

My name is Sheldon Brunk, and I am here today to discuss the value of 3rd party consumable items for use with commercial Explosives Trace Detection (ETD) devices. For 20 years, I was a US government employee and served as certification test director for ETD at the Transportation Security Lab (TSL) in Atlantic City, NJ. I conducted every ETD certification test event at TSL, beginning at the inception of the trace certification program following the tragic events of 9/11, and ending with my retirement in 2020. The TSL is owned and operated by the Department of Homeland Security, Science & Technology Directorate, and is widely regarded as the premier Test and Evaluation lab for transportation security threat detection equipment for the Federal government as well as worldwide. Besides ETD systems, the TSL also tests and certifies metal detectors, whole body imagers, x-ray and computed tomography scanners for checkpoint and checked baggage, and bottled liquid scanners. Testing assesses compliance with customer-defined detection requirements. These performance requirements are typically defined by the Transportation Security Administration (TSA), which is TSL's primary customer.

Here is a brief summary of my background. Prior to joining the government, I spent over 20 years as a board-certified and state-licensed clinical and forensic toxicology laboratory director. I have a Ph.D. in Analytical Chemistry from the University of Illinois, and completed a post-doctoral Fellowship at the University of Oregon Medical School.

With that said, I will now turn to another important ETD issue: consumable supplies and materials used to support ETD operations in the field. Historically, Original Equipment Manufacturers (OEM) of ETD systems have offered these products for sale as a sole-source for these items, often at inflated prices and with poor customer support. Consequently, government agencies (TSA in particular) expressed a need for lower priced items and alternative sources of supply to minimize the impact of back orders. But before 3rd party items can be placed into service, they must be evaluated for suitability and performance effectiveness. That's where the TSL steps in. TSL is uniquely positioned to evaluate ETD 3rd party products because TSL is in the business of testing and certifying the ETD systems themselves. Before testing can begin, prospective vendors are required to submit a data package showing evidence that the product is available, has been tested by the vendor, and is suitable for use in the field. Once a product has been accepted for testing, the next step is a test for equivalence to the corresponding OEM product. The equivalence test is a rigorous process, with a test design developed in collaboration with TSL's in-house statistician. I cannot go into details of the test design, as this information is government test-sensitive. Suffice it to say, the test is robust enough to state with reasonable scientific certainty that the products are either equivalent or not equivalent. To evaluate sample media (also called sample swabs or sample traps), quantitative trace amounts of explosives are deposited on sample media using a TSL-patented process called Dry Transfer. The amounts chosen correspond to the amounts specified in TSA's detection standard (classified document). This process is used in ETD certification testing as well. Then 3rd party and OEM sample media are tested side-by-side at the same time, on the same systems under identical conditions with the same ETD operator. To take into account variability between individual ETD units, three units are used in each test, with samples distributed equally between the 3

units. ETD systems for each test are provided by and maintained by TSA, with current TSA software versions installed. Another part of the test is a nuisance alarm test, which measures alarm rate on clean, non-doped sample media. Finally, at the conclusion of the test, data are evaluated and a determination is made of equivalence or non-equivalence using defined statistical confidence intervals.

Calibration and verification materials are evaluated differently. 3rd party and OEM materials are tested daily, side-by-side, over a pre-defined time interval and successful calibrations/verifications are recorded and compared, along with the number of cycles required to return the ETD to the "Ready" state. Other materials, such as drier cartridges are evaluated side-by-side in two separate ETD units over a time period of not less than 30 days.

In my experience, for over 16 years DSA trace products have consistently met or exceeded TSL/TSA performance requirements. And the feedback I have received over the years from TSA users/customers gives DSA uniformly good scores for pricing, customer service and responsiveness. I strongly recommend DSA for ETD consumable products.

Sheldon Brunk, Ph.D.