

REPORT 1 9.3-9.8:

BRIEF INTRODUCTION TO THE VALUE OF TEXTILE FIBRES IN CRIMINAL INVESTIGATIONS



1. Fibres shed from clothing and form part daily environment; are very small, and left behind unknowingly
2. Extensive textile industry manufacturing a wide range of manmade and natural types (75) and colours/ shades
3. An expert is able to find the transferred fibres, compare them and provide evidence that links person to person or person to object
4. Used routinely in the UK since the 1970s – fibres form an important source of trace evidence – in the 1990s it was 2nd only to DNA –however not as routine today

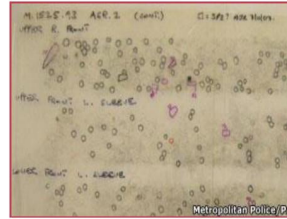
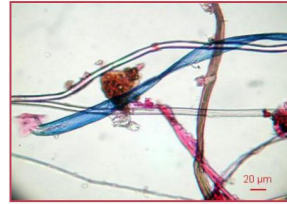
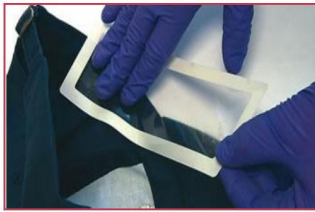


REPORT 1: TECHNIQUES & TESTS AVAILABLE
01/09/1997 – 15/08/1998

- SEARCH & RECOVERY
- MICROSCOPIC IDENTIFICATION & COMPARISON
- ANALYTICAL TESTING:
 - MSP (COLOUR)
 - TLC (DYE IDENTITY AND COMPONENTS)
 - FTIR (CHEMICAL MAKE UP)

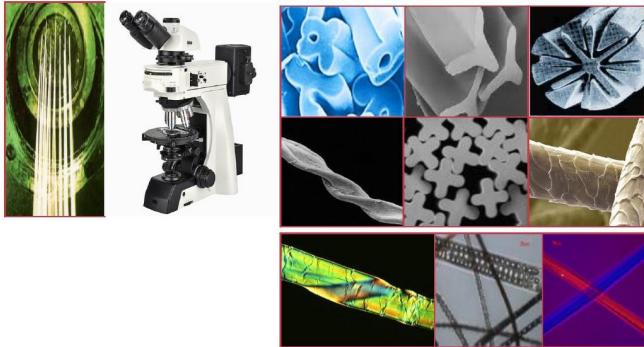
REPORT 1: 9.10-9.17

SEARCH & RECOVERY: VISUAL (ON OBJECTS) , TAPE LIFTS (TAKEN FROM CLOTHING);
LOCATING FIBRES OF INTEREST; TAKING REFERENCE SAMPLES FROM POTENTIAL
SOURCE GARMENTS



REPORT 1: 9.18-9.22

MICROSCOPIC IDENTIFICATION & COMPARISON: MORPHOLOGY & MANUFACTURING CHARACTERISTICS

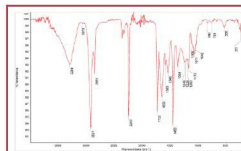
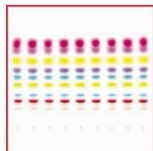
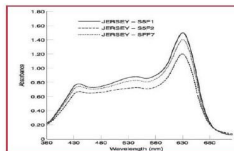


REPORT1: 9.23-9.31

ANALYTICAL TESTING:

VIS MSP (COLOUR) - TLC (DYE COMPONENTS) - FTIR (CHEMICAL MAKE UP)

- MSP: Depending on the mix of dyes and their purity, the graph produces a range of peaks and troughs which are compared
- TLC: Identifies the dye used and separation of the components within a single fibre and compared
- FTIR: identifies the chemical “fingerprint” of the polymer



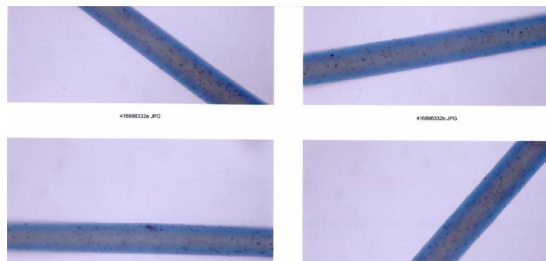
REPORT 2A: 7.25 – 7.40: FSANI OUTPUT

FSANI Results (rf. INQ025900 p140):

400 fibres recovered from 800+ exhibits, including populations of:

- BLUE/GREEN synthetic fibres *
- BROWN synthetic fibres
- GREEN synthetic fibres
- GREY synthetic fibres

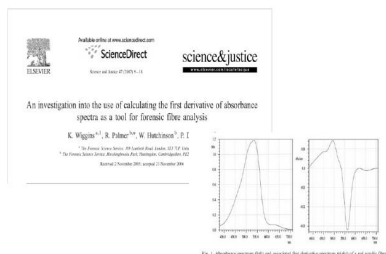
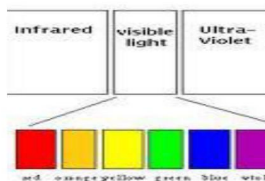
** 5 of which were recovered from glue within the TPU and said to match a jumper (PC3) recovered from an address related to Shane and Michael Broderick.*



(Examples of blue/green acrylic fibres: (rf. INQ025876) p.26-35)

FSANI Conclusion: the scientists involved considered the finding of the 5 blue/green acrylic fibres to be weak evidence and further testing (TLC?) appeared to suggest they no longer matched.

REPORT 2A: 7.41 – 7.47



Additional Testing available elsewhere:

UVVis MSP and 1st derivative were available in the Forensic Science Service (England & Wales) from 2000.

UVVis – an additional light source to test the fibre colour under Ultra-Violet light as well Visible White Light.

1st Derivative – uses the data in the original graph (Vis and UV) to highlight subtle changes. (rf. 7.41. 34. p10). The technique may assist with extra discrimination but does have limitations.

SUMMARY TO DATE

Until I satisfy myself with the parameters for the exclusion of the jumper (PC3) being the source of the 5 blue/green acrylic fibres recovered from the Omagh Bomb TPU, I am currently unable to agree with this original finding on the grounds:

1. Testing the potential source garment could require extensive sampling in line with the improved analytical techniques that were introduced during this period.
2. The application of UVVis MSP and 1st Derivative may have assisted with additional exclusion/ inclusion of the jumper being a potential source.