A Note for the 3rd the Bills Committee on the Dangerous Drugs, ICAC and Police Force (Amendment) Bill 1999 to be held at 10:45 a.m. on 2 February 2000 (Wednesday)

Forensic Application of Intimate and Non-intimate Samples

PURPOSE

This note informs Members of the possible forensic application of intimate and non-intimate samples as provided for in the proposed Bill.

BACKGROUND

2 At the 1st Bills Committee meeting held on 6 January 2000, Members asked, and we undertook, to provide a paper setting out the application of various types of intimate and non-intimate sample included in the Bill for forensic analysis.

DETAILS

3 The following is a summary of how various types of intimate and non-intimate samples may be used for forensic analysis.

Intimate Samples

(a) a sample of blood, semen or any other tissue fluid, urine or pubic hair

4.1 A blood, semen or any other tissue fluid sample taken from a person acts as a known reference (or control) source for comparison with other bodily materials found on exhibits related to crimes. With advance in technology, the need for collecting blood, semen, or other tissue fluids as reference sources had diminished as buccal swabs can serve the same purpose. However, there exist unsolved crimes for which blood grouping and / or a less advanced DNA technique have previously been used and no crime stain materials remain for further analysis. For these cases, comparison would be restricted to blood groups (of any culprits subsequently caught) and the DNA information got from the less advanced technique. As a buccal swab would not contain enough blood group substances or DNA for analysis using the previously employed technique, blood samples would be required.

4.2 Depending on the results obtained from previous analysis, the strength of the evidence could vary. If the crime sample only yielded one positive blood grouping result, the discrimination could be 1 in a few persons, but if the crime sample had been successfully profiled in four DNA systems using the less advanced technique, the discrimination would be 1 in tens of millions of people.

4.3 Urine samples are required for analysis to establish suspicion on internal concealment of drug by a suspect. The urine test is only a preliminary analysis and the test result will not be used as evidence in court because in proving drug trafficking offences, it would be crucial to actually find the drugs concealed inside the body.

4.4 Hair samples, including pubic hair, from different persons could bear morphological differences. The examination of the morphology of a hair

sample includes examining its form and internal parts, such as its shaft diameter, scale pattern, pigment distribution, texture, and cross-sectional shape, etc. and is done microscopically. As pubic hair could bear individual characteristics, the comparison of a pubic hair recovered from a crime scene with that from a suspect could yield information concerning the likelihood of the suspect being the source of the hair at the scene.

4.5 Whilst there is no standard for measuring the importance or weight of the evidence, similarities or dissimilarities in the characteristics exhibited by the hairs have corroborative value, particularly when the comparison offered exclusion evidence, i.e. the hair at the scene could not have originated from the suspect.

(b) a dental impression

5.1 Comparison of dental impressions of a suspect with bite mark from a crime scene can offer very strong and sometimes absolute proof of a suspect's involvement in the crime. Dental impressions can occur in assault cases where a suspect may bite a victim, or vice versa. A criminal may also leave behind an object, such as a piece of fruit, at the crime scene which may be associated with him later through a bite in the object. An example of this occurred in a robbery / homicide case in the early 1980's in which a schoolgirl was killed in crossfire during a shootout in North Point. A star fruit was later found in an abandoned getaway car. The fruit was seized and was submitted to forensic odontologists for casting of a bite mark in it. Comparison of that mark with the dentition of a suspect, made through a dental impression taken from the suspect, showed that the suspect was the originator of the bite mark and thereby became very important evidence in the trial.

(c) a swab taken from a person's body orifice other than the mouth or from a private part of a person's body

6.1 A swab taken from a person's body orifice could contain bodily material from another individual and that bodily material could be subjected to DNA analysis for individualization. One scenario that a swab from a suspect's orifice could serve forensic analysis purpose is with sexual assaults where it is alleged that the culprit demanded the victim to lick his/her orifice such as the ears or anus. A swab taken of the appropriate orifice for DNA analysis to determine whether there is material from the victim that could assist in establishing the facts of the case.

6.2 A swab taken from a person's private part is useful in establishing, again in allegations of sexual assaults, whether there has been contact between the suspect's private part with the victim. If a person has had sexual intercourse with another person, there would be mutual transfer of bodily materials onto the genitals of the other person; that is, a male rapist would bear bodily materials from his victim on his genitals. DNA analysis of a swab taken of the suspect's genitals to determine whether there is material from the victim would assist in the investigations of the crime.

6.3 DNA analysis that would be applied could offer evidence being able to discriminate a person from hundreds of billions people.

Non-intimate Samples

(a) a sample of hair other than pubic hair

7.1 For applications stated for pubic hair in paragraph 4.4 above, examination of hair morphology could serve forensic comparison purposes.

In addition, dyestuffs used on head hairs could also be analyzed for their chemical composition. Comparison of the chemical composition of dyestuffs on a hair recovered from a scene with that on a head hair sample from a suspect could offer strong forensic evidence.

7.2 Similarities or dissimilarities in the characteristics exhibited by the hairs and the chemical composition of the dyestuff have corroborative value. The value would be particularly significant when the comparison offered exclusion evidence, that is, the hair at the scene could not have originated from the suspect.

(b) a sample taken from a nail or from under a nail

8.1 In crimes where there had been physical struggle between the perpetrator and the victim, a flake of skin, a minute blood drop or a clothing fibre from the victim could become trapped under a nail of the perpetrator. Hence, it is important that in investigations of violent crimes, samples are taken from the nails or from under the nails of suspects.

8.2 A detected flake of skin or blood drop could be subjected to DNA analysis which could offer evidence being able to discriminate a person from hundreds of billions people. A clothing fibre could also offer very significant forensic evidence.

(c) a swab taken from any part other than a private part of a person's body including the mouth but not any other body orifice

9.1 In violent crimes with heavy blood-shedding, it is not uncommon for the perpetrator to be stained on his/her hands or spattered on the face with blood from the victim. By taking a swab of the bloodstained

hands or face of a suspect, DNA analysis could be performed and the results could offer evidence that could distinguish a person from hundreds of billions of people.

9.2 A swab of a person's mouth can produce DNA information for comparison with bodily materials found on exhibits related to crimes. It would be used for DNA analysis, the results of which could offer evidence that could distinguish a person from hundreds of billions of people.

(d) saliva

10.1 For purposes similar to those stated in paragraph 4.1 for blood samples above, saliva samples could be required for blood grouping for comparison with results previously obtained. These would be required for unsolved crimes for which blood grouping has previously been performed and no crime stain materials remain for further analysis.

10.2 Depending on the results obtained from previous analysis, the strength of the evidence could vary. If the crime sample only yielded one positive blood grouping result, the discrimination could be 1 in a few persons. However, the result could also serve exclusion purposes and this would be significant evidence.

(e) an impression of any part of a person's body other than the identifying particulars described in section 59(6) of the Police Force Ordinance (Cap. 232)

11.1 The identifying particulars described in section 59(6) of the Police Force Ordinance (Cap.232) include photographs, finger-prints, palm-prints, sole-prints, toe-prints and the height and weight measurements.

11.2 Under the proposed Bill, an impression of any part of a person's body could be an impression of the face, an ear or a forearm. It is not unheard of that in some cases, the perpetrator of a crime would leave an impression of a part of him/herself at the scene, e.g. a burglar leaving an impression of an ear on a door whilst eavesdropping to confirm that there was nobody in the premises. Also, in cases where there had been fierce fighting, sometimes an impression in blood of a person's forearm could be left at the scene. An impression of the appropriate body part of a suspect could be used for forensic comparison.

11.3 As with certain areas of forensic analysis, there is no standard for measuring the importance or weight of the evidence. However, the value would be particularly significant when the comparison offered exclusion evidence.

ADVICE SOUGHT

12 Members are invited to note the content of this paper.

Security Bureau
January 2000

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