



B143 Optimized Location of Forensic Evidence by Canines and Instruments Through Implementation of Best Practice Guidelines and SPME/GC-MS Methods

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After attending this presentation, attendees will better understand how an optimal combination of biological and electronic detectors can maximize the collection of evidence from crime scenes and improve counterterrorism efforts.

This presentation will impact the forensic science community by providing a better understanding of how biological and electronic detectors can, in combination, improve the collection of evidence by maximizing the location of trace evidence in an efficient, cost effective manner while minimizing the collection of samples not relevant to an investigation.

This paper describes ongoing studies involving the identification and quantification of dominant odor signature chemicals that can be used by certified law enforcement detector dogs and instruments to reliably locate forensic specimens including accelerants, biotoxins, currency, drugs, explosives and humans (living and deceased). In the work presented, methods developed using Solid Phase Microextraction / Gas Chromatography – Mass Spectrometry (SPME/GC-MS) have identified the dominant odor chemicals available at room temperature. The results demonstrate that canines are generally not using the relatively low volatility parent substances but instead use characteristic volatile headspace components to accurately locate specimens. The application of these results to the optimal selection of canine training aids and the tuning of instruments for these compounds are discussed.

In addition, the latest developments in consensus-based best practice guidelines for canines and machines will be discussed from the Scientific Working Group on Dog and Orthogonal detector Guidelines (SWGDOG) which is a partnership of local, state, federal, and international agencies including law enforcement and first responders. This project was undertaken as a response to concerns coming from a variety of sectors including law enforcement and homeland security about the need to improve the performance, reliability, and courtroom defensibility of detector dog teams and their optimized combination with electronic detection devices. This project is developing internationally recognized consensus-based best practice guidelines developed by a membership of respected scientists, practitioners, and policy makers representing diverse backgrounds within the canine community and comprises 55 members.

SWGDOG general meetings have been held biannually for the past three years to produce the initial set of guidelines with NIJ funding the management of this project and the travel for international members and the TSA/FBI funding travel and meeting costs for the domestic SWGDOG members. The approval of each subcommittee best practice document takes at least six months to complete including a two month period of public comments. The nine SWGDOG subcommittees and target timetable for posting of the best practice guidelines are as follows: unification of terminology (Part A - April 2006; Part B – October 2006; Part C – March 2007; Part D – August '07), (2) general guidelines for training, certification, maintenance, and documentation (April 2006) Publication in FSC October '06), (3) selection of serviceable dogs and replacement systems (October '06), (4) Kenneling, keeping, and health care (October '06), (5) selection and training of handlers and instructors (October '06), (6) procedures on presenting evidence in court (October '06), (7) research and technology (March '07), (8) substance detector dogs: Agriculture; Arson; Chem./Bio.; Drugs; Explosives; Human remains; Other/Misc. (August '07), and (9) scent dogs: Scent identification; Search and Rescue; Trailing dogs; Tracking dogs (August '07).

The adoption of these consensus based best practices by agencies certifying and/or deploying detection teams will provide a variety of benefits to local law enforcement and homeland security including improved interdiction and courtroom acceptance by improving the consistency and performance of deployed teams and optimizing their combination with emerging electronic detection devices.

Detector Dogs, Evidence Recovery, Consensus Guidelines