Science and Technology

## TRANSPORTATION SECURITY & EXPLOSIVES CHARACTERIZATION

# SAMPLE COLLECTION CHAMBER FOR SCENT DETECTION

### A CONCEPT FOR A CONTACTLESS SAMPLE COLLECTION SYSTEM THAT WOULD USE CONCENTRATED PARTICLE AND VAPOR CAPTURE FOR IMPROVED SCENT DETECTION BY K-9S

Detecting illicit substances and materials is an essential component of transportation and event security. K-9 units are often used to supplement threat detection protocols, especially when screening individual persons or objects. However, effective K-9 detection of trace amounts of illicit substances requires close contact between the subject and the K-9 units which can increase screening times and lead to bottlenecks in security checkpoints.

The envisioned Sample Collection Chamber would allow for contactless, accurate illicit substance detection when screening subjects for threats, capturing and concentrating particles and vapors for the K-9 units. A subject would step into the chamber, where pressurized air is blown over the subject and then captured in a receptacle where it would be screened by K-9 or swabbed for compound detection. The Sample Collection Chamber could also be used to enable a self-service screening option at security checkpoints.

An alternative application for the Sample Collection Chamber concept would be for use in disease detection with K-9-assisted diagnostics.

## KEY BENEFITS

+ Increases vapor sample concentration for more accurate threat detection
+ Apparatus can be adjusted for optimal air distance based on subject size
+ Provides contactless, non-invasive threat detection
+ Allows for faster identification and response of potential threats

## STAGE OF DEVELOPMENT

Proof of Concept

## PARTNERSHIP SOUGHT

Licensing or Collaborative Research and Development Agreement (CRADA)

## INVENTORS

Mark A. Fry

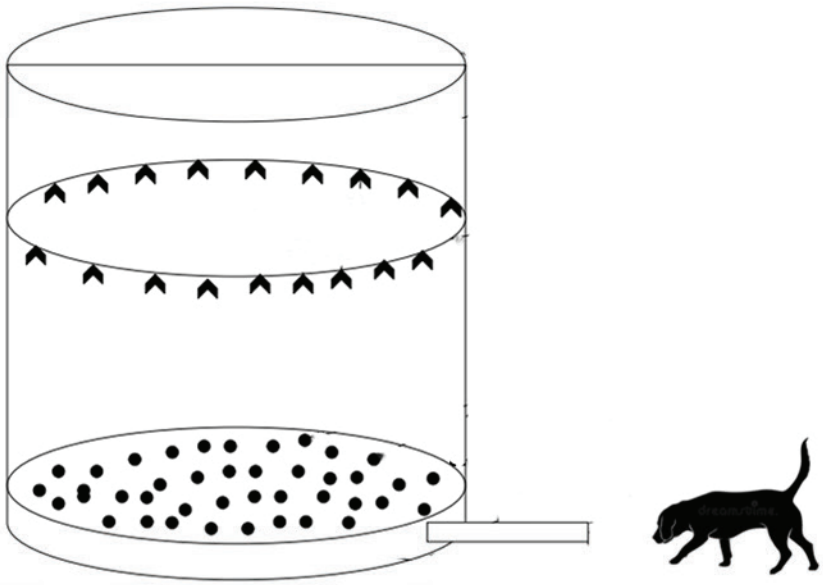
## DHS COMPONENT

Science and Technology Directorate

The Technology Transfer and Commercialization Branch (T2C) within the Office of Industry Partnerships (OIP) of the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) serves as the centralized point to manage technology transfer activities throughout DHS and the DHS laboratory network. **T2C@hq.dhs.gov**

# THE TECHNOLOGY

The invention consists of a cylinder where the screened subject stands. Tubing around the cylinder directs air into the cylinder, pushing vapor and particles off of the subject to the base of the platform. The vapor and particles are captured by vacuum and carried through a channel to a receptacle for detection or analysis by instrument or K-9. The chamber and air nozzles can include "smart sensing" features that will adjust the air nozzle placement depending on the size of the subject. This contactless method of capturing a concentrated air sample from a subject increases the likelihood that a K-9 or other identification system will detect potential threats faster.



*An open screening portal which includes a sample collection apparatus for scent detection*

## APPLICATIONS

**The technology has several potential end-users:**

+ **Transportation security: air, rail, ship**
+ **Restricted access sites with high screening volume: government buildings, sports stadiums, high-profile venues**
+ **Disease detection and diagnostics**

## PATENT INFORMATION

**US Patent numbers 11,313,771**

## CONTACT INFORMATION

+ **T2C@hq.dhs.gov**

TECHNOLOGY SOLUTION

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