances was not, however, collected during this research and so we cannot comment further on this possibility.

Those affected by CS typically complained of pain or discomfort to the eyes, and a burning sensation to the skin. Around one in ten also complained of breathing difficulties. We have reviewed incident report forms and reports from police surgeons where injuries to subjects were believed to have been caused by CS, and, where appropriate, sought further information from force liaison officers. We have found no indications of long term harm from CS, and there is nothing in the reports from police surgeons to indicate that, in their view, CS had caused serious injury to those sprayed or otherwise affected.

CS was sprayed during an incident in Ilford in which an individual died; there is now an inquiry in progress into this death. We have not had access to information collected by the inquiry team, and therefore this report cannot reflect this information.

Officers' views

Officers interviewed generally spoke very highly of the CS incapacitant. They commented that it had boosted their confidence even more than when batons had been issued as a replacement for truncheons. They ascribed this greater boost in confidence to a number of factors described in detail in the report.

Views of members of the public

We commissioned two elements of public attitude research. In both surveys, the clear majority (67% or more) of members of the public surveyed were in favour of the issue of CS spray to police officers. Views were consistent across both gender and age.

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1. Introduction

Terms of reference

The primary objective of these trials was to assess the suitability and effectiveness of the CS incapacitant as an item of police defensive equipment. Specifically, this evaluation examined:

- the effectiveness of training;
- frequency of CS usage, and its operational use;
- health related matters, including injuries to police officers and others;
- police officers' views about the CS spray;
- public views about the acceptability of CS.

Each of the above has its own section later in this report.

Methodology

The research involved sixteen forces, namely Avon & Somerset, Cambridgeshire, Cleveland, Dorset, Durham, Dyfed-Powys, Greater Manchester, Kent, Leicestershire, Merseyside, Metropolitan, Northumbria, North Yorkshire, West Mercia, West Midlands and West Yorkshire.

These sixteen forces together represented 25 trial and matching control areas. Forces chose one or more trial sites, and paired each trial site with a control site similar in size and policing demands. Whilst most forces had only one trial and one control site, the Metropolitan, North Yorkshire and Northumbrian forces had six, two and four trial (and corresponding control) sites.

A total of 3818 officers carried CS in the sixteen forces participating in the trials. The activities of a further 3122 officers in control locations were monitored to identify changes caused by carriage of CS in trial sites.

The work consisted of six key elements, as follows:

- collecting views and data on training through observation of training sessions, questionnaire collection of data, interviews and group discussions with trainers and trainees;
- collecting and analysing data on incidents involving officers carrying CS in the sixteen forces mentioned above. In addition, we collected data from officers not carrying CS in 'control' areas selected as comparable in policing terms with those 'trial' areas where officers were carrying CS. This report refers to this data collection form as the Incident Report Form (IRF);

- collecting and analysing data on the medical condition of those sprayed with or exposed to CS. All those sprayed with CS were offered a medical examination by a police surgeon as soon as feasible after the incident. They were asked to allow the police surgeon to complete a Medical Report Form (MRF) and to return a copy of this form describing their condition to us; the patient indicated their consent to this by completing a Consent Form;
- understanding the views of officers. We consulted those carrying CS, and their supervisors, through a number of interviews and group discussions held in six of the trialling forces, selected as far as possible to provide a representative cross-section. These were held after twelve weeks of the trial had elapsed. Shortly after these group discussions (involving 51 officers who had 'drawn' or 'drawn and used' CS), we circulated an Officer Perception Questionnaire (OPQ) to all 3818 officers who had carried CS in trial locations over the previous three months;
- analysing relevant force data on matters such as injury, assault, public comment and other relevant areas, so as to allow comparisons to be made between trial and control locations. This data was collected on our behalf by the Liaison Officer in each force. This report refers to this document as the Force Data Form (FDF);
- understanding the general public's views on the CS incapacitant spray. For this, we commissioned two public attitude surveys conducted on our behalf by NOP. In these surveys, we sought an understanding of the public attitude towards CS. This survey took place twelve weeks after the start of the trial.

Training of police officers in the use of CS began in Spring 1995, but was suspended following an incident during training. This incident is described in more detail in Section 2 below. Training subsequently restarted in February 1996, with CS being issued for carriage by officers from Friday 1st March 1996.

This report covers incidents between 1st March and 31st August 1996, the full six months of the trial period. The report treats all incidents equally; for example, those incidents subject to detailed inquiry as a result of public complaint have not, for this report, been subjected to detailed review. In particular, the report does not provide a detailed examination of well-publicised incidents in Ilford and elsewhere, nor any consideration of the implications of those incidents.

2. Training and other preparation

Reports were received on the training of 2599 of the 3818 officers subsequently issued with CS. We are confident that we would have received a significantly higher proportion had the start of the trials not been postponed on more than one occasion. Ninety per cent of officers for whom reports were received passed their training. Two per cent failed or withdrew from training. The training outcome for the remaining eight per cent for whom reports were received was not given.

Course structure

Trainers were given a standard structure to follow when they attended the Instructor Training Course. All followed this format.

In outline, this structure consisted of three broad sections as follows:

- theory. This typically lasted one and a half hours. The session included a brief history of CS, details of force policy and guidelines, brief review of relevant law, discussion of the 'Conflict Resolution Model', threat recognition and court defensibility, aftercare of those affected by CS, restraining techniques and awareness of other issues such as positional asphyxia;
- practical. At the start of this practical session, officers were exposed to CS through use of a general exposure canister. In most forces, all trainees participated in this general exposure, though in one force, a substantial number did not do so. This was then followed by demonstration by trainers of appropriate techniques for use of CS, and practice by trainees. The full session typically lasted around two hours;
- examination. Officers' skills and knowledge were then tested. One force held the theory exam immediately after the theory section.

Overall, the course lasted between four and six hours. Variations in duration in part reflected the need for some forces to travel to a general exposure site away from the training facilities, and, in part, different levels of familiarity with self defence techniques. Class size varied from ten to twenty five, with an average of one trainer per eight trainees.

Aftercare

Trainees were given detailed instruction on how to care for those sprayed or otherwise affected by CS. As the trials progressed, some forces supplemented these with additional measures:

- by providing access for those sprayed to a saline solution, which they may use if desired to irrigate their eyes;

- by providing a supply of contact lens cases to custody officers, for prisoners with contact lenses to use upon removal of their lenses;
- by inviting those sprayed with CS to remove their outer clothing on arrival at the custody suite, with the option of replacement with a standard issue 'white suit';
- by providing a fan in the custody suite to blow air over the subject (usually pointed away from the custody sergeant);
- by cautioning the subject and others to take particular care about CS residue left on the person or on clothing, thus avoiding unnecessary cross-contamination to those not immediately involved in the incident.

Medical matters

It had originally been intended that each training session would contain a 'live demonstration' of CS, that is, an officer would volunteer to be sprayed in the face with the CS incapacitant. At a Trainers' training session, a Metropolitan Police officer was sprayed in such a live demonstration. He subsequently suffered a more severe reaction than was expected, which required hospital treatment. We understand that he was subsequently off work for two weeks, but are told that he has now fully recovered. This unexpected reaction led to the postponement of the CS trials, which at that time had been scheduled to start in July 1995. Others so sprayed had, we understand, not exhibited such extreme reactions.

The trials eventually restarted in March 1996, once the appropriate authorities had made further checks on the safety of the CS incapacitant to be used in the trials. Additional information was issued on spraying and aftercare procedures, and no further live demonstrations of the CS spray were undertaken at training sessions. We understand that the officer exhibiting the extreme reaction described above, and a number of other officers in similar situations, are now pursuing civil cases in connection with these injuries.

General exposure sessions did, however, continue. As noted above, some officers refused to participate in these sessions; in one force, those refusing were subsequently required to submit their reasons for refusal to the Force Medical Officer. Of those that did participate, the majority experienced only the expected, short-lived effects. However, one officer was subsequently described by his trainer as suffering burns to the roof of his mouth, whilst two further officers were described as suffering stress or panic attacks whilst experiencing the effects of CS. Some of those wearing contact lenses at the time of being sprayed noted particular discomfort to their eyes. Conversely, a small number of officers noted no symptoms whatsoever after being exposed to CS. One force required trainees to sign an indemnity prior to exposure.

There were some injuries to officers from a training spray supposedly containing water that caused stinging when the water hit officers' faces. We understand that the training spray was believed to contain small amounts of CS, resulting in some mild contamination.

Other trainer comments on training

Trainers felt that better guidance on use of the general exposure spray was needed. ACPO guidelines were understood to state that such general exposure should take place 200 metres from residential property; in some forces, such facilities were apparently so difficult to find that these guidelines were not met. Further, trainers were uncertain whether or not those trainees with contact lenses should remove them before exposure, and, if removed, how much later the lenses should be replaced.

Trainers felt that there had been some confusion as to when CS was to be used, and as to aftercare procedures. These concerns were largely removed by the time of the second phase of training in early 1996.

Trainers commented on the advantages of briefing a wide range of parties on CS spray; these other parties included those working in occupational health, health and safety, civil litigation, the ambulance service, staff from the local hospital, the Crown Prosecution Service, other legal professionals and the force complaints and discipline departments. These briefings improved their overall understanding of CS.

Trainers, like most trainees, felt that the 'general exposure' element of the training course was worthwhile. Most trainers hoped to include CS training within a wider ranging 'defensive tactics' training course in due course.

Those trainees who also carried firearms received at least one additional hour's training to cover the use (or otherwise) of CS in relevant incidents.

Trainees' feedback on courses

Overall, trainees felt that the CS training courses were good. The feedback from courses held in 1996 was more favourable than for courses held in 1995, with 99% of trainees stating that their questions on CS had been satisfactorily answered. In addition, confidence about when and how to use the CS spray, as well as how to administer aftercare, was increased.

Trainees commented though that the directions on where they were permitted to use CS had changed several times. However, most completed the course feeling confident about when they should use CS.

There were some variations between forces in how CS was to be used. In particular, a small number of forces trained officers not to shout a warning before spraying CS, for fear that the target might then be able to protect his face from the spray. By contrast, most forces trained officers to shout a warning before spraying.

There were mixed views on whether the retraining period for CS should be two years (as currently planned) or a shorter period. There was some feeling that there should be an aftercare refresher at more frequent intervals. Trainees generally agreed that CS training should be included in a package covering use of all elements of defensive equipment.

Some officers wondered whether the deterrent effect currently visible to them with CS would decline over time, as they believed it had done with the baton. They felt that the baton was now a known quantity to aggressors, whilst CS spray was not; this, they felt, might lead to more subjects not challenging officers with CS than might be the case longer term.

3. Operational use of the CS spray

Officers in trial and control locations in each of the sixteen participating forces were asked to complete an Incident Report Form ('IRF') each time they:

- drew and used their baton or truncheon;
- drew or used their CS aerosol (if carried);
- were assaulted ('common assault' or more serious);

or any combination of the above. 1596 completed IRFs were returned.

Whilst we believe that the IRFs we received will have provided police officers' full accounts of relevant incidents, it is clear from our group discussions and other meetings with participating officers (discussed in detail later in this report) that not all incidents covered by the criteria for completing IRFs were reported to us. In particular, we understand that officers in trial sites drew CS much more frequently than IRF returns would suggest. Later enquiries indicate that, for each 'CS drawn, not used' reported, a further five were not reported. The main reason for this non-reporting appears to be that officers did not complete an IRF if CS was drawn but kept hidden from the subject, hence CS did not affect the outcome of the incident. In addition, the returned IRFs were not always completed entirely according to the instructions. We have processed these IRFs as best we are able. Finally, it is likely that officers in trial sites felt more involved in the trials, and thus would have been more likely to return an IRF for relevant incidents than those officers in control locations. We do, however, believe that 'CS drawn and used' will generally have been well reported.

Numbers of incidents reported

The majority of IRFs returned to us were from CS carrying officers. However, we did not ask those in control areas to report incidents where they simply drew (and did not use) their baton. Had we done so, we would have received many more reports from officers in control locations of incidents of public disorder similar to those where trial officers had drawn CS spray. Table 1, overleaf, shows the number and type of incidents reported on IRFs.

Table 1: Number and type of incidents reported				
	Trial locations	Incidents per 1000 officers	Control locations	Incidents per 1000 officers
Used baton, not CS	70	18.3	71	22.7
Baton and CS used	28	7.3	0	0.0
Drew CS, did not use	381	99.8	0	0.0
Drew and used CS	726	190.2	0	0
Were assaulted	81	21.2	149	47.7
No answer/unclear	37	9.7	65	20.8
TOTAL	1269	332.4	285	91.3

Note: columns may not sum to totals, since incidents may have consisted of several qualifying elements. Additionally, six IRFs have been excluded as providing unclear or incomplete data, for example it not being clear whether the form represented an incident in a trial or a control area.

Officers reported 81 assaults in trial locations, and 149 assaults in control locations. Taking account of the number of officers in each location, this is equivalent to 21.2 assaults per thousand officers in trial locations, and 47.7 per thousand officers in control locations. This suggests officers not equipped with CS spray are twice as likely to be subjected to assault. The impact of CS on assaults and injuries to police officers is examined in more depth in the next section of this report.

Incidents in trial areas

Officers in trial areas reported 1269 relevant incidents, of which 726 were incidents where CS was drawn and used, 28 were incidents where both baton and CS were drawn and used, and 381 were incidents where CS was drawn but not used. This suggests that, on average, an officer carrying CS will draw and use it once every 32 months.

The overwhelming majority of incidents where CS was drawn were public disorder or domestic disputes. Table 2 opposite, gives details of these incidents.

Table 2: Types of incident in trial areas		
	CS drawn, not used	CS drawn and used
Organised Operations		
Searching Premises/Persons	19	19
Arresting Suspects Wanted on Warrant	12	29
Public Disorder		
Fight/Disturbance	110	237
Other Disorderly Behaviour	84	180
Traffic Stop		
No Pursuit	14	23
Pursuit	20	22
Incidents on Police Premises (inc. vehicles)		
Processing Prisoner	1	4
Escorting Prisoner	6	28
Dealing with Enquiries	1	2
Foot Stop		
Enquiries	4	4
Suspicious Behaviour	12	9
Interrupting Crimes		
Attempted Theft, Shoplifting	2	13
Attempted Burglary	4	7
Other	6	5
Disputes		
Domestic Dispute	58	114
Other Dispute	9	8
Other		
Armed Robbery	11	10
During Arrest	21	23
Criminal Damage	4	3
Mental Illness	1	7
Other	12	20
No Answer	1	4

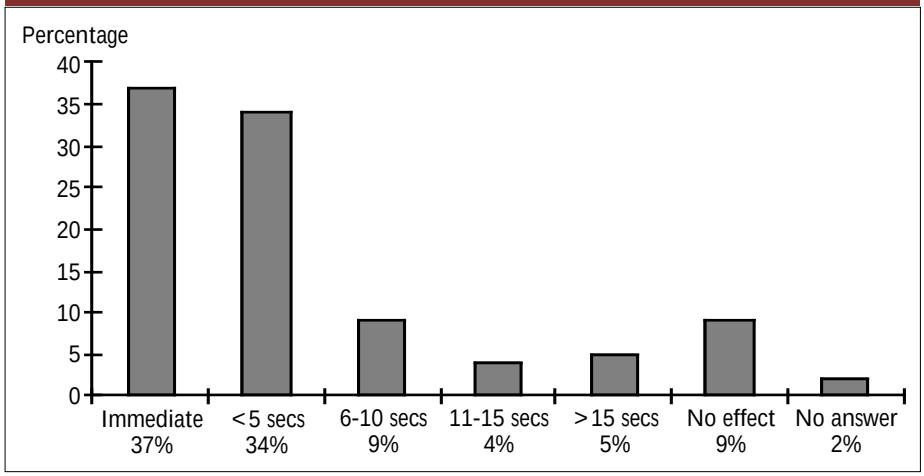
CS was usually drawn, or used, to enable the officers to defend themselves, colleagues or members of the public. In around one in four incidents, officers reported that CS was drawn, or used, primarily to make an arrest. We have reviewed officers' accounts of these incidents, which indicate that in the majority of such incidents, officers were also concerned for their own safety.

Table 3: Primary reason for drawing CS

	Drew CS, did not spray	Drew and sprayed CS
Defend self	59.7%	48.0%
Defend member of public	4.5%	3.8%
Make an arrest	22.7%	28.4%
Prevent crime	2.4%	2.1%
Defend colleagues	13.1%	6.9%
Other	1.6%	2.1%
No answer	5.3%	8.7%

Where sprayed, CS typically took effect within five seconds. However, in close to one in ten incidents, CS did not have any effect. Officers had been warned in training that, in some cases, CS would not have an effect on those sprayed.

Figure 1: How quickly did CS take effect?



After spraying CS

After spraying CS, handcuffing was more likely for those sprayed by CS than those not so sprayed; 83% of those sprayed were cuffed, compared with 66% where CS was drawn only. Officers were encouraged to cuff those sprayed, since in training they were told that this helped prevent subjects rubbing their eyes (which would prolong the effect of CS). Most of those sprayed and cuffed were cuffed to the back. 9% of sprayed subjects were cuffed and placed prone, face down, compared with 25% placed in this position in control locations. CS training discouraged officers from placing cuffed subjects prone, face down to avoid the risk of positional asphyxia.

69 IRFs reported the need to evacuate an area where CS had been used indoors. Evacuation times were reported as lasting up to one hour, though more typically were ten to fifteen minutes.

4. Injuries to police officers and others

Injuries to police officers

Table 4 below shows injuries to police officers as reported via Incident Report Forms.

Table 4: Injuries to police officers

	Trial locations	Per 1000 trial officers	Control locations	Per 1000 control officers
Injured: taken directly to hospital	6	1.57	3	0.96
Injured: visited hospital in due course	20	5.24	20	6.41
Injured: other	167	43.74	139	44.52

There was little difference between trial and control locations in the risk officers experienced of sustaining injury requiring hospital attention. Officers in trial areas were slightly less likely than those in control areas to sustain other, more minor injuries: moreover, many of these other injuries in trial areas appear to be related to CS spray cross-contamination. This is consistent with the indications reported earlier that officers not equipped with CS spray are twice as likely to be subjected to assault; hence, we judge, the reduced risk of assault (and, hence, minor injury) to those officers carrying CS is masked by the incidence of CS cross-contamination, which officers appear in some cases to have reported as minor injury. This view is supported by the reports of location of minor injuries to officers; a higher proportion of eye injuries are reported by officers in trial locations than in control sites (18% compared with 9% respectively), consistent with the view that CS cross-contamination is reported as minor injury.

Table 5 shows the extent to which officers spraying CS suffered cross-contamination effects. Officers escaped cross-contamination in only 22% of cases where they sprayed CS, though it is worth noting that in discussions with officers reported in the next section, they felt the disadvantage of such cross-contamination to be outweighed by the advantages CS brought them. It is also worth noting that those subsequently coming into contact with subjects sprayed with CS also regularly experienced cross-contamination. Police surgeons were particularly prone to experience such effects.

Table 5: Effect felt by police officers discharging CS	
Burning sensation to skin	49%
Pain or discomfort to eyes	45%
Breathing difficulties	7%
None	22%
Throat irritation	2%
Nasal irritation	3%
Other	3%
No answer	7%

Data provided by forces shows that, in trial locations, assaults on police officers during the trial period fell by 18.1% versus the same period in the previous year. In control locations, such assaults fell by 22.3%.

Table 6: Assaults on police officers		
	March - Aug 1995	March - Aug 1996
Trial locations	353	289
		-18.1%
Control locations	390	303
		-22.3%

This data suggests that the issue of CS spray has not reduced the number of formal complaints of assaults on police officers. However, the data from Incident Report Forms shown earlier in this section and in the previous section suggests that CS does help to reduce the frequency of assaults on police officers.

Overall, the data shown above does not allow clear conclusions to be drawn about the effect CS carriage has on injuries to, and assaults on, police officers. However, officers themselves are clear on this matter. In interviews reported in more detail later in this report, they view CS spray very positively, feeling that it significantly improves their safety. They view cross-contamination as a small price to pay for such perceived improvements.

Injuries to subjects

Table 7 below shows injuries sustained by subjects as reported in Incident Report Forms. There were six occasions where subjects were taken to hospital for injuries believed to have been caused by CS, and 93 injuries believed caused by CS for which other treatment was given.

Although the numbers are small, the data suggests that CS spray no more frequently caused injuries needing hospital treatment than did the police baton. When the much higher usage of the CS spray is taken into account, the risk of such injuries for each CS use is relatively much lower. This may explain police officers' views that CS represents a lesser use of force than the police baton.

Table 7: Injuries to subjects

	Believed caused by baton	Rate per 1000 baton uses	Believed caused by CS	Rate per 1000 CS uses
Injured: taken directly to hospital	2	*11.8*	1	*1.3*
Injured: treated by hospital in due course	10	*59.2*	5	*6.6*
Injured: given other treatment	50	*295.9*	93	*123.3*

We have reviewed incident report forms where injuries to subjects were believed to have been caused by CS, and, where appropriate, sought further information from force liaison officers. We have found no indications of long term harm from CS.

Although this data shows that the risk of injury from CS use is less than for baton use, the information from IRFs presented in Section 3 of this report shows that CS is not used (nor was it ever intended that it be used) as a replacement for the baton. This might suggest a net increase in the number of injuries to subjects in areas where CS is carried compared with those areas where CS is not carried. It is important to recognise that injuries also occur during physical struggles with police officers (where officers make no use of available police equipment), and it may be that use of CS reduces this type of injury to subjects. Information on subject injuries sustained in these circumstances was not, however, collected during this research and so we cannot comment further on this possibility.

Those affected by CS typically complained of pain or discomfort to the eyes, and a burning sensation to the skin. Around one in ten also complained of breathing difficulties.

Table 8: Effect felt by those sprayed with CS	
Burning sensation to skin	37%
Pain or discomfort to eyes	68%
Breathing difficulties	16%
None	16%
Other	3%
No answer	11%

The subject typically was able to reopen their eyes within ten minutes of being sprayed. In one in ten cases, though, this took in excess of fifteen minutes.

Twenty one trial and control pairs provided full information on deaths in custody, however they may have been caused. In these locations, there were three such deaths in March to August 1995 in control locations, and two such deaths during March to August 1996, in trial locations. There were no such deaths in other relevant periods. One of those who died in 1996 had been sprayed with CS. This incident, in Ilford, is currently the subject of an inquiry.

Reports from police surgeons

In order to preserve doctor-patient confidentiality, police surgeons were able to provide us with a professional view on the medical condition of those sprayed with CS only when those sprayed gave their signed consent. We estimate that around fifty per cent of those sprayed refused to give this consent.

In addition to reporting on those sprayed who consented, police surgeons also examined and reported on those police officers and others who were affected by the discharge of CS. In total, we received 585 completed Medical Report Forms, of which forty four per cent related to police officers.

Table 9: Number of Medical Report Forms	
Civilian: male	291
Civilian: female	32
Police officer: male	216
Police officer: female	42
Unspecified	4

Over seventy five per cent of those affected were examined by a police surgeon within two hours. There were instances though where individuals were examined over two hours later. Five police officers were examined over ten hours after the incident (one of these 79 hours after), and one civilian was examined 96 hours after the incident.

Civilians and police officers exhibited similar symptoms at the time of the police surgeon's examination. The most usual symptoms were irritated or watering eyes, reddened skin where sprayed, and throat irritation. Police surgeons also reported similar cross-contamination to themselves.

The most common course chosen by the police surgeon was to take no further action (Tables 10 and 11 below). However, in seven cases, drugs other than oxygen were administered to those sprayed with CS. Police surgeons advised further treatment for fourteen civilians and three police officers. This advice ranged from "to attend eye hospital (since previously partially sighted in left eye)", to "should wash face and eye area later" and "remove contact lenses and irrigate eyes".

Table 10: Treatment given by police surgeons

	Civilian	Police officer
Irrigation of eyes with water	22%	21%
Washing of skin with water	12%	12%
Fresh air	6%	4%
Saline wash	2%	2%
Other	4%	1%
None	65%	64%
No answer	5%	6%

Table 11: Further treatment advised by police surgeons

	Civilian	Police officer
No further treatment advised	90%	89%
More treatment advised	4%	1%
No answer	6%	10%

Twelve police officers and twenty five civilians examined were confirmed as having pre-existing asthma, with a further twenty one claiming to be asthmatic but not confirmed. There was nothing in the reports of asthmatics' treatment to suggest they reacted any differently to CS than those not suffering from asthma. There were a further 59 individuals that police surgeons felt had 'relevant pre-existing medical conditions'. These included depression, schizophrenia, epilepsy, hayfever and alcoholism. In all cases bar the schizophrenic, the police surgeon felt that no further treatment was necessary. The schizophrenic was "advised to see own doctor if symptoms recurred".

5. Police officers' views on the CS spray

Overall, officers who had used CS saw it as very or quite effective on more than four out of five occasions. CS was least likely to be seen as effective on those believed suffering from a mental disturbance, or affected by drugs; indeed, officers had been forewarned in training that CS spray would be less effective on such individuals. However, in both types of case, the CS spray was deemed very or quite effective in over two thirds of relevant incidents.

Officers interviewed generally spoke very highly of the CS incapacitant. They commented that it had boosted their confidence even more than when batons had been issued as a replacement for truncheons. They ascribed this greater boost in confidence to a number of factors: CS was seen as offering a lower degree of force than the baton; CS was seen as easy for even the slightest officer to use, and was particularly welcomed by female officers for this reason. Female officers stated that it gave them confidence to ward off, even arrest the most powerful subject; use of CS was seen as less likely to result in serious injury to the subject; CS was judged less likely to be seen as overly violent by bystanders; CS was seen as less likely than the baton to lead to subject complaint; CS was seen as much more certain than the baton to prevent an 'unreasonable' response by the police officer to the subject's aggression. With the baton, officers commented, it is difficult to tell what degree of force to use, and for how long, to stop the subject renewing their attack on the officer; CS, officers said, allows officers to maintain a greater distance from the subject, and is psychologically easier to use than the baton.

Officers pointed out that CS could be used in restricted spaces where the baton could not. They also pointed out that police drivers were unlikely to leave CS in the police car - unlike the baton, which officers usually had to remove before driving.

Simply drawing CS often deterred would-be assailants. Officers said it could even allow a single officer to deter a large group in a way that the baton could not, since the single officer could threaten to spray the whole group, but could not credibly threaten to baton the whole group. There was some concern, though, that if an officer had to carry out such a threat, the canister might run out of CS before all such a large group were sprayed.

There was a general perception that the number of officer injuries had greatly declined since CS had been issued, and that the number of complaints about officers (primarily 'inappropriate use of force') had similarly declined. It is worth noting that the direction, but not the magnitude, of these reductions is supported by data presented in Sections 4 and 6 of this report, if CS cross-contamination is not counted as injury.

Officers commented that they would generally draw CS in preference to the baton, except possibly in the following situations: where the officer was downwind; if there were many bystanders; if it were known not to work on the aggressor; in major public

order situations if CS use might lead to hysteria; on dogs (most officers believing correctly that CS would not work on dogs). If there were more than one officer at the incident, it had become commonplace for one to draw CS and another to draw a baton. The baton was also seen as a fallback to use if CS failed to work.

Officers recognised that CS didn't always work. However, they commented that, even when it didn't work, the momentary distraction of the subject bought the officer enough time to take control of the incident. Officers recognised that CS could be taken from an officer and used against them, but pointed out that this applied also to the baton, with more serious consequences for the officer.

Officers commented that sprayed subjects were regularly taken back to the custody suite in a police car. To minimise the cross-contamination effects of the CS, officers frequently had to travel with the car windows fully open. Even then, officers reported that the effects of CS were still noticeable. They all recognised that CS often caused cross-contamination, but generally judged this a small price to pay.

Officers further commented on what they saw as design faults in the CS canister and pouch. On the canister, these included the occasional malfunction of the canister, the ease of obstructing the exit hole with an index finger, the inconvenience of the 'safety' nipple, the ease of snapping canister hinges, difficulty in flipping open the canister top. For the pouch, the situation was less clear cut, since there were four types of pouch in circulation. However, some officers did feel that drawing the canister from the pouch could be difficult.

There were comments on the difficulties in cross-border incidents in using CS with officers from neighbouring divisions: these officers rarely understood the commands associated with CS taught at CS training.

Concerns were expressed about the validity of breath tests when performed on those sprayed with CS.

Response to Officer Questionnaire

We circulated a questionnaire at the end of three months of the trial to all 3818 officers in trial locations. 989 questionnaires were returned and analysed.

Two thirds of officers returning questionnaires reported that they had not yet drawn CS. Others reported drawing CS between one and thirty times (Table 12). Twelve per cent reported using CS on between one and eleven occasions. This suggests that, on average, an officer will draw CS around four times a year, and use CS slightly less than once a year. Data obtained from IRFs (presented in Section 3) instead suggests that a typical officer will use CS once every 32 months; this difference in likely frequency of use may reflect a higher likelihood that a CS user

will have returned our questionnaire (since they may had felt they more to bring to our attention).

The data from the questionnaires also suggests that eight per cent of officers will account for eighty per cent of occasions where CS is drawn. This may reflect the nature of duties to which officers are assigned: thus, those drawing CS most frequently are those assigned to duties more likely to involve public order or similar such policing problems.

Table 12: Number of occasions officers had drawn and used CS

	Drawn not used		Drawn and used	
None	675	68%	875	88%
1	121	12%	80	8%
2	61	6%	12	1%
3	47	5%	10	1%
4	26	3%	7	1%
5 - 9	39	4%	4	*%
10 and over	20	2%	1	*%
Total forms returned	989	100%	989	100%
Total number of events	*1015*		*201*	
Average per reporting officer	*1.03*		*0.20*	

*Note: * = less than 0.5%.*

Twelve officers reported that their CS canister had failed to spray when required; each had experienced this on one occasion. This represents 5.9% of the 201 occasions where these officers used CS.

Only 29% of those who had used CS had not been affected by cross-contamination. On average, an officer in a trial site was affected 0.47 times within the first three months of the trial. This suggests that the average officer will be affected by CS nearly twice in a typical year, with some affected far more freqently.

Officers were asked for their views on a range of relevant subjects: responses are summarised below in Table 13.

Table 13: Officers' views on CS

	Totally agree (2)	Tend to agree (3)	Tend to disagree (2)	Totally disagree (1)	Don't know	Mean score
I can rely on CS to have the desired effect	33%	37%	3%	1%	26%	3.37
I prefer to have both baton and CS with me, rather than just the baton	83%	12%	1%	1%	3%	3.83
In my view, CS represents a lesser use of force than the baton	72%	18%	4%	3%	3%	3.66
I understand very clearly the situations in which I am permitted to use CS	79%	18%	1%	*%	2%	3.80
I would feel comfortable using the baton and CS together, if the need arose	55%	25%	7%	5%	8%	3.42
The effects felt by police officers near those sprayed by CS are acceptable	32%	43%	5%	1%	19%	3.30
The effects felt by civilians near those sprayed by CS are acceptable	32%	41%	4%	1%	22%	3.33
Those sprayed with CS will recover quickly, with no adverse after-effects	42%	39%	2%	1%	16%	3.48
Overall, the CS spray is an effective aerosol incapacitant	58%	28%	*%	*%	13%	3.66
Overall, I am more confident with the CS spray than without it	70%	22%	3%	2%	3%	3.66
Overall, I feel better able to defend myself with the CS than without it	73%	21%	3%	*%	3%	3.73
Police officers should be issued with an effective aerosol incapacitant	90%	7%	1%	*%	2%	3.91

*Mean score excludes 'Don't know/not stated * = less than 0.5%*

It is noteworthy that:

- there is general acceptance amongst those expressing a view that they can rely on CS to have the desired effect;
- there is strong agreement that police officers should be issued with an effective aerosol incapacitant. Most see the CS spray as such an incapacitant.

6. Public attitudes to the CS spray

There were reports of written public comment from nineteen of the twenty five trial sites. Twenty one letters were received in favour of CS, twenty one against CS, and a further twenty five were neither in favour nor against.

Twenty three of the trial sites reported a total of forty five complaints against police officers relating to use of CS. However, Table 14 below shows that the total number of complaints of any nature has fallen more in trial locations than in control locations.

Table 14: Number of complaints about police officers

	March - July 1995	March - July 1996
Trial locations	1851	1110
		-40.0%
Control locations	1523	1029
		-32.4%

Seventeen trial and control pairs provided relevant information on complaints against police officers relating to use of their baton. In those areas providing relevant information, complaints in CS trial areas about police use of batons fell by 31.4% compared with the previous year. In control locations, such complaints grew by 70.8%. It is worth noting that data from Incident Report Forms suggests that batons were used as often in trial locations as in control locations.

Table 15: Number of complaints about police use of batons

	March - Aug 1995	March - Aug 1996
Trial locations	35	24
		-31.4%
Control locations	24	41
		+70.8%

Public attitude research

We commissioned two elements of public attitude research. These were:

- a telephone survey of 960 representative members of the public from across England and Wales;
- a street survey of 300 members of the public in divisions trialling CS.

In both surveys, most members of the public surveyed were in favour of the issue of CS spray to police officers. Views were consistent across both gender and age.

Table 16: Telephone survey: Public views on the issue of CS spray to police officers	
	Total
Totally favourable (5)	34%
Fairly favourable (4)	33%
No view either way (3)	12%
Fairly unfavourable (2)	9%
Totally unfavourable (1)	11%
Don't know	1%
Mean score	3.71

Table 17: Street survey: Public Views on the issue of CS spray to police officers	
	Total
Totally favourable (5)	47%
Fairly favourable (4)	31%
No view either way (3)	9%
Fairly unfavourable(2)	6%
Totally unfavourable (1)	5%
Don't know	2%
Mean score	4.11

Results from the telephone survey suggest that there are strong indications that views on whether CS should be issued to police officers are linked to views on whether CS is a safe deterrent or not. The table below illustrates this: the shaded areas show that those feeling that CS should be issued tend to agree that CS is a safe deterrent, whilst those feeling that CS should not be issued tend to feel that CS is not a safe deterrent.

Table 18: Public views on whether "CS spray is a safe deterrent for police officers to use"

		View on whether CS should be issued:		
View on whether CS is a safe deterrent:	Total	Totally or fairly favourable	No view	Totally or fairly unfavourable
Totally agree (5)	31%	44%	11%	3%
Tend to agree (4)	31%	38%	26%	11%
Neither agree nor disagree (3)	10%	8%	30%	4%
Tend to disagree (2)	14%	6%	25%	32%
Totally disagree (1)	11%	1%	6%	47%
Don't know	3%	2%	3%	4%
Mean score	3.59	4.17	3.14	1.90

7. Conclusions

Our primary objective in these trials was to assess the suitability and effectiveness of the CS incapacitant as an item of police defensive equipment. We were asked to consider six areas in reviewing such suitability and effectiveness. We draw conclusions about relevant matters in each of these six areas below.

The effectiveness of training

Generally, training appears to have been effective. However, two matters raise particular concern. The first is over training about the circumstances in which CS may be used; officers reported a lack of clarity and consistency in the information delivered on this matter.

The second concern relates to inconsistency about the warnings to be given before spraying CS. Most officers were trained to shout a warning before spraying CS. In many cases, this audible warning is enough in itself to give the officer control of the situation. However, officers in some forces have been trained not to shout a warning. Hence, in some forces, there are occasions where CS is sprayed where a verbal warning may have made this unnecessary.

Frequency and type of CS usage

On average, it appears that officers equipped with CS spray will draw it around four to five times a year, and use it significantly less than once a year. However, the data also suggests that a relatively small proportion of officers will account for most CS use.

CS has generally been used to defend police officers (and occasionally, members of the public). It has also been used to make, or assist officers in making, an arrest. We have reviewed officers' accounts of these incidents, which indicate that in the majority of such incidents, officers were also concerned for their own safety.

The pattern of use of CS alongside other items of police defensive equipment

In trial areas, CS has been used much more frequently than the baton. We believe that it will also have been drawn much more frequently than the baton. It appears in most circumstances to be the defensive equipment that officers in trial locations have turned to first. This reflects most officers' views that CS represents a lesser use of force than the baton.

Injuries to police officers and others

CS was sprayed during an incident in Ilford in which an individual died; there is now an inquiry in progress into this death. We have not had access to information collected by the inquiry team, and therefore this report cannot reflect this information.

None of the information provided to us suggests that CS causes serious injury. Although CS spray was not used in trial locations as a replacement for the police baton (nor was it intended as such a replacement), CS spray is much less likely where used to cause injuries requiring medical treatment than is the baton. The reports we received from police surgeons on their examinations of those affected by CS showed that, in 90% of cases, they judged that no further treatment was necessary. There was nothing in the remaining 10% of reports to suggest that police surgeons believed CS had caused serious injury to those sprayed or otherwise affected.

There was frequent cross-contamination associated with CS. Our research suggests that officers in areas where CS is issued can expect, on average, to be cross-contaminated with CS once every six months - and, for some, much more frequently. This could also apply to trainers during any mass training of officers in CS use. Additionally, some officers have driven police vehicles whilst so cross-contaminated. This raises questions of safety. Despite this, officers generally believe these cross-contamination effects are acceptable. Police surgeons have also experienced cross-contamination.

Data on assaults shows a mixed picture. Officers' perceptions are of a marked reduction in assaults in trial locations versus control locations. Whilst this is supported by data from Incident Report Forms (completed by officers themselves), force data on formal reports of assaults shows little difference between trial and control sites.

Police officers' views

Almost without exception, police officers in trial sites believe that all officers should be issued with an effective aerosol incapacitant. The clear majority of trialling officers believe the CS spray to be effective.

However, there are comments about the current design of canister and pouch, and about other matters including the frequency of cross-contamination with CS. In addition, we have been informed of occasions where the CS canister has failed to work; to date, this 'failure rate' stands at 5.9% of incidents where CS is used.

Public views about the acceptability of CS

The public accept the introduction of CS. The substantial majority of those surveyed are in favour of the issue of CS to police officers. However, more are against CS than were against the issue of the baton to police officers (Kock, Kemp & Rix, 1993). Many of those against its issue have concerns about whether CS spray represents a safe deterrent for police officers to carry.

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