



D5 Characterization and Testing of Canine Training Aids for Forensic Victim Recovery Investigations

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After attending this presentation, attendees will have a better understanding of the challenges facing forensic canine specialists in today's world. There are several key challenges that need to be addressed, particularly the consistent or appropriate training of victim recovery canines across the community. If canines can be trained using a common training aid, the overall consistency of results should improve.

This presentation will impact the forensic science community by expanding the core group of people aware of these issues, which in turn may lead to faster and/or better research and development to address these key issues. Of equal importance is the benefit of having well trained, efficient canines that are consistently able to locate clandestine burials (i.e., human remains) and provide case related information, as well as some measure of closure for the families of these victims.

The use of canines in law enforcement and military applications is well-known. Canines are used to screen for drugs and explosives, to locate missing persons, to associate crime scene evidence with a suspect, and to locate victims of violent crimes. To do this, these canines require extensive training and conditioning. This training includes many facets, one of the most important of which is the use of training aids. In most of the situations listed above, standard training aids have been developed that can be used by the canine community and these training aids have been proven very successful for training canines. Of the group listed above, training aids for locating clandestine burials is of keen interest. The community of so-called victim recovery canines is quite diverse and not very well organized and training aids can vary widely. Some handlers acquire human tissue, human bone, human blood, "other"

cocktails, or one of a very few commercially available products. However, agreement over which training aid is the best to use for a given situation is lacking. The commercially available training aids offer the greatest potential advantages because they can be acquired by canine handlers across the world, which would help to standardize how the canines are trained.

For a training aid to be effective, it must very closely simulate the actual material that the canine is attempting to locate. In the case of human remains, this is not a simple task. There is some research that describes what volatile compounds have been found emanating from human remains. However, there are a number of factors that influence what compounds might be detected at the site of human remains: time since death, disposition of the body (surface, buried, or submerged), environmental factors, influence of scavengers, etc. As such, developing a training aid that can account for all of these variables is quite challenging. It is also possible that one training aid will not be sufficient to address all of these variables and canine handlers will have to use training aids that target the general conditions in which they find themselves at the time of their search. This presentation describes the characterization of commercially available training aids and the initial attempts at developing a training aid based upon current research activities in our laboratory.

Several different analytical approaches have been utilized to characterize the commercially available training aid formulations studied here. The basic approach involves collecting air samples from the training aids and analyzing those samples using gas chromatography with mass spectrometric detection (GC/MS). Air samples are collected primarily because they are the most relevant to canines. In this research, air samples have been collected and analyzed using thermal desorption methods, cryogenic methods, and solid phase microextraction (SPME). Preliminary results show how commercial training aids contain very few (i.e., <3) of the chemical signatures previously found to be associated with buried human remains. For the development of a new training aid, data from past research was utilized that identified 33 headspace components found above the sites of buried human remains. Mixtures of these compounds were then prepared and tested using canines to determine if positive responses could be achieved.

Canine, Clandestine, Burial