Chapter 19
End User Commentary on The Application of Forensic Soil Science in Case Work and Legal Considerations

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Over the past 30 years, the investigation of homicide and other serious crimes has become a far more complex, challenging and specialist arena. In that time, strong and enduring relationships have been forged between those working in law enforcement and Forensic Science.

Significant scientific and technological advancements continue to provide far greater opportunities for investigators, resulting in;

- Many serious cases, both current and historic, being brought to a successful (and swift) conclusion
- Little or no challenges being mounted against presented forensic evidence
- Suspects being eliminated more quickly
- Opportunities for miscarriages of justice being reduced due to the integrity of evidence
- Victims, their families and indeed the public at large having greater confidence in the criminal justice system.

The key discipline of Crime Scene Management has developed markedly in recent times. All major investigation crime scenes must be managed professionally and effectively to preserve the integrity of evidence and indeed often acute challenges can be encountered by law enforcement staff and scientists alike when there are multiple locations which require to be secured/examined.

Police Forces have invested heavily in devising and developing training in disciplines such as Crime Scene Management (CSM), Production/Exhibit Handling and Search Advisor. Senior Investigating Officers (SIOs) view these roles as being key to ensuring forensic integrity and ultimately providing the greatest opportunity to identify the person(s) responsible for the crime under investigation.

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The discovery of a victim after a suspected homicide will result in the activation of Major Crime Protocols governed under the College of Policing, Authorised Professional Practice (APP), and the Murder Investigation Manual (2006) (currently under review).

Ultimately, after life has been pronounced extinct, the crime scene will be secured. Inner and outer cordons will be put in place and its sterility will be maintained at all times by attending officers who will be responsible for keeping a Scene Entry Log.

In Scotland, the next formal step in a case of this nature is to arrange a Forensic Strategy Meeting (FSM). This forum will assess and agree on the investigative priorities, challenges, risks and requirements. It will then examine resource requirements, establishing which specialist disciplines and processes will be deployed and how these will be sequenced/phased in partnership. At this stage, consultation often takes place with the National Crime Agency (NCA) to establish whether they can provide any specialist support to develop the investigation.

The membership of a FSM has changed dramatically over the last 5–10 years. On a regular basis, and particularly in cases with external scenes/deposition sites, specialists from a number of external organisations, and also from academia, are invited to participate.

Experts such as Professor Lorna Dawson, a Forensic Soil Scientist from the James Hutton Institute, Aberdeen, as well as Forensic Anthropologists, Archaeologists, Botanists and Entomologists, have provided advice and opinion in a number of major crime investigations throughout Scotland over the past 10 years.

Their input can be invaluable, especially in cases where an identified suspect requires to be linked through trace evidence (e.g. soil) on footwear/clothing/vehicle tyres, to a deposition site in another part of the country.

They have also given evidence at resultant High Court trials, such as HMA v. Angus Sinclair for the 'Worlds End Murders' following the deaths in 1977 of Helen Scott and Christine Eadie.

The use of combined databases in Geographical Information Systems (GIS) can help to bring together soil, geological, land cover information and police data to enable SIOs to prioritise searches on the ground.

In addition, the examination of historical undetected homicides (otherwise known as Cold Cases) has gained momentum over the past 10 years. The significant advances in Forensic Science, particularly around DNA/Fingerprint technology, have assisted such investigations greatly.

It has to be said, however, that utilising the expertise, skills, techniques and databases of forensic soil scientists, and engaging their network across the UK and beyond, is something that was not considered some 25–30 years ago. As a result, the re-examination of clothing/footwear or other more intimate samples, coupled with a review of initial search parameters, may provide SIOs with a range of new investigative opportunities.