

About Battelle

Battelle is the world's largest nonprofit independent research and development organization, providing innovative solutions to the world's most pressing needs through its four global businesses: Laboratory Management, National Security, Energy Technology, and Health and Life Sciences. It advances scientific discovery and application by conducting \$5 billion in global R&D annually through contract research, laboratory management, and technology commercialization.

Vapor Capture for Chemical Agents (VCCA)

Background

Chemical releases which occurred during the Persian Gulf War (Desert Storm) revealed a critical need to obtain evidentiary samples when Chemical Warfare Agents (CWAs) or Toxic Industrial Materials (TIMs) are released on the battlefield.

"...the concern that release of Iraqi chemical agents, possibly as result of the bombing of Iraqi chemical weapons storage sites, particularly Khamisiyah, might have exposed some members of the U.S. armed forces to the chemicals..." *DCI Persian Gulf War Illnesses Task Force, Khamisiyah: A Historical Perspective on Related Intelligence, April 9, 1997. Unclassified, 24 pp.*

Solution

A 400 ml coated stainless steel vacuum canister or Sample Canister. Sample Canisters are used to acquire and maintain a viable chemical sample for an extended period of time until they can be analyzed.

Performance

Environmental:

- Operating Temp Range 0–100°F (-18–38°C)
- Storage Temp Range -60–160°F (-51–71°C)

Chemical Vapor Performance:

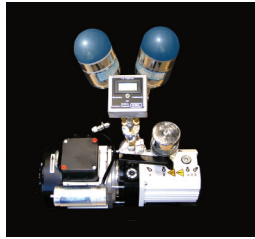
- Agent and interference test challenges were selected to represent a comprehensive spectrum of CWAs and Toxic Chemical Vapors anticipated under any operation environment.
- Operates in humidity.
- Survives wheeled vehicle vibration environments.

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

Logistics

- Supportability Analysis
- Comprehensive Maintenance Process



Training

- Technical Manual
- Training Support Package
- Training Material

Innovative Design

- Vacuum canisters
 - Captures ALL chemical vapors in a given area
- Versatile
 - Can be adapted to multiple platforms
- Portable
 - Less than 50 lbs (110 kg)
- Power Efficient
 - 28 VDC (3 amp max, 1.5 amp nom)
- Easy to use
 - Push button operation with remote operation option

Safe

- Health Hazard Assessment
- Safety Assessment Report

Sample Canisters (SC) Safety Margin

- SC never fills to ambient (outside) pressure during sample collection
- SC stem valve performance improves with increasing internal pressure
- SC performance tested to wide range of ambient environmental temperatures
- SC has a shelf life of 1 year with continuing efforts to extend the shelf life.

▶ RELATED TECHNOLOGY

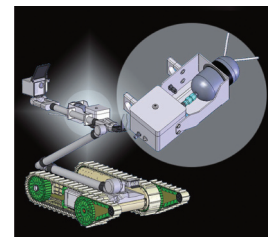
Vapor Capture for Chemical Agents (VCCA)—Buildings

- Stationary Application
- Common Consumables
- Common Training
- Push button operation with remote operation option



VCCA—Robot Platform

- Robotic Application
- Common Consumables
- Common Training
- Push button operation with remote operation option



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