

DHS Science and Technology Directorate

Canine Explosives Detection Program

Dogs' sense of smell makes them crucial assets for homeland security

The Department of Homeland Security, Science and Technology Directorate (S&T) is well aware that dogs' noses are a million times more sensitive than a human's nose and can be trained to detect a wide variety of specific scents, such as drugs, fruits and explosives. Dogs are trained to alert their handlers to the presence of these hazardous items by pawing, barking or in the case of something dangerous, sitting or lying quietly.

The demand for dogs for homeland security missions is increasing

Dogs are tremendously useful team members for sniffing out threats to homeland security, and the demand for top-notch canines is ever increasing. For explosives detection, canine training is especially critical, calling for the best training aids, tools, and techniques.

There are shortages in breeding robust puppies with the intelligence, temperament, and most importantly, the "noses" to find hidden contraband. Additionally, facilities often lack sufficient non-hazardous, homemade explosives (HMEs) canine training aids.

Program accomplishments to date

- S&T successfully tested low-cost explosive odor training aids for HMEs that are considered safe and non-hazardous with the Transportation Security Administration (TSA) canine teams.
- S&T delivered the results of independent operational testing of canine teams working in the air cargo search environment, as well as the results of TSA passenger-screening canine teams at three airports, to TSA. These results demonstrated operational strengths and weaknesses and helped determine concepts of operations for operational use. S&T conducted behavior analysis work that led to improved and validated testing for dogs bred in the TSA breeding program for canine explosion detection work. This work confirmed that the approach used to selectively breed canines for specialty detection leads to behaviors that are beyond random chance.

Milestones, deliverables and transitioned products

S&T expects to reach specific milestones in this program. In fiscal year (FY) 2013 S&T tested and validated the de-

sign and manufacturing approach of low-cost, non-hazardous HME canine training aids for use by TSA.

Through FY 2014, S&T provided detection results and recommendations for canine teams deployed in airports, at large stadium events and at mass transit venues.

S&T also wants to identify pertinent canine behavior cues and potential DNA markers that make successful detection dogs, as well as to gain greater understanding of the science of olfaction through FY 2015.



Projects now being funded within this program:

Canine Training Aid Development and Test: Deliver low-cost, non-hazardous HME canine training aids for safer training. Making such training aids more available will increase HME detection proficiency.

Canine Operational Environment Assessments: Assess the canine explosives detection capability in operational environments to improve canine training and performance.

Canine Structure and Function: Determine the behavioral and genetic identifiers of successful explosives detection dogs and use that information to improve breeding programs.

S&T customers and partners

S&T is working with TSA; the Federal Bureau of Investigation; Bureau of Alcohol, Tobacco, Firearms and Explosives; U.S. Department of Defense; and state and local law enforcement to refine canine explosives training programs.



Homeland Security

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To learn more about the Canine Explosives Training Program, email sandt.explosives@dhs.gov.