

CHEMICAL AGENT VAPOR CAPTURE SYSTEMS



SAFE EFFECTIVE, HIGH FIDELITY PERFORMANCE

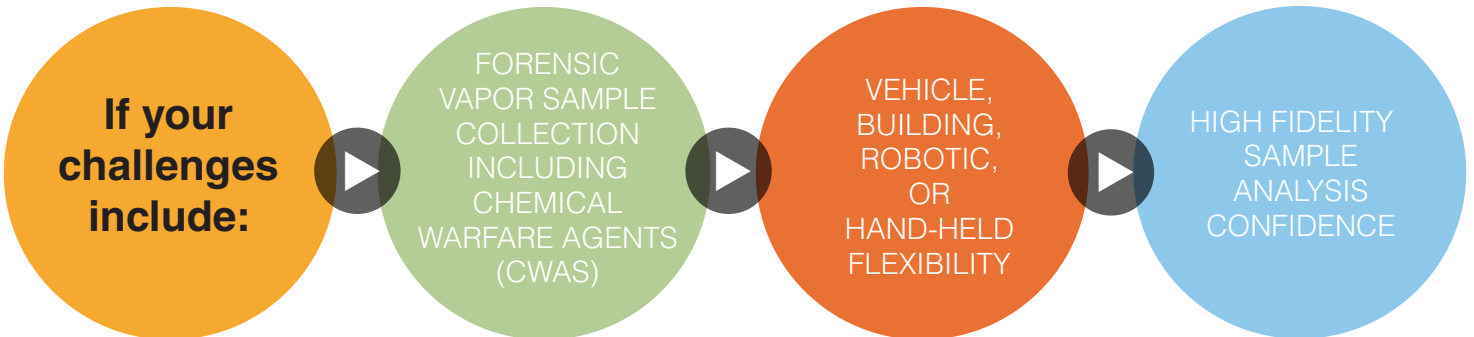
Over the past decade, Battelle has developed, refined, tested, produced, and fielded a vapor capture capability for Chemical Warfare Agents (CWAs) and Toxic Industrial Chemicals (TICs).

The Vapor Capture for Chemical Warfare Agents (VCCA) System was commercially developed by Battelle as an environmentally ruggedized, vehicle mounted capability for the United States Army. The VCCA System incorporated optimized Battelle technologies to ensure once vapor samples were captured, that they would be viable for safe transport to a certified chemical analysis laboratory in theater or shipped to the Continental United States (CONUS). The heart of the system is an evacuated 400 milliliter stainless steel canister. The system employs a heated sample transfer line to transport vapor to the stainless steel

canister. Once the system is primed with the vapor sample, a valve is electronically opened to enable the evacuated canister to draw in the vapor sample. The canister design includes multiple safety and human factors engineering analysis margins, including sample collection to less than ambient pressure to physically prevent leakage from ever occurring, and engineering all wetted path surfaces and components to be completely internal to prevent operator contact with contamination. The system employs three Sample Canisters for the collection of three independent samples.

Advantages

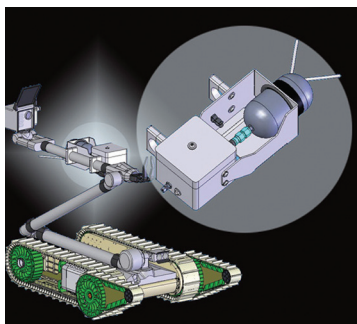
- Tested to US Military Specification for System Performance
- Produced and Fielded in US Army Vehicles
- Life Cycle Support and Forensic Chemical Analysis Supported by Battelle



HIGHLY SPECIALIZED PRODUCTS FOR HIGH FIDELITY CHEMICAL VAPOR CAPTURE

The VCCA System technical approach proved to be highly successful in laboratory testing with a variety of CWAs and interferents emulating real life environments. Further, the entire system was fully tested for ruggedness survivability in full spectrum of MIL-STD-810 environmental survivability testing. Since this system is currently in production at Battelle, the system and Sample Canisters undergo periodic re-testing to reconfirm performance.

Proven reliable, the stainless steel Sample Canister approach was extended to include a tailored, less rugged (less expensive) design for vehicles, buildings, a ruggedized design for robotic applications, and also a hand-held expedient chemical vapor sampler for use in Mission Oriented Protective Posture (MOPP) IV or similar protective ensemble for direct sampling in contaminated environments (below).



ENGINEERING CAPABILITY

- Vapor Capture for Chemical Agent (VCCA) systems design tailored to meet specific customer needs based on proven technical approaches for vapor capture in rugged environments
 - mobile systems
 - buildings
 - robotic systems
- Designs incorporating proven human factors engineering and safety engineering approaches
- Military environment tested solutions including Mil-Std-810, Mil-Std-461, and Mil-Std-1275

ANALYTICAL CHEMISTRY LABORATORIES (ACL)

- State of the art chemistry laboratories perform research and development of highly sensitive methods for analysis of samples to determine the presence of select chemical compounds, forensic analysis, and custom synthesis

Vapor	Humidity*	Interferents	Performance
Sarin (GB)	X	X	X
Sulfur Dioxide (SO ₂)	X	X	X
Cyanogen Chloride (CK)	X	X	X
Phosgene (CG)	X	X	X
Nitrogen Dioxide (NO ₂)	X	X	X

*Various Humidity Levels

PRODUCTION CAPABILITY

- Over 500 systems produced and supported
- Over 4000 Sample Canisters produced and supported
- Full life cycle support logistics

Every day, the people of Battelle apply science and technology to solving what matters most. At major technology centers and national laboratories around the world, Battelle conducts research and development, designs and manufactures products, and delivers critical services for government and commercial customers. Headquartered in Columbus, Ohio since its founding in 1929, Battelle serves the national security, health and life sciences, and energy and environmental industries. For more information, visit www.battelle.org.

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