Naval Research Laboratory

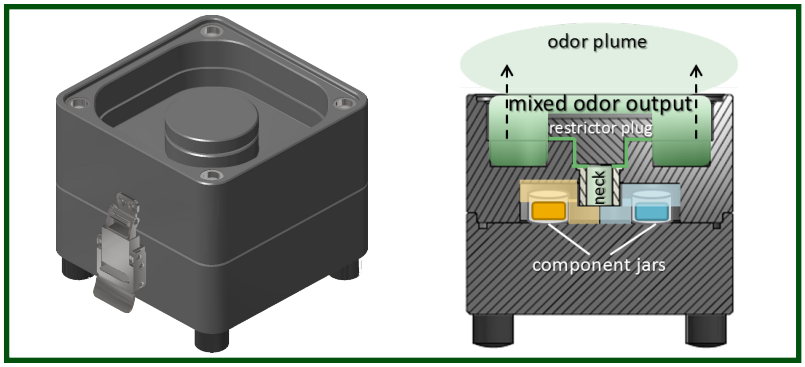
The Corporate Laboratory for the Navy and Marine Corps

Mixed Odor Delivery Device (MODD) for Canine Training on Binary Explosive Materials

Though many instrumental detectors have been developed, canines continue to be the gold standard in the detection of binary explosive mixtures commonly found in HMEs (homemade explosives). It has been shown that canines are significantly less effective when trained on the individual components alone instead of the mixture, and yet training on the mixtures poses a substantial safety risk. For this reason, the US Naval Research Laboratory (NRL) has developed the mixed odor delivery device (MODD) to safely contain binary explosive components and delivers the mixed odor in a manner that the component type, ratio, and total vapor output is easily adjustable.

This patent-pending device holds explosive components in segregated vials with no mixing, alleviating safety concerns. Individual component vapors move from the vials into a neck where they mix as they diffuse towards the top of the MODD, yielding mixed vapor for canine sampling.

In experimental testing, canines located the MODD containing separated components of a mixture at the same rate as when containing the actual mixed explosive. Results indicated that the canines recognized both the mixed and unmixed samples in the MODD as the same odors. Laboratory testing has further confirmed that the odor available from the segregated components at the top of the MODD is consistent with that of the mixed odor. Potentially, the MODD could be utilized with other explosive components, narcotics, or distractor materials. NRL seeks a partner with whom to collaborate for further development, as well as a partner to license and commercialize this innovative technology.



Benefits:

- **Safe:** Explosives components are not mixed, removing safety issues.
- **Portable:** Small enough to be carried in a backpack ; < 5 lbs; 5" x 5" x 4.5"
- **Efficient:** Reduces sample size needed for testing
- **Adjustable:** : Adjustable restrictor plug and four slots for vials allows for total vapor and vapor ratios to be easily changed without reweighing of materials. Components type can be changed following easy cleaning procedure.
- **Removes visual cueing:** Does not give canines or handlers visual cues that would distort test results

References:

US Patent Publication No. US20140311420, other patents have been filed.

DeGreeff, Lauryn E.; Malito, Michael; Katilie, Christopher J.; Brandon, Andrew; Anath, Ramagopal; Rose-Pehrsson, Susan L. Analytical support, characterization, and optimization of a canine training aid delivery system: Phase one. *Naval Research Laboratory Memorandum Report 6180--15-9603. Feb. 18, 2015.*

For more information contact: Rita Manak, Ph.D. Head - Technology Transfer Office - (202) 767-3083 - rita.manak@nrl.navy.mil