

OSAC RESEARCH NEEDS ASSESSMENT FORM



Title of research need:

Keyword(s):

Submitting subcommittee(s): **Date Approved:**

(If SAC review identifies additional subcommittees, add them to the box above.)

Background Information:

1. Does this research need address a gap(s) in a current or planned standard? (ex.: Field identification system for on scene opioid detection and confirmation)

Research is needed to develop reliable surrogate training aids, particularly for human remains, as well as for live human scent, drugs and explosives. These surrogates would be used to compliment difficult to obtain and often controlled and hazardous materials that are currently used to train canines. Ideally, these provide controlled delivery of chemicals to provide a range of operationally relevant concentrations of odor to maintain performance and to provide for a standard by which to assess calibration (i.e., working threshold). Currently the state of knowledge is insufficient and/or contraindicates the use of surrogate continuation training aids for initial training or certification.

2. Are you aware of any ongoing research that may address this research need that has not yet been published (e.g., research presented in conference proceedings, studies that you or a colleague have participated in but have yet to be published)?

Unknown

3. Key bibliographic references relating to this research need: (ex.: Toll, L., Standifer, K. M., Massotte, D., eds. (2019). Current Topics in Opioid Research. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88963-180-3)

Lazarowski L, Krichbaum S, DeGreeff LE, Simon A, Singletary M, Angle C, Waggoner LP. (2020) Methodological considerations in canine olfactory detection research. *Frontiers in Veterinary Science* doi: 10.3389/fvets2020.00408
Simon AG, DeGreeff LE, Frank K, Peranich K, Holness H, Furton KG (2019) A method for controlled odor delivery in olfactory field testing. *Chemical Senses* 44: 399-408
Furton, K. G. and L. J. Myers. "The scientific foundation and efficacy of the use of canines as chemical detectors for explosives." *Talanta* 54.3 (2001): 487-500.
Harper, R. J., J. R. Almirall, and K. G. Furton. "Identification of dominant odor chemicals emanating from explosives for use in developing optimal training aid combinations and mimics for canine detection." *Talanta* 67.2 (2005): 313-27.
Macias, M. S. and K. G. Furton. "Availability of Target Odor Compounds from Seized Ecstasy Tablets for Canine Detection." *Journal of Forensic Sciences* 56.6 (2011): 1594-600.
Macias, M. S., et al. "Detection of piperonal emitted from polymer controlled odor mimic permeation systems utilizing *Canis familiaris* and solid phase microextraction-ion mobility spectrometry." *Forensic Science International* 195.1-3 (2010): 132-38.

Macias, M. S., R. J. Harper, and K. G. Furton. "A comparison of real versus simulated contraband VOCs for reliable detector dog training utilizing SPME-GC-MS." American Laboratory 40.1 (2008): 16-+.

Vu, D. "Process for producing non-detonable training aid materials for detecting." US Patent No US9108890B2. April 18, 2015.

4. Review the annual operational/research needs published by the National Institute of Justice (NIJ) at <https://nij.ojp.gov/topics/articles/forensic-science-research-and-development-technology-working-group-operational#latest>? Is your research need identified by NIJ?

No

5. In what ways would the research results improve current laboratory capabilities?

Matching key compounds/components of pseudo more closely to that of true target source. Provide a range of operationally relevant concentrations of odor to maintain performance and to provide for a standard by which to assess calibration.

6. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

The research would improve understanding of the subcommittee to be used in drafting standards related to training and certification.

7. In what ways would the research results improve services to the criminal justice system?

The standards will result in improved detector canine operational performance as a result of an expected increase in more effective and efficient canine training. Validation and standardization of training aids utilized in canine training regimens.

8. Status assessment (I, II, III, or IV):

I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.