

'LASTGASPOLOGY' - DEVELOPMENT OF GASEOUS GCMSⁿ TECHNIQUES FOR FORENSIC APPLICATIONS

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To date the application of scientific techniques for forensic analysis has concentrated on the analysis of liquid samples (blood, urine, semen etc) and solid samples (tissue, glass, paint, fibre etc). However, if appropriate technology can be developed and proved there are many instances where gaseous samples could also be collected, analysed and used as evidence. Gas Chromatography Mass Spectrometry is a powerful technique for detection and quantification of various volatile compounds and, if coupled to the right gas sampling and preparation devices, could add valuable information to assist in forensic analysis.

For example:- a body found in a pine forest would be expected to have pine needles attached to the external surfaces as a consequence of Lachard's exchange principle – which states that every 'body' that comes in contact with another 'body' exchanges some material with each other. The presence of pine needles only proves that the body was found in a pine forest – which is already established. However, the analysis of the air in the deceased persons lungs would aid the investigation because if their lungs contained traces of volatile compounds exuded from pine forests then it can be surmised that they were still breathing when they were in the forest whereas, conversely, a low or absent concentration of pine volatiles indicates the person was dead before being brought to the forest. Further volatile 'fingerprinting' of the gaseous content of the lungs could aid in determining the atmosphere in which the person breathed their last breath which could pin-point the scene of the crime.

This paper will present preliminary findings in the application of GCMSⁿ analysis of volatiles from gases to assist the forensic science of 'lastgaspology'.
