

#15

A METHOD FOR MONITORING SUBSTRATUM HYGIENE USING A COMPLEX SOIL; THE HUMAN FINGERPRINT

Paul J. Airey & Professor Joanna Verran*

Biological sciences, Manchester Metropolitan university, John Dalton Building, Chester Street, Manchester, M1 5GD, UK

ABSTRACT

Human fingerprint residue is an example of a specific and complex organic-material/microorganism soil which is often present in a variety of environments that are required to be hygienic. When applied onto surfaces a fingerprint may affect cleanability and influence bacterial retention, alter topography and in some cases, may even compromise the aesthetic qualities of the material. One of the most common modes of cross contamination in hygienic environments is via the human hand but this soil/microorganism matrix is rarely studied in controlled conditions.

In our study slight modifications were made to published sweat and sebum standard formulations to allow two Gram positive organisms (*Staphylococcus aureus* and *Staphylococcus epidermidis*) and a Gram negative representative (*Escherichia coli*) to survive in a synthetic fingerprint soil which will then allow hygienic assessment of a range of surfaces.

Alongside this, a method for depositing a range of organic soils in specific quantities and arrangements (e.g. the synthetic fingerprint soil in a fingerprint pattern) onto a range of substrata has been developed to allow cleanability to be assessed. A method to assess cleanability was developed by identification and quantification of individual chemical components of a given soil and their ease of removal from the surface. After a 'cleaning' procedure, the quantity of each component was again measured using the appropriate analytic technique. In the case of the fingerprint soil gas chromatography-mass spectroscopy (GC-MS) was utilised.