Mixed Odor Delivery Device (MODD)

For Canine Training on Binary Explosive Materials

AT A GLANCE

WHAT IS IT?

Canines continue to be the gold standard for the detection of mixed homemade explosives (HME). ONR recently demonstrated that canines are more effective when they are trained on actual explosive mixtures, as opposed to its separated components. However, safety issues involved with storing and transporting live explosives makes routine canine training difficult, so ONR investigated whether safely separated components with their odors mixed could be an effective and safe training alternative, leading to the development of the Mixed Odor Delivery Device (MODD).

HOW DOES IT WORK?

The device can safely and separately contain components of binary explosives, is compact and rugged, requires only small amounts of material, can contain up to 4 vials, and can adjust odor release through its restrictor plug design. Both computational and laboratory results show that separated component odors are equivalent to the mixed odor.

WHAT WILL IT ACCOMPLISH?

Canines, with olfaction abilities far exceeding our own, can distinguish extremely minute nuances between odors. For example, if we train them on odor X, they may not understand we want them to alert to X when it is mixed with Y. The MODD can allow us to easily vary ratios and components, as the variations of HME recipes are infinite, as are apple pies. A major focus of ONR's Expeditionary Canine Sciences portfolio is exploring the generalization, or concept formation, of related odors so we can best prepare our detection canines.

POINT OF CONTACT

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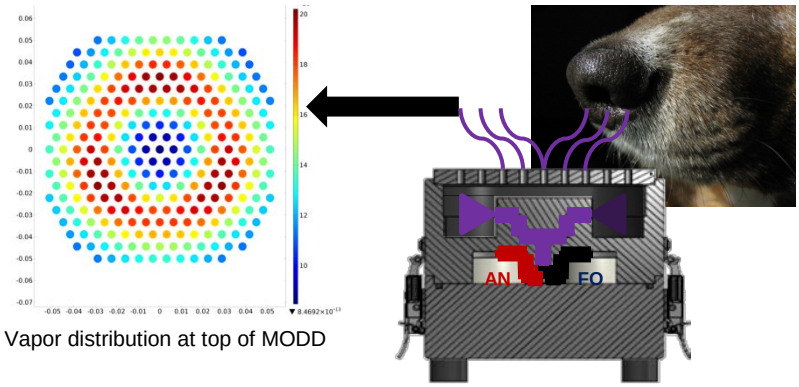
Explosive components separated, but vapors are mixed



Vapor distribution at top of MODD

Practical Demonstration:

1

Sniff components separately (apple, cinnamon and vanilla extract).

2

Then sniff the mixture from the MODD. The exact same components are inside, but the mixture smells like apple pie.