NEW SOUTH WALES POLICE
FORENSIC SERVICES GROUP

Title: 26.0 Guidelines For Fibre Collection and Preliminary Examination		
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26.0 GUIDELINES FOR FIBRE COLLECTION AND PRELIMINARY EXAMINATION

1. SCOPE

This manual is for Forensic Services Group personnel and outlines the procedures for the recovery of questioned fibres from a scene or exhibit, and the collection of a known sample from an identified source for comparison. It also outlines the procedure for preliminary screening of fibre tapelifts.

2. PRINCIPLE

The underlying principle of all forensic trace evidence examination is that "every contact leaves a trace", also known as Locard's Exchange Principle. The purpose of the examination is then to investigate potential material exchanges by examining material, in this case fibres collected from one item and then comparing them to samples from a possible source that may have been in contact. This most often involves the possible association of two (or more) people or, alternatively, a person(s) to a scene. When two people come into contact there may be a transfer of fibres from the clothing of one person to another (a one way transfer) or in both directions (a two way transfer). Fibres may also be transferred from an item of clothing to a non-textile surface

3. CASE MANAGEMENT

All major crimes including murder, attempted murder and sexual assault cases should be considered for potential fibre evidence. Exceptions are incidents where it is clear no contact has occurred or any case where there has been legitimate prior contact. As a general rule, in cases where fibres may be important, recovery of these should be given priority. This is because they are not normally visible to the naked eye and are very easily lost. As transferred fibres are not physically held to the surface any movement of the item(s) will cause the loss of fibres. Too many movements or prior examinations of the item(s) will result in a fibre examination no longer being possible. Tapelifts for fibres

can subsequently be used for nuclear DNA testing, however the reverse is not possible.

Fibre transfer to car seats can be very useful in establishing a connection between a vehicle and a person. It is also possible to search for fibres transferred from a vehicle, most commonly from the carpet, onto the clothing of a person.

As colour is the only feature used when searching tapelifts, it should be noted that fibres that appear similar in colour at the stereomicroscope stage might not actually be similar to the target fibres after further, more detailed examination. Conclusions about possible fibre transfers can only be made after a full fibre examination.

Fibre examination will NOT be considered for exhibits that have not been packaged correctly and sealed.

Refer to **Crime Scene Procedures Manual – General**, Evidence Management

4. COLLECTION OF QUESTIONED FIBRES

As with other types of physical evidence, the initial collection is of any visible material by handpicking or use of tweezers, after recording its location and noting any foreign material adhering to the fibres (i.e. adhesive residue). The collected material can then be packaged in a paper boat and labelled with the location and secured in an exhibit bag.

Once visible material has been collected, the item should be tapelifted using the FSG Hair and Fibre Kit. It should be noted that most transferred fibres won't be visible to the naked eye or even oblique lighting, and so tapelifting should still be performed, even if there does not appear to be any material present.

The item or surface should be tapelifted in a systematic way and the location each tape was taken from recorded with its respective letter or number. Usually, the item can be divided into sections and each section is tapelifted with the one tape. For example, a T-shirt can be divided into four quarters on the front, four quarters on the back and the front and then back of each sleeve. It is essential that the tapes are not overloaded with fibres; there should only be a light, even covering. If the tape has lost its adhesive qualities then it is covered with too many fibres and is overloaded. Overloaded tapes will

not seal properly and are extremely difficult to examine. If ever in doubt, use a new piece of tape. Tapes are then attached to a clean overhead transparency and either labelled with the location or assigned a letter/number that is explained in your notes and sketches.

It is not the purpose of tapelifting to recover every fibre. A balance has to be achieved between the efficient recovery of extraneous fibres and filling the tapelift with fibres from the item itself. This balance will vary according to the nature of the surface being taped. In cases where the item is highly shedding and tapes are covered with fibres from the item only, these may be better used as a potential source of fibres that other items can then be searched for (target fibres).

4.1 Collection at the Scene

4.1.1 Homicide

Victims of homicides that appear to involve contact should be tapelifted *in situ* at the scene, in consultation with the attending Forensic Pathologist. The upper surfaces of bodies should be tapelifted before they are turned over or otherwise moved. In cases where decomposition is too far advanced, tapelifting may not be possible. In this situation the clothing and skin of the victim should be examined closely and any visible material collected by tweezers or handpicked.

Using the Crime Scene Operations Branch (CSOB) form Anatomical Chart – Body as a guide, divide the body into sections and reference with either a letter or number. *Refer to* FSG Forms, *Anatomical Chart – Body*. This may assist with determining the type of contact that has occurred. Start with the uppermost surfaces that are the most easily accessed. Any areas that have to be leant over should have already been tapelifted. Avoid areas where biological evidence is clearly present. Instead, examine these areas visually and collect any material present using clean tweezers. Disposable tweezers are usually not effective and a better alternative is to use the metal tweezers in the Hair and Fibre Kits. Ensure they are cleaned with an alcohol wipe before use and decontaminated after use. *Refer to* **Crime Scene Procedures Manual - General**, Contamination Prevention, *4.3.11 Decontamination of Implements/Tools*.

4.1.2 Sexual Assault/Assault

In cases of sexual assault and assault where fibre evidence may be important, it will not always be possible (or practical) to tapelift clothing before removal. In these cases, tapelifting is to be done during the initial examination of the items. It should also be documented where and when the clothing was collected as well as by whom. The tapelifting for fibres should then follow the guidelines in section 4.2

Where the assault has taken place in a vehicle, or a vehicle was otherwise involved, consideration should be given to tapelifting the seats. This is explained in section 4.3.

4.2 Collection From Exhibits In a Search Room

With garments, outer surfaces should be examined first unless the item is inside out already. It is not always necessary to tapelift inner surfaces of garments. However, in cases of sexual assault consideration should be given to also tapelift the inside of underwear, inside pants around the waist, inside of skirts and the inner 10-15 cm of tops around the lower edges (i.e. surfaces that may have been in contact during the event).

Items from victims and suspects should not be searched in the same physical location, where practicable. If this is not possible and the one physical location has to be used then extra precautions to prevent cross contamination must be taken. *Refer to* **Crime Scene Procedures Manual - General**, Contamination Prevention. If the examination of victim/scene exhibits and suspect exhibits cannot be physically separated by location, then they must be physically separated by time (i.e. the examinations are performed on separate days).

In cases where the items have been examined in the same physical location, a fibre comparison will not be performed unless one group of fibres are from a known source. The high risk of contamination when exhibits are examined in the same room means that similar fibres may be present due to contamination.

A **control tapelift** should also be collected. This is done by placing a clean piece of

tape adhesive side up to collect any extraneous fibres settling out from the room. At the end of the examination, place it on a separate overhead and label it as the control.

Clean Personal Protection Equipment (PPE) **MUST** be worn. *Refer to* **Crime Scene Procedures Manual - General**, Contamination Prevention. Ensure that any other person entering the search room during your examination is also wearing PPE. After one set of exhibits has been examined, the PPE **MUST** be replaced.

4.3 Tapelifts of Car Seats

Tapelifting vehicle seats should be done after the examination of the exterior of the vehicle and the interior of the doors. If the car is to be fumed for fingerprints, this should be done first after making the fingerprint examiners aware that they cannot come into contact with the seats until they have been tapelifted.

Refer to the Hair and Fibre Collection Kit Instructions for tapelifting vehicle seats.

5. COLLECTION OF KNOWN SAMPLES

After tapelifting for questioned fibres from textile surfaces, e.g. clothing, a sample of known fibres from the item needs to be collected. Known fibres should be collected using a tapelift from a pre-taped area that is representative of the general nature of the item. Items with a high degree of colour variation may require a number of known sample tapelifts. Whenever possible, a yarn from each direction of weave should also be collected.

To minimise the impact on other forensic examinations that may be required, known samples can be collected from the item after all examinations have been completed (i.e. DNA, textile damage). For non-textile surfaces (e.g. leather, vinyl, wood) no known samples need to be taken.

Tapelifts from a single item can then be packaged and sealed together in the one exhibit bag.

6. PRELIMINARY SCREENING OF TAPELIFTS

The first step is to determine which fibre types or **"target"** fibres will be searched for. **Target** fibres are fibres from a known source that are chosen because they are a strong colour, coarse in texture or have some other characteristic that makes them easier to search for. Items that are highly shedding and are dark in colour make better target fibres. For example, white cotton would not be suitable as a target fibre as it is colourless and very common and thus difficult to find on tapelifts. Similarly, do not nominate fibres from traditional blue denim garments as target fibres as these are so common and have little evidential value unless exceptional circumstances exist. On the other hand, a red acrylic fibre would make a good target fibre as it is an easy colour to search for.

6.1 Equipment

- Stereomicroscope
- Fine permanent marker

6.2 Examination

The fibres from the possible fibre sources (ie items of clothing from the suspect and/or victim) should be examined first using a stereomicroscope. At this level the colour of the fibres, and to some extent the fibre type, can be determined. After this examination suitable **"target"** fibres should be selected.

Tapelifts from items that may have been in contact are then searched for these target fibres. The positions of any fibres of a similar colour to the targets are then marked with a permanent marker. Generally, no more than two target fibres should be searched for at a time. Tapes can be examined again for more target fibres. Fibres similar to different targets can be marked with different coloured pens.

While searching tapelifts any large number of obvious extraneous fibres (ie. dark or distinctive colours, very coarse or very long fibres) should also be recorded. However, it is not the intention that all fibres present are recorded. In some situations however, this may be possible (ie tapelifts from an unclothed murder victim or fibres collected from a non-textile surface that would not normally hold fibres).

7. FURTHER EXAMINATION

When tapelifts have been searched and fibres similar in colour to the targets have been located then the case should be referred to the Criminalistics Chemist at Westmead Major Crime Laboratory for further examination. When submitting items for examination please include the following:

- All tapelifts and any known samples;
- If possible the garments themselves;
- A copy of the original exhibit entries;
- A Forensic Services Information Management System (FSIMS) Job Request through COPS with Westmead Laboratory as the completing station;
- Details of any possible sources of contamination or any special circumstances; and/or
- Contact details of the submitting officer.

8. ENQUIRIES

General enquiries about hair examination can be made by contacting the Criminalistics Chemist at Westmead Major Crime laboratory on [redacted] or by email ([redacted]).