



**Homeland  
Security**

Science and Technology

# Summary

U.S. Department of Homeland Security



System Assessment and Validation for Emergency Responders

The U.S. Department of Homeland Security (DHS) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders making procurement decisions.

Located within the Science and Technology Directorate (S&T) of DHS, the SAVER Program conducts objective operational tests on commercial equipment and systems and provides those results along with other relevant equipment information to the emergency response community in an operationally useful form. SAVER provides information on equipment that falls within the categories listed in the DHS Authorized Equipment List (AEL).

The SAVER Program is supported by a network of technical agents who perform assessment and validation activities. Further, SAVER focuses primarily on two main questions for the emergency responder community: "What equipment is available?" and "How does it perform?"

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## Air-Purifying Escape Respirators (APER) Summary Report

In April 2006, the Center of Domestic Preparedness (CDP) conducted a comparative assessment of selected air-purifying escape respirators (APER) approved by the National Institute for Occupational Safety and Health (NIOSH) for the use in chemical, biological, radiological, or nuclear (CBRN) environments. The purpose of the assessment was to provide information regarding currently available CBRN APER in an effort to improve emergency responder and public self-rescue capabilities. Effective APER deployment and use can improve the ability of emergency responders and trained non-responders to respond to a hazardous incident by accomplishing the following objectives:

- Enhancing public safety
- Increasing public confidence in response capabilities
- Enabling the public to escape the area prior to the arrival of emergency responders
- Mitigating Liability
- Managing risk

The APER currently approved for CBRN use by NIOSH are the ILC Dover SCape CBRN, the MSA Safe Escape CBRN



MSA Safe Escape CBRN Respirator



ILC Dover SCape CBRN

Respirator, and the North Safety Products ER 2000 Safe Escape CBRN Respirator. Only two NIOSH CBRN-approved APER were available for assessment---- the positive pressure ILC Dover SCape and the negative pressure MSA Safe Escape Respirator. The ER2000 Safe Escape CBRN Respirator was not available in time for inclusion in the assessment.

An APER assessment focus group was held on February 24, 2006, to identify potential APER uses within the emergency response and non-responder communities, and the focus group discussed two potential methods of distributing APER: 1) pre-positioning APER in high-risk locations such as federal buildings or transportation hubs, and 2) carrying APER into the exclusion area by emergency responders.

On April 26, 2006, subject matter expert (SMEs) were given an opportunity to examine each APER in its original packaging, as it would have been received in their local jurisdictions. It also allowed the SMEs to familiarize themselves with the selected APER, product literature, and user manuals provided with the equipment.

The comparative assessment consisted of two activities: 1) self-rescue and 2) safe haven rescue. The assessment allowed the SMEs to use each APER in a simulated hazardous materials response as well as to assist evacuees in donning an APER prior to an evacuation.

A number of issues concerning responder involvement in APER employment arose during the assessment. A major question identified by the focus group was the viability of the safe haven scenarios for employing the APER with either previously trained or untrained people. The SMEs taking part in the assessment noted that Occupational Safety and Health Administration (OSHA) 29 CER 1910.134 requires that APER training be provided to every "employee" using an APER. This important distinction had a major impact on the SMEs. The evaluators were resistant to the responder-deployed

APER use in the safe haven rescue segment of the assessment. Unlike the self-rescue segment, which utilized trained APER users, the SMEs were extremely reluctant to validate the concept of responder deployment of APER to previously untrained users. The SMEs commented that the OSHA standards and NIOSH recommendations, particularly the APER training requirements, would need clarification concerning the use of APER by the public during emergency situations. The SMEs' concluded that responder deployment of APER, or responder involvement in the deployment of pre-positioned APER, will require a major paradigm shift in responder training and regulations, and should be discussed with municipality or jurisdictional emergency planners and insurance carriers.

Due to the above concerns, as well as there only being two NIOSH CBRN-approved APER available for assessment, and the SME comments indicating the advantages and disadvantages of each APR model may vary greatly from user to user and from application to application, the CDP decided not to publish the normal assessment report that includes several other considerations relative to the selection of APER, including the following:

- APER issued in the workplace.
- APER issued to the general population in high-risk areas.
- APER pre-positioned in high-risk areas.
- APER deployed by emergency responders at an incident scene.

To find out more about the CDP's APER assessment findings, visit the SAVER Web site. All of the CDP's reports pertaining to the APER assessment can be found on the Web site, along with reports on other technologies assessed as part of the SAVER Program.