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Your Ref: CC/JMW

July 11, 2000

**CS/MIBK Incapacitant Spray**

John Giffard has forwarded a copy of the letter you sent to him on 6th July on the above subject. He has asked me to reply to you with a response to the issues you have raised in the letter.

**1. French Government Report**

As Brian Coleman said in his letter to Sean Price on 5th November 1998, this report was produced by the French Government and although PSDB staff were able to view the document on a fact finding trip to France, PSDB do not hold a copy of this report. The report is not a major research contribution on all aspects of CS, it just details operational tests on the effectiveness of CS at varying concentrations; 3%, 5% and 7%. It does not contain data on toxicological testing of CS. The conclusions of the report state that 3% CS in MIBK is not as effective as 5% whilst 5% and 7% produce similar results, therefore 5% is recommended as the most suitable concentration. Efforts to obtain a hard copy of this classified document from the French military authorities have so far been unsuccessful, but given that we know the limited scope of the report, neither the DoH or PSDB regard this as a major obstacle.

**2. HSE Document**

Whilst the document does include the paragraph you quote it goes on to state, two paragraphs later: "4-Methylpentan-2-one (MIBK) does not exhibit mutagenic or reproductive toxicity properties and is expected not to possess any significant sensitising or carcinogenic potential. Thorough repeated inhalation exposure studies in animals also provide considerable reassurance that the tissue-damaging potential of this substance in relation to human health is low, with a NOAEL (No Observable Adverse Effects Level) of 1000 ppm." It may be that you do not have the latest amendment to this document dated 1998<sup>1</sup>, I have enclosed a copy for you.

### **3. Short Term Exposure Limit (STEL)**

Measurements taken by PSDB and detailed in section 3 of "Evaluation of CS and MIBK exposure during CS Spray Use<sup>2</sup>" (copy enclosed) showed that in a worst case situation (i.e. subject in an unventilated room with no air movement and static for the 15 minute period following spraying) the STEL is exceeded at a point 0.5m below the impact point and directly in front of the impact point. The STEL is not exceeded at points corresponding to the position of the police officer. It should be noted, and this point is emphasised in the Department of Health Independent Committee's Statement<sup>3</sup> (copy enclosed) in section 11, that these results do not represent a cause for concern if the ACPO operational guidelines are followed and the subject is removed to an uncontaminated area to recover. The Short Term Exposure Limit is an occupational exposure limit and as such applies to employees who may be subject to repeated exposure (police officers), it is not applicable to members of the public but it would be prudent to try to conform to this limit if possible. Hence the recommendation from the DoH Independent Committees to adhere to the ACPO guidelines. It is worth noting that even in this worst case situation the average measurement in front of the subjects face following a one second spray (the ACPO guidelines recommend two half second bursts) is 69 ppm.

### **4. Australian Research**

We have no records of any Australian research into CS. The contact we have had with Australia concerns the use of pepper spray and copies of relevant information on OC was forwarded by PSDB to Australia for their benefit.

### **5. CS/MIBK**

I would refer again to the Department of Health Independent Committee's Statement on CS Spray. The data on the combination of CS and MIBK is presented in sections 43 - 46. The main thrust of this data is to confirm that effects on the eye are transitory, this is in agreement with the findings for MIBK (section 36). Although the Independent Committees noted the sparsity of data on the formulated product in comparison to the considerable amount available on CS and MIBK, they did not flag this as a concern.

### **6. MIBK and MC Exposure Limits**

It is worth clarifying the difference between an occupational exposure standard (OES), which MIBK is subject to, and a maximum exposure limit (MEL) which applies to Methylene Chloride (MC). An OES is the concentration of an airborne substance at which there is no evidence that it is likely to be injurious to employees if they are exposed by inhalation day after day. An MEL is the maximum concentration of an airborne substance which employees may be exposed to by inhalation under any circumstances. I have enclosed copies of the full definitions of these exposure limits for you.<sup>4</sup>

To answer your question, the difference in the definition and enforcement of these two types of standard make it impossible to compare them directly. With an MEL the onus is on the employer to reduce exposure to a level as low as possible (not just to the limit itself) whereas the OES is an acceptable level for exposure day after day.

7. **Testing of commercially available CS sprays**

The testing currently being carried out at PSDB against the ACPO/PSDB Specification for CS Sprays for Operational Police Use will assess whether any improvements have been made to commercial products which failed to meet the standard during the last evaluation. The testing is being carried out with the full support of ACPO SDAR, and the results will be available to all UK forces. The tasking was not from ACPO (Scotland). Testing is very close to completion and we hope to have the results by the end of next week. I will send you a copy of the results when they are ready. This should be before July 27.

I hope the above answers the issues you raised in your letter, if you need any clarification or further information please contact me. I am copying this letter to John Giffard and to [REDACTED] at the Home Office.

[REDACTED]  
Manager, Firearms and Protective Equipment

- enc.
1. HSE Review (MIBK) 1998
  2. Evaluation of CS and MIBK exposure during CS Spray Use (PSDB) 1999
  3. DoH Statement 1999
  4. HSE EH40 (p6-8) 1999

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Staffordshire  
Police

FAX MESSAGE

Chief Constable's Office  
Police Headquarters, Cannock  
Road  
Stafford, Staffs, ST17 0QG

Tel: 01785 257717 Fax: 01785  
232313

To: [REDACTED]

Fax No: [REDACTED]

Date: 8.7.00

FROM: Insp [REDACTED]

Fax: [REDACTED]

Message:

fax: for the attention of Mr [REDACTED]  
for Mr J Griffith Chief Constable of Staffordshire  
following phone call re: same matter.

Any problems please contact me at Stafford on  
[REDACTED]

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Chief Constable's

7 JUL '00 7:47

FROM NOTTS POLICE HQ CMND

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Working together to make Nottinghamshire safer

From: Stephen M Green MA  
Chief Constable

HEADQUARTERS  
Sherwood Lodge, Arnold  
Nottingham NG5 8PP

Telephone (0115) 9672005  
Fax (0115) 9672009  
ARNOLD 3 DX 715006

CC/IMW

6 July, 2000

2009

Dear John,

**CS/MIBK INCAPACITANT SPRAY**

As you are aware following my appointment as Chief Constable of Nottinghamshire Police, I intended to review my predecessor's decision not to issue the current Home Office approved CS/MIBK incapacitant spray.

I have now had the opportunity to be briefed on Nottinghamshire's concerns about the spray. It appears that a number of issues raised in correspondence between Nottinghamshire and both the PSDB and ACPO(SDAR) are still outstanding. To assist my review I would be grateful if you could respond to the following issues and questions.

Nottinghamshire has requested a copy of the French Government research report into CS/MIBK spray which is quoted although not referenced by PSDB. Brian Coleman kindly offered to share this research with ACPO, but a copy has not been received in Nottinghamshire. I would be grateful for a copy of this report.

PSDB supplied Nottinghamshire with a review of MIBK (4-methylpentan-2-one) prepared by the Health and Safety Executive. Unfortunately the paper was not very reassuring as it stated that "There are no worthwhile studies available investigating the mutagenicity, carcinogenicity or reproductive toxicity of 4-methylpentan-2-one in humans". The paper does however establish the basis for setting Occupational Exposure Standards for MIBK and the short term exposure limit is set at 100 ppm (parts per million). The outstanding question raised with PSDB was what level (ppm) someone sprayed with or using this spray is exposed to. I would be grateful if this information could be supplied.

Nottinghamshire raised research carried out by the Australian Government with PSDB. I would find it useful to know if the Australian research has been analysed by the PSDB and what if any conclusions were drawn.

J W GIFFARD ESQ QPM BA(Hons)  
CHIEF CONSTABLE  
STAFFORDSHIRE POLICE  
CANNOCK ROAD  
STAFFORD ST17 0QQ

07-JUL-00 09:10

0115 9672 009

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7 JUL '00 7:47 FROM NOTTS POLICE HQ CMND

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**RESTRICTED**

The Defence Evaluation and Research Agency document, A Review of the Toxicology of Methyl Iso Butyl Ketone and Methylene Chloride dated July 1996 was supplied to Nottinghamshire by PSDB. The report states that the current device delivers some liquid droplets rather than just solid particulates of CS. Nottinghamshire asked if PSDB were aware of any bio-medical research into CS in MIBK solution, as opposed to airborne CS. I would be grateful for an answer to this question.

The above three questions detail the important outstanding issues and I look forward to your response. I would also be grateful for your comments on the following issues.

The minutes of the ACPO(SDAR) meeting on 28-04-00 include a report from PSDB on its research into an alternative solvent. I note that Methylene Chloride (MC) has been excluded as it is currently assigned Maximum Exposure Limits. The DERA report 'A Literature Review of Solvents Suitable for the Police CS Spray Device' 1997 indicates that the short term exposure limit is 300 ppm for MC and 100ppm for MIBK. The DERA report 'A Review of the Toxicology of MIBK and MC' 1996 states that MC is more volatile than MIBK and subjects are less likely to be exposed to MC. This would appear to indicate that a subject sprayed with MIBK is likely to receive a higher dose of a chemical that has a lower exposure limit. I would be grateful if PSDB could comment on this.

I understand that ACPO Scotland have requested PSDB to undertake testing of the currently available CS/MIBK sprays (Alarmagrip, Alsetox, Cannings, CDS/IDC and Pains Wessex), to ensure that they comply with the PSDB Specification. I would be grateful for a copy of the results of the tests already completed, an indication of when the testing will be complete and a copy of the final results.

*Yours sincerely*  
*Steve*  
Chief Constable

cc [Redacted]  
Nottinghamshire Police  
Police Federation

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P.02

07-JUL-00 09:11

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**MINUTES OF MEETING OF CS SPRAY RESEARCH PROJECT ADVISORY  
GROUP  
HELD AT THE HOME OFFICE ON 29 JANUARY 2002**

Present: [REDACTED] (Chair) - Home Office  
Dr [REDACTED] - Department of Health  
Dr [REDACTED] - Metropolitan Police  
[REDACTED] - Metropolitan Police  
[REDACTED] - Police Scientific Development Branch  
[REDACTED] - Home Office  
[REDACTED] (Secretary) - Home Office

Item 1      Introduction

Mr [REDACTED] welcomed everybody to the meeting and informed attendees that only one Tender had been received by the closing date. There had also been one expression of interest where an extension of 2 months to the closing date had been requested but this had been refused.

Item 2      Apologies

These were received from Inspector [REDACTED] Metropolitan Police.

Item 3      Tender evaluation

Mr [REDACTED] informed attendees that the single Tender to carry out the work had been received from Professor [REDACTED] of Imperial College. Attendees then completed their CS spray evaluation matrix which was used to evaluate the received Tender and was intended to give a score to set off against all the information provided by the Tenderers. Professor [REDACTED] Tender received a score of 57 out of a maximum score of 72 and was thought to have been an impressive piece of work from a hugely experienced academic.

The only sticking point the meeting found was the £93K fee that Professor [REDACTED] had placed on completing the work. The meeting believed that the charge may have been this high as Professor [REDACTED] had based his figures on a sample of 100 people for the study and that this could possibly be brought down to 65 people. Mr [REDACTED] indicated that he believed that only £50-70K would be available to finance this work but he would speak to his Head of Unit as to whether any more money was available.

Item 4      Next steps and start date

Mr [REDACTED] would establish whether there was any further money available for the exercise and report back to the meeting. He would also draft a letter to Forensic Medical Examiners (FME's) for circulation when the contract is awarded.

Items 5 & 6      Any further business and date of next meeting

As there was no further business the meeting came to a close. The next meeting will be arranged once Mr [REDACTED] is in a position to report back to the Advisory Group.

[REDACTED]  
Action Against Crime and Disorder Unit



**MINUTES OF 2<sup>nd</sup> MEETING OF CS SPRAY RESEARCH PROJECT ADVISORY GROUP**

**HELD AT THE HOME OFFICE ON 4 MARCH 2002**

Present: [REDACTED] (Chair) - Home Office  
Professor [REDACTED] - Imperial College  
Dr [REDACTED] - Department of Health  
Dr [REDACTED] - Metropolitan Police  
[REDACTED] - Metropolitan Police  
Inspector [REDACTED] - ACPO SDAR  
[REDACTED] (Secretary) - Home Office

Item 1      Introduction and apologies

Mr [REDACTED] welcomed everybody to the meeting. He expressed thanks to Professor [REDACTED] for agreeing to take charge of the study.

Item 2      Minutes of last meeting (29 January)

These were agreed as an accurate transcript of the meeting.

Item 3      Matters arising

There were no matters arising.

Item 4      Professor [REDACTED]

Professor [REDACTED] circulated a timetable for the work which he believed to be an accurate assessment of the time-scales involved. He also produced for the meeting draft guidelines and a reporting form which will be sent to FME's before the study starts. Professor [REDACTED] informed members that an Ethics submission would need to gain approval from the LREC before commencement of the study but did not expect this to cause any problems. He intended to commence the study on 6 May (subject to LREC approval).

It was disclosed that 111 people had been sprayed with CS by the police in the last quarter. This group was to make up the main field for the study. However, as at least 50 people were required to take part in the study to make it a useful exercise, it was decided by the meeting to also use more recent cases in case of shortfalls. Even though persons taking part in the study could not be paid a flat fee, they were to be offered £30 travelling. Mr [REDACTED] had produced a Home Office letter to FME's asking for co-operation in the study and this was expected to be sent out later on in that week. Professor [REDACTED] would also write to FME's as the main contractor.

Professor [REDACTED] asked what the Home Office expectations were of the results of the study. He suggested that skin sensitisation to MBIK may be the main long-term effect. Mr [REDACTED] replied that the Home Office was responding positively to the Committees on Toxicity

(COT) suggestion that the longer-term health effects of persons sprayed with CS should be evaluated (Mr [REDACTED] hoped that this study would give CS a clean bill of health).

Items 5 & 6                    Any further business & Date of next meeting

As there was no further business the meeting came to a close. The date of the next meeting was fixed for Tuesday 28 May at 10am - attendees to be informed of location in due course.

[REDACTED]  
Action Against Crime and Disorder Unit

**MINUTES OF 3<sup>rd</sup> MEETING OF CS SPRAY RESEARCH PROJECT ADVISORY GROUP**

**HELD AT THE HOME OFFICE ON 28 MAY 2002**

Present: [REDACTED] (Chair) - Home Office  
Professor [REDACTED] - Imperial College  
Dr [REDACTED] - Department of Health  
Dr [REDACTED] - Metropolitan Police  
[REDACTED] - Metropolitan Police  
Inspector [REDACTED] - ACPO SDAR  
[REDACTED] - PSDB  
[REDACTED] (Secretary) - Home Office

Item 1      Introduction and apologies

Mr [REDACTED] welcomed everybody to the meeting.

Item 2      Minutes of last meeting (4 March)

These were agreed as an accurate transcript of the meeting.

Item 3      Matters arising

There were no matters arising.

Item 4      Progress and Update on Study

Professor [REDACTED] said that the Study had not yet started but would begin shortly. He circulated a number of documents and forms relating to the Project which required agreement and possible revision. Suggested amendments were agreed and Professor [REDACTED] thanked the meeting for this. Mr [REDACTED] also mentioned that he had been contacted by the Metropolitan Police's solicitors who required more information on the Study in case of litigation by applicants who were participating. Mr [REDACTED] agreed to speak to them about the issues involved. The meeting also asked if it would be possible to examine a particular CS canister to assess how much CS had been sprayed from it and hence a maximum amount the person could have been exposed to. Mr [REDACTED] said that this would be possible but would be resource-intensive and it was agreed that this issue would be revisited at the end of the Study if necessary.

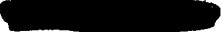
**[ACTION: Mr [REDACTED] to speak to Metropolitan Police solicitors]**

Item 5      Any further business

None.

Item 6      Date of next meeting

The date of the next meeting would be in early July and members would be contacted shortly for availability.

  
Action Against Crime and Disorder Unit

# MINUTES OF 4th MEETING OF CS SPRAY RESEARCH PROJECT ADVISORY GROUP

HELD AT THE HOME OFFICE ON 13 AUGUST 2002

Present: [REDACTED] (Chair) - Home Office  
Professor [REDACTED] - Imperial College  
Dr [REDACTED] - Department of Health  
Dr [REDACTED] - Metropolitan Police (by telephone)  
[REDACTED] - Metropolitan Police  
Inspector [REDACTED] - ACPO SDAR  
[REDACTED] - PSDB  
Chief Inspector [REDACTED] - PSDB  
[REDACTED] (Secretary) - Home Office

## Item 1 Introduction and apologies

Apologies were received from [REDACTED] PSDB. Mr [REDACTED] welcomed everybody to the meeting and especially Ms [REDACTED] who was attending her first. He explained that he had called this special meeting to discuss ways of taking forward the Study even though, so far, there had not been a single person agreeing to participate in the project.

## Item 2 Minutes of last meeting (28 May)

These were not discussed at this meeting.

## Item 3 Matters arising

These were not discussed at this meeting.

## Item 4 What happens next with the Study

Professor [REDACTED] explained that the Study had been running properly since July but there had not been a single call to his team. [REDACTED] at the Metropolitan Police had informed him that 47 persons had been sprayed with CS in July with 93 persons being sprayed between April and June. As a result of this non-action, Mr [REDACTED] had written to Principle FME's on 8 August to check that FME's had signed up to the project. Of the 19 letters sent, there had been nine responses and all but one had forms in place for possible subjects, doctors had been briefed and all were keen to help. The remaining one had not been sent the forms but this had now been rectified.

Mr [REDACTED] said that it was important to find out the areas where the 47 sprayings had occurred and whether the subjects had been referred to FME's by the Custody Sergeant.

- **Action:** [REDACTED] to find out where sprayings occurred;

- **Action:** [REDACTED] to find out if people are being invited to take part and reasons for not volunteering.

A number of other suggestions were made to increase participation in the Study.

- **Action:** [REDACTED] agreed to sending a letter to all persons sprayed 48 hours after the event, inviting them again to participate. Will also write to those sprayed in the last month if possible.
- **Action:** [REDACTED] would also speak to colleagues in A&E Departments.

If the attempts to recruit more volunteers failed a number of full backs were discussed. These were a telephone survey, a police survey, a volunteer survey and a survey of complainants involved in legal action against the police.

Mr [REDACTED] then suggested short and long term objectives for the project. The short-term objectives included finding out now why persons were not coming forward to assist in the study, sending out follow-up letters to subjects 48 hours after being sprayed and sending out study leaflets to the 47 persons sprayed in July. Long-term objectives included a possible GP study, a telephone study, a police study and a volunteer study.

Item 5      Any further business

None.

Item 6      Date of next meeting

The date of the next meeting would be on Wednesday 28 August at 2.30pm as previously arranged.

[REDACTED]  
Action Against Crime and Disorder Unit

CS Project  
Brief file  
(6)

5<sup>TH</sup> MEETING OF CS SPRAY RESEARCH PROJECT ADVISORY GROUP  
5<sup>TH</sup> FLOOR, QUEEN ANNE'S GATE 28 AUGUST 2002 14:00 HOURS

PRESENT:

[REDACTED]

APOLOGIES:

[REDACTED]

Matters Arising

[REDACTED] established the location of last month's operational sprayings.

2. [REDACTED] has written to principal FME's in an effort to ascertain why volunteers are not coming forward. He is currently discussing with MPs legal sending out follow up letters to those who have been sprayed.

3. Staff at St Mary's A&E Unit did not examine anyone exposed to CS during the bank holiday period.

Action: [REDACTED] to liaise with [REDACTED] on follow up letter.

Short Term

4. It was agreed to carry on trying to recruit volunteers for the next seven weeks which would allow for the follow up letter to take effect and to ascertain from FMEs why volunteers were reluctant to come forward.

5. It was also in principle agreed to send questionnaires, subject to funding, to all G.Ps in London and all FME's in those Forces who routinely examine members of the public who are routinely sprayed.

Action: [REDACTED] to liaise with [REDACTED]

Long Term

6. At the end of the seven week period the project will be reviewed again and a decision reached on an alternative approach as necessary.


Action: [REDACTED] to consider volunteer study proposal.

AOB

7. None

Next Meeting

8. Tuesday 15 Oct 14:30 hours, QAG

  
020 7273 8166