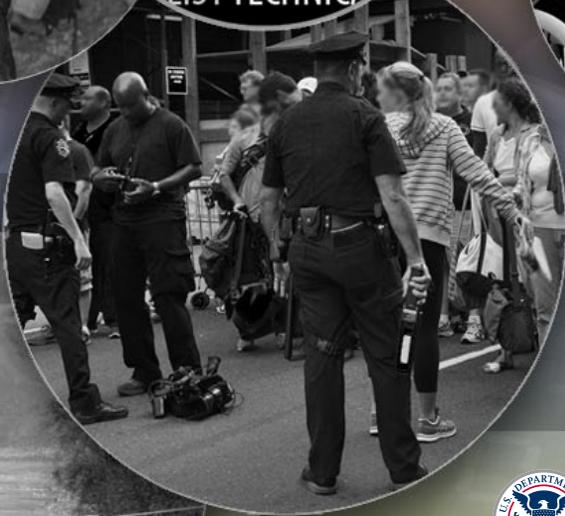




TOLOGY GUID
BOOK VALIDATION REP
LETTER MARKET SURVEY REP
CUS GROUP REPORT TECHNO
MMARY ASSESSMENT REP
ST LIST TECHNICAL



System Assessment and Validation for Emergency Responders (SAVER)

Year in Review

2013



**Homeland
Security**

Science and Technology





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INTRODUCTION

To meet current national challenges, Federal, state, and local responders are purchasing emergency response equipment at an increasing rate. Although equipment is often tested by manufacturers in a controlled laboratory environment, the overall safety, quality, reliability, and maintainability of the equipment may be significantly affected as each item functions in a field environment as part of an operational system.

The System Assessment and Validation for Emergency Responders (SAVER) Program was established to assist responders with procurement decisions. Located within

the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T), the SAVER Program conducts impartial, practitioner-relevant, operationally oriented assessments and validations of commercial off-the-shelf, emergency response equipment that falls within the categories listed in the DHS Authorized Equipment List (AEL). Results are then shared with responders, enabling them to better select, procure, use, and maintain emergency response equipment.

The SAVER Program shares assessment results and other relevant equipment

information with responders through the publication of various reports completed within the past year. SAVER publications, including market survey, focus group, and assessment reports, are made available to responders in the SAVER section of the Responder Knowledge Base (RKB) website.

The SAVER Program is supported by a network of technical agents who conduct assessment and validation activities, coordinate responder participation in the program, and produce SAVER publications. Through its use of technical agents, the SAVER Program is able to research and evaluate

an extensive range of emergency response equipment. Between October 2012 and September 2013, technical agents completed 27 projects, assessed 34 products, and produced 114 publications. Brief descriptions of these projects are provided in the subsequent pages of this report.

Technical agents enlist responders to participate in SAVER focus groups and assessments, providing the foundation for the SAVER Program. Through their participation in focus groups, responders assist technical agents in determining information needs and evaluation criteria. Those criteria, which address the overall affordability, capability,

deployability, maintainability, and usability of emergency response equipment, are then evaluated by responders using operationally relevant tasks during SAVER assessments. Between October 2012 and September 2013, 82 responders participated in 6 focus groups and 5 assessments for the SAVER Program.

The SAVER Year in Review provides an overview of the SAVER Program and the projects that were completed within the previous year. For more information on the SAVER Program or to view SAVER publications, visit the SAVER section of the RKB website, [HTTPS://WWW.RKB.US/SAVER](https://www.rkb.us/saver).

SAVER ACCOMPLISHMENTS

* Annual Accomplishments (October 1, 2012, to September 30, 2013)

† Accomplishments to Date (July 1, 2004, to September 30, 2013)



Criteria related to life-cycle costs of a piece of equipment or system.

AFFORDABILITY

Criteria related to the power, capacity, or features available for a piece of equipment or system to perform or assist the responder in performing one or more relevant tasks.

CAPABILITY

Criteria related to the movement, installation, or implementation of a piece of equipment or system by responders at the site of its intended use.

DEPLOYABILITY

Criteria related to the maintenance and restoration of a piece of equipment or system to operational condition by responders.

MAINTAINABILITY

Criteria related to the quality of the responders' experience with the operational employment of a piece of equipment or system. This includes the relative ease of use, efficiency, and overall satisfaction of the responders with the piece of equipment or system.

USABILITY

SAVER ASSESSMENT PROCESS

The SAVER Program developed an assessment process that guides technical agents through the assessment and validation of commercial off-the-shelf, emergency response equipment. The assessment process ensures that the SAVER Program produces objective information to share with the responder community.

Identifying Information Needs and Equipment Prioritization

To determine what equipment will be assessed, the SAVER Program, on an annual basis, considers Homeland Security Presidential Directives 8

and 5 (HSPD-8 and -5) and the Federal Emergency Management Agency's (FEMA's) strategic goals and priorities, as well as the information needs of the responder community. After consideration, the SAVER Program develops a project list for the fiscal year. SAVER projects may include equipment that has never been assessed by the program or equipment that has been assessed but requires an updated evaluation due to technology changes or variances in application for different responder disciplines. DHS S&T and the FEMA National Preparedness Directorate then collaboratively discuss

and develop an annual prioritization plan for testing and evaluating commercial equipment. After information needs are identified and the equipment to be assessed is prioritized, DHS tasks the appropriate technical agents.

Project Planning and Execution

Prior to the start of any project, the SAVER Program ensures no actual, potential, or perceived conflict of interest will be encountered by the technical agents or responder participants while executing project tasks, guaranteeing the "honest broker" nature of the SAVER Program. The basic elements

of a SAVER project include conducting a market survey, facilitating a focus group, conducting an assessment, analyzing assessment results, and producing SAVER reports.

Conduct Market Survey. The purpose of the market survey is to provide information on a particular type of commercial off-the-shelf, emergency response equipment. The information provided is meant to be useful in determining the types of equipment available for use by responders. The SAVER Program applies due diligence to develop reports that are representative of the marketplace.

SAVER PROGRAM PROJECT EXECUTION



Facilitate Focus Group.

Focus groups are composed of responders who are familiar with the type of equipment that will be evaluated. One purpose of the focus group is to develop evaluation criteria for assessment. Focus group participants also recommend scenarios that may be used during the assessment, identify information needs, and suggest product selection criteria and/or specific products for assessment.

Conduct Assessment.

Responders participate in SAVER assessments by evaluating a representative sample of equipment based on evaluation criteria, as

identified by a focus group. SAVER assessments include tasks that simulate the actual operational environments of responders. These tasks, which are specific to the equipment being assessed, enable participants to effectively evaluate and rate equipment performance.

Analyze Assessment Results and Produce SAVER Reports. Technical agents use participant feedback to produce SAVER reports. When developing assessment reports, evaluation criteria ratings are used to calculate scores for each piece of equipment. The process used to calculate

the score is explained in the final report.

SAVER Review and Approval Process

The SAVER review and approval process is designed to ensure quality documents reach the emergency responder community. Each SAVER document is routed for review by a variety of subject matter experts both internal and external to the authoring technical agents' organization and is then submitted to DHS for review and approval. Following approval by DHS, the document is posted in the SAVER section of the RKB website, [HTTPS://WWW.RKB.US/SAVER](https://www.rkb.us/saver).



SAVER PRODUCTS

The SAVER Program conducts impartial assessments and validations of commercial off-the-shelf, emergency response equipment and provides the results and other relevant equipment information to the responder community. This information is made available through documents produced by the program and published in the SAVER section of the RKB website, [HTTPS://WWW.RKB.US/SAVER](https://www.rkb.us/saver).

APPLICATION NOTE

An application note contains information and recommendations on the operational usage or employment of a specific technology such as hydraulic rescue tools with alternative fueled vehicles.

ASSESSMENT REPORT

An assessment report provides a comparative evaluation of the selected equipment based on the focus group criteria. It typically reiterates the criteria established in the

focus group, provides an overview of the assessment activities, and presents the results. Results are presented as weighted scores, pros and cons, and evaluator comments.

FOCUS GROUP REPORT

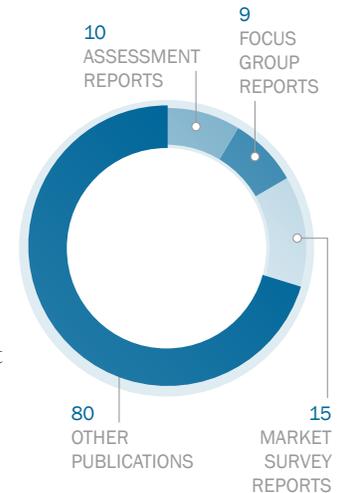
A focus group report lists evaluation criteria that fall within the five SAVER categories for the purposes of the equipment assessment. The report provides details that responders consider important when making an equipment acquisition or operational decision. A focus group report includes recommended evaluation criteria, assessment scenarios, product selection criteria, and product recommendations.

HANDBOOK AND GUIDE

A handbook summarizes a current technology and describes capabilities and considerations related to that technology. Operating principles and typical applications

PUBLICATIONS

Between October 1, 2012, and September 30, 2013, the SAVER Program produced **114** publications.



are also included. A guide has many features of a handbook, though there is a primary focus on outlining an exemplar selection or procurement and/or project management process for a technology.

HIGHLIGHT

A highlight is a one-page document that provides an overview of a particular SAVER project. The highlight attempts to answer the following questions: “What is the project about?” “Who is conducting the project?” and “Why is it important to the responder community?”

MARKET SURVEY REPORT

A market survey report provides a snapshot of the current commercial marketplace for a particular type of equipment. It lists known manufacturers of the equipment, their contact information, and salient technical characteristics of the equipment.

For certain markets with a large number of manufacturers, a representative sample of the market may be appropriate. The information is gathered through various means including, Internet searches and request-for-information announcements listed on the Federal Business Opportunities website.

NEWSLETTER

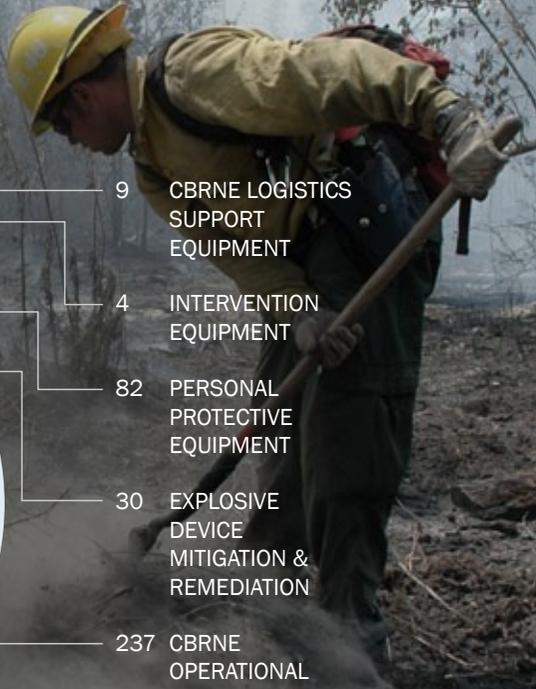
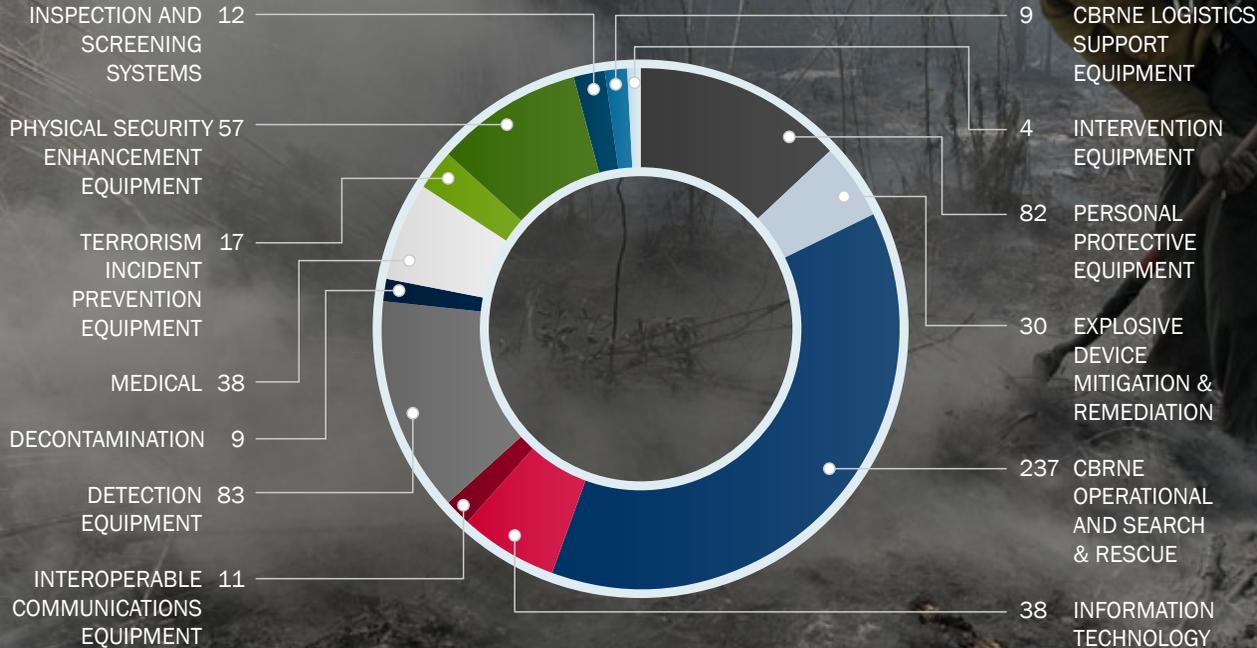
A newsletter is produced on a quarterly basis to update the responder community on the latest information, projects, and activities in the SAVER Program.

PRODUCT LIST

A product list is derived from a market survey report and is typically only produced for very large markets. It is a tabular document that gives very succinct details about products such as the product name, manufacturer, and contact information.

PRODUCTS ASSESSED

Between July 1, 2004, and September 30, 2013, the SAVER Program has assessed 627 products in 13 AEL categories.





SAVER Assessment Photo

SUMMARY

A summary is typically a four- to seven-page document that summarizes an assessment report. It presents the evaluation criteria, the most important results, a comparative chart, and conclusions.

TECHNICAL REPORT

A technical report provides details and further analysis of assessed equipment beyond what is typically included in an assessment report.

TECHNOLOGY GUIDE

A technology guide describes a specific technology and potential applications of that technology, allowing the reader to better understand operational and deployment considerations. Guidelines for selecting and procuring specific technology products are typically provided.

TECHNOTE

A technote is typically a high-level, two-page document that answers some basic questions about a technology area such as: “What is it?” “What is it used for?” “Who is using it?” “How does it work?” “Why is it important to the responder community?” and “Where can I find more information on this?”

VERIFICATION REPORT

A verification report documents tests on equipment to confirm manufacturer claims; specifically, claims that are of interest to responders when making acquisition or operational decisions.

YEAR IN REVIEW

A year in review provides a description of the SAVER Program and summarizes the projects completed within a fiscal year.



2013 SAVER PROJECTS

ACTIVE SHOOTER TRAINING SIMULATORS

04AP-08-SIMS

Training simulators provide responders with realistic training in a simulated, controlled environment so that they can learn, practice, and enhance their skills. Training simulators provide interactive, audiovisual simulations of various emergency situations that may be too costly or too dangerous to reproduce with live training.

BIOLOGICAL AGENT DETECTION EQUIPMENT

07BD-01-KFAS

Responders use biological agent detection equipment—field kits and assays—to

discriminate biological agents from harmless biological and nonbiological material present in the environment or in a sample. Field kits and assays assist responders in the initial assessment phase of an incident and support short-term decision-making. Test results from field kits and assays require confirmation, usually through a laboratory.

BLAST RESISTANT TRASH RECEPTACLES

14EX-00-BCAN

Blast resistant trash receptacles are designed to diffuse the force of an explosion by directing a blast upwards, thereby protecting bystanders from

the fragmentation that results when an explosive device is detonated in an ordinary trash can.

CLOSED CIRCUIT TELEVISION TECHNOLOGY

14SW-01-VIDA

Closed circuit television (CCTV) systems provide surveillance capabilities used in the protection of people, assets, and systems. These systems serve mainly as security force multipliers, providing surveillance of a larger area, more of the time, than would be feasible with security personnel alone. These systems are often used to support comprehensive security systems by

incorporating video coverage and security alarms for barriers, intrusion detection, and access control.

ENVIRONMENTAL (WEATHER) SURVEILLANCE EQUIPMENT

07SE-03-ENVS

Environmental (weather) surveillance equipment, including both fixed and portable weather stations, provide information needed by responders during chemical, biological, radiological, nuclear, and explosive (CBRNE) emergencies involving the release of hazardous materials into the atmosphere.

ESCAPE ROUTE MODELING TOOLS

04AP-06-TRAF

Escape route modeling tools help identify potential vehicular bottlenecks and determine the most efficient evacuation routes from a city or other highly populated area. These computer-based models provide simple point-to-point routes to use during a hurricane, flood, fire, or other emergency.

EXPLOSIVES DETECTION PORTALS

07ED-03-PORT

Walk-through and drive-through explosives detection portals are used to screen people or vehicles entering secure locations at

airports, nuclear power plants, military bases, and other locations. These portals may be based on trace explosives detection technology, backscatter X-ray detection, or millimeter wave and submillimeter wave detection.

FINGERPRINT PROCESSING AND IDENTIFICATION EQUIPMENT

20FP-00-AFIS

Fingerprint processing and identification equipment is used to capture fingerprints, identify minute details unique to an individual, and convert those minutiae into a system of numerical values that can be searched using recognition software.



(Top row, left to right) Active shooter training simulation, biological agent detection equipment, and blast resistant trash receptacles. (Middle row, left to right) CCTV technology, weather surveillance, and escape route modeling screen shot. (Bottom row, left to right) Explosive detection portal screen shot and fingerprint processing equipment.



(Top row, left to right) Handheld underwater metal detectors assessment and HAZMAT/CBRNE mobile app. (Middle row, left to right) IMS-based chemical agent detector and magnifying patrol rifle scope. (Bottom left) Personal flotation devices for law enforcement.

GEOGRAPHIC INFORMATION SYSTEM TECHNOLOGY

04AP-03-GISS

Geographic information system (GIS) software tools collect, display, analyze, manage, and store geographic data. These tools offer robust visualization features at various geographic scales; give users multiple layer mapping, spatial analysis, and pattern modeling capabilities; and often provide customization features that support unique, agency-specific GIS solutions.

HANDHELD IMAGE INTENSIFIERS

030E-02-TILA & 04MD-01-LAMP

Handheld image intensifiers increase the intensity of available light to provide imaging in poorly lit situations. They are widely used by responders in nighttime surveillance, search and rescue, and covert operations.

HANDHELD PHOTOIONIZATION DETECTORS

07CD-01-DPPI

Handheld photoionization detectors are small, lightweight devices that can rapidly detect volatile organic compounds

and other chemicals in parts-per-million and parts-per-billion concentration ranges.

Responders often mount these detectors to remotely operated vehicles for plume mapping or to collect data prior to entering a spill area.

HANDHELD UNDERWATER METAL DETECTORS

03WA-01-UWMD

Handheld underwater metal detectors assist public safety divers with locating objects underwater by providing visual, audible, and/or tactile alerts when metallic objects are detected.

HAZMAT/CBRNE MOBILE APPS

04AP-06-CBRN

Mobile applications, or mobile apps, have been developed specifically to provide guidance to responders during hazardous materials (HAZMAT) or CBRNE events. These apps are able to integrate with many features on mobile devices, enabling them to capitalize on the functionality of global positioning system technology, e-mail, built-in cameras, and notification systems.

IMS-BASED CHEMICAL AGENT DETECTORS

07CD-01-DPSI

Ion mobility spectrometry (IMS)-based chemical agent detectors are used by responders to monitor atmospheric chemical agent levels in their immediate surroundings. They are designed to be rugged, small, and lightweight so that they can be operated while being worn or carried. Their primary function is to alert users that chemical agent concentrations are approaching hazardous levels. These devices can also be used to identify the specific chemical agent present.

LASER-BASED EXPLOSIVES DETECTORS

07ED-01-LASR

Explosives detectors are used to screen people, luggage, and packages; investigate unknown substances; and prevent suicide attacks and damage from roadside bombs. Laser-based explosives detection techniques are being investigated for emergency response applications because they have the potential capability for standoff and multiple-threat detection.

MAGNIFYING PATROL RIFLE SCOPES

03OE-02-BNOC

Magnifying patrol rifle scopes aid in aiming patrol rifles

by providing a magnified view of distant threats, such as gunmen. Law enforcement personnel may use magnifying patrol rifle scopes during active shooter situations, felony car stops, and field searches, as well as for perimeter containment.

PERSONAL COOLING SYSTEMS

01ZA-06-COOL

Maintaining a normal body temperature is critical to working safely, rapidly, and efficiently. Personal cooling systems maintain a microclimate around the responder, reducing the possibility of heat stress. These systems may be active or passive and comprise

a cooling technology or a garment, usually a vest. Active systems usually involve a circulating fluid and require a power source, while passive systems have no moving parts and do not require power.

PERSONAL FLOTATION DEVICES FOR LAW ENFORCEMENT USE

01WA-06-PFDS

When conducting operations in, on, or around water, law enforcement personnel may be required to wear personal flotation devices. These devices are classified by the U.S. Coast Guard as multipurpose vests, hydrostatic collars, inflatable pouches, and flotation clothing.

PHYSIOLOGICAL STATUS MONITORING

01ZA-01-PPMS

Physiological status monitoring is a relatively non-intrusive method of collecting, recording, and reporting a user's vital signs in real time for extended periods of time. This technology is being developed for use in military and emergency responder applications.

RADAR SYSTEMS FOR THROUGH-THE-WALL SURVEILLANCE

15IN-00-RADR

Radar systems for through-the-wall surveillance are handheld units typically used by law enforcement

personnel to detect individuals behind doors, walls, and windows. These systems enhance situational awareness in operations such as forced entry and hostage rescue when knowledge of the whereabouts of individuals is beneficial.

RADIATION MITIGATION BLANKETS

03OE-03-RADB

Radiation mitigation blankets provide temporary shielding from ionizing radiation, acting as a physical barrier that reduces or eliminates the passage of radiation. These blankets help prevent contamination and reduce exposure to radiation; however, they are

not effective in protecting against inhalation of airborne radioactive material.

RUGGEDIZED TABLETS

04HW-01-HHCD

Ruggedized tablets are mobile computing devices that are able to withstand various environmental and hazardous conditions and rough handling, making them suitable for use by law enforcement personnel during field operations. Ruggedized tablets may be used to write reports, communicate with peers, take notes during interrogations, conduct surveillance operations, and search criminal record databases.

SHELF STABLE, READY-TO-EAT FOOD PACKS

21CR-00-FOOD

Responders may be required to work in remote settings or in areas that have been compromised after an incident or natural disaster. In the absence of other means of sustenance, shelf stable, ready-to-eat food packs are used to provide responders with nourishment and enable mission completion.

STANDOFF RADIATION DETECTORS

07RD-04-SGND

Standoff radiation detectors are used to locate radioactive sources at a distance and



(Top row, left to right) Through-the-wall surveillance radar system and ruggedized tablet. (Middle row) Shelf stable, ready-to-eat food packs. (Bottom row) Subsistence and sanitation system.



determine if they constitute a threat. These systems usually contain gamma and neutron detectors.

SUBSISTENCE AND SANITATION SYSTEMS

19GN-00-HSSF

Subsistence and sanitation systems are used to support response and recovery operations in areas without basic infrastructure. These systems may include field kitchens, showers, restrooms, and laundry systems, and allow continued operations in areas where these facilities are unavailable due to remote location or because they have been compromised.

TETHERED AEROSTAT SYSTEMS

14SW-01-VIDA

Tethered aerostats are balloons, similar to blimps, which use lighter-than-air gases to take flight and remain aloft while moored by ground equipment. These balloons can carry equipment such as digital cameras or communication repeaters. The integration of a tethered aerostat with information system components can assist responders with tasks including border surveillance, crowd control, and disaster relief.

VIDEO ANALYTICS SYSTEMS

14SW-01-VIDA

Automated video surveillance systems, or video analytics systems, are used to automate video surveillance tasks traditionally performed by an operator. These systems provide users with the ability to detect and classify objects, which can help protect critical assets while reducing labor intensive tasks. While video surveillance previously required an operator to watch live or recorded video to detect a possible crime, video analytics systems are able to determine whether an alert or notification should be issued and record the incident.



SAVER Assessment Photo

