University of Southern Mississippi

National Center for Spectator Sports Safety and Security

Security Snapshot

Elmridge Protection Products, LLC
iEvac Smoke/Fire Hood

Foreword

The National Center for Spectator Sports Safety and Security (NCS4) at the University of Southern Mississippi has established a National Sport Security Laboratory (NSSL) dedicated to sports safety and security to assist spectator sports venue operators in assessing and validating systems and technologies for safety and security use.

The NSSL provides a mechanism to aggregate specific safety and security requirements for the spectator sports domain as developed by security and venue operator practitioners through participation in a National Advisory Board. This Advisory Board includes participation from all professional sports leagues and the collegiate institutions. The National Laboratory, using industry requirements and operational needs, develops:

1 Impartial, vendor agnostic, and operationally relevant assessments and validations of safety and security solutions (systems) based on the community of interest (COI) requirements.

2 Evaluation reports that enable venue operations and security personnel to select and procure suitable solutions; and deploy and maintain solutions effectively. In some cases process evaluations will be performed to provide newly devised procedures.

The evaluation program follows principles currently espoused by standing DHS validation programs (such as SAVER2) that are meant to assist end operators with objective and quantitative reviews of available commercial systems and solutions. Information obtained in the course of the assessment (including this report) will be made available to subscribers of NCS4 publications and to the U.S. Department of Homeland Security for their use.

Evaluators and Assessment Support

Evaluators	**Vendor Support**
Robert Pickering Dir. of Training/HAZMAT Hattiesburg Fire Dept. rpickering@hattiesburgms.com	Ira Gurvitch Elmridge Protection Products ira@elmridgeprotection.com
Steve Miller Director, Systems Integration, NCS4 University of Southern Mississippi Steven.g.miller@usm.edu	
Teddy Hayduk Project Coordinator NCS4 University of Southern Mississippi Theodore.hayduk@eagles.usm.edu	

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Introduction

Background

The NSSL's primary mission is to continually identify, evaluate and demonstrate products, systems and processes that address safety/security issues affecting sport venues and other events of mass gathering. The evaluation process is primarily composed of two avenues that allow solution providers to demonstrate their products/processes to the market place.

The first evaluation method is the full-scale lab evaluation that contains established criteria with executable requirements along with a panel of subject matter experts serving as evaluators. Solutions are scored quantitatively and qualitatively with respect to their performance versus the vendor claimed functionalities.

The second type of evaluation is the "Snapshot" which is available when the solution provider either chooses not to conduct a full-scale evaluation or when circumstances do not allow for an in-depth evaluation.

This Snapshot involves the iEvac Smoke/Fire Hood manufactured by Elmridge Protection Products. The iEvac is an emergency escape hood designed to protect against life-threatening hazards such as carbon monoxide, smoke, various other gases, biological hazards, in order to allow for egress from crisis situations.

The product will be used in an actual burn room and evaluated against the vendor claimed features and benefits. This exercise will allow NCS4 lab personnel to experience the iEvac as users in a hazardous environment and report the results to the spectator sport safety and security community.

Sport Venue Evacuation and the iEvac

The NSSL and its Lab Advisory Council continually survey the sport venue community and along with NCS4 research, safety/security issues are prioritized and categorized by type. Of the priorities of interest, emergency evacuations continue to be of major concern to venue operators. With ever increasing threats of crisis events ranging from terrorism to natural disasters, sport and special event venues are targets for potential incidents involving human casualties. Venue operators need to have an understanding of the products and services available to their staff to effectively conduct an evacuation in times of crisis.

Based on the vendor's claims, the iEvac offers protection from a wide range of hazards including smoke and other harmful gases that could be present in the event of a sport venue crisis. For a more complete list of the chemical, biological and physical hazards addressed by the iEvac, refer to the vendor's web site at www.elmridgeprotection.com. The following sections will describe the NSSL's demonstration and use of the iEvac at

the Hattiesburg, MS Fire Dept. Burn Facility.

Objectives

The main objective of this Snapshot is to demonstrate and document the use of Elmridge Protection's iEvac as a protection device against fire related gases. The manufacturer, Elmridge Protection, has identified sport venues as an applicable arena for the availability of the iEvac to enhance the safety of these environments in times of crisis. This demonstration will be set up and conducted at a local burn room with a controlled fire. This environment will produce combustion gases including carbon monoxide and particles as well as extreme heat as experienced in a fire situation.

The reader of this report is encouraged to consult the manufacturer, Elmridge Protection, for detailed information regarding details of the iEvac's operational characteristics. It is also important to note that the intent of this report is not for comparison purposes with other similar vendor products.

The specific vendor claimed features of the iEvac that are considered within this Snapshot are listed below:

-No assembly tools or special instructions required
-Quick and easy deployment
-Protection against fire-related gases including carbon monoxide
-Protection against fire-related physical hazards such as radiant heat
-Hood materials will stand exposure to high temperatures
-Ease of breathing with hood on and protection of head and face
-Clear field of view with hood on
-Reflective strips on hood enhance visibility of user
-No distress or adverse effects caused by the hood while in the burn room

Each of the claims above are evaluated during the use and demonstration of the iEvac in the burn room. These claims are addressed in the Evaluation section that follows the Demonstration and Use section.

Demonstration and Use

Overview

The vendor desired to have the iEvac demonstrated and used in an actual fire/smoke environment. With assistance from the local fire/hazmat department, a burn room exercise was coordinated and scheduled in conjunction with the vendor and the NCS4. Use of the product in the burn room created a realistic environment in which to test the vendor claimed functionality of the iEvac hood. Safety was ensured by the participation and presence of certified fire/hazmat personnel during the entire event.

Demonstration

The evaluation team assembled at the burn room and the Elmridge Protection personnel distributed the iEvac hoods. The hoods were in sealed foil bags with clear and concise instructions included. They were found to be easily opened and donned, see Picture 1. After a quick review of the donning procedure, the team made its way to the burn room, see Picture 2 below.

Once at the entry to the burn room, the team was led by the certified fire/hazmat coordinator who gave instruction on entering and navigating throughout the room. With the iEvac hoods donned, the team entered the burn room and began breathing through the hood in the dark, smoke-filled environment. Temperature also elevated from 200 degrees F to 300 degrees F as the team moved from one area of the room into the other.

A total of approximately 20 minutes was spent in the room. During that time, there appeared to be no detection of any smoke or gases being breathed in through the hood. From the user's perspective, the air through the mask was found to be as clean and pure as the air outside the burn room. Another observation was the identification of those users with hoods on due the reflective strips. Although they are not recognizable in the dark, when a light is shined on them, they become visible. This allowed for finding those who would not have been seen without it. Another notable observation was the manner in which the iEvac held up under the conditions of heat and smoke. There were no noticeable signs of deterioration of the hood after being subjected to the room.

After exiting the burn room, inspection of the users revealed no visible signs of irritation of anyone's head and facial areas. The hoods remained intact with good seals on each user and there were no complaints of smoke or gases coming in through the hoods. The clear visor areas also remained clear throughout the demo thus not allowing any fogging inside the hoods.

Picture 1- Removing the iEvac from its Sealed Foil Bag

Picture 2- Entering the Burn Room

Evaluation

The vendor claimed features of the iEvac, identified in Objectives section, were documented during the demonstration and use of the product. The following is a breakdown of the evaluations of the vendor claimed features of the iEvac.

No assembly tools or special instructions required- The iEvac does not require any tools for use. The instructions for use are clear and concise and located on the packaging with pictorial diagrams as shown in Picture 1 in the previous section.

Quick and easy deployment- The iEvac was found to be quickly and easily opened and donned using only the instructions on the packaging. In less than 30 seconds, the hood can be opened secured onto the head and tightened using the straps located in the back of the hood.

Protection against fire-related gases including carbon monoxide- This demonstration did not involve the measurement of gas levels (using instruments) inside the hoods. However, users reported no signs of exposure to gases or physical alterations due to exposure from the environment in the burn room.

Protection against fire-related physical hazards such as radiant heat- the iEvac was worn in the burn room in temperatures that reached 300°F. This high temperature did not sear the faces of users during the 20 minutes when they were inside the burn room.

Hood materials will stand exposure to high temperatures- the materials from which the iEvac is made suffered no deterioration while the hoods were worn inside the burn room.

Ease of breathing with hood on and protection of head and face- Users found the iEvac to be easy to breathe in. Even in the burn room the hood never allowed smoke or detectable gases to enter. Upon exiting, users had no evidence of exposure to heat anywhere in the face and head areas.

Clear field of view with hood on – The iEvac area of vision remained clear and visible throughout the demonstration.

Reflective strips on hood enhance visibility of user- The reflective strips on the iEvac made it visible in the burn room whenever a light was shined on it. This feature allowed for easily finding those that were wearing the iEvacs.

No distress or adverse effects caused by the hood while in the burn room- Users experienced no physiological difficulties or other problems associated with the wearing of the hood while in the burn room for twenty minutes.

Evaluator Comments and Observations

The iEvac was found to be a quick and efficient way to provide first responders and front line venue staff with the means necessary to effectively facilitate a crisis response under smoke and gas conditions.

The design and capability of the iEvac make it suitable for a wide range of crisis scenarios. These include, among others, emergencies such as fire, sudden structural damage as from an earthquake, biological hazards, chemical hazards and hazmat situations.

The fact that this product requires no power source, training, or maintenance makes it a viable option for virtually any location or venue of mass gathering.

With the cost of maintenance and training associated with traditional self-contained breathing apparatus (SCBA), the iEvac provides a very cost effective solution for venues that would not otherwise have the budget or recurring need for this type of protection.

The 5 ½ year shelf life of the iEvac is also a benefit to the user who may not have a frequent consumption rate. The maintenance-free design also attributes to this efficiency.

The universal size and latex-free design offers flexibility and makes for rapid deployment in times of need.

Summary

Overall, the iEvac measured up well against the vendor claimed features that could be evaluated and demonstrated in a burn room environment under use conditions. It is important to note that the observations were not made using any test equipment or measuring instruments. The evaluations in this report are solely from the usage in the burn room.

As shown from the evaluation and comments sections, the iEvac appears to have a very useful purpose for sports venues and other venues of mass gathering. The ease of use and exemption from maintenance and training costs make the iEvac a feasible option for crisis response situations.

It is important to note that the iEvac is NIOSH approved and ANSI/ISEA certified. The manufacturer, Elmridge Protection, has detailed test and certification (NIOSH and ANSI) information available. This detailed performance data includes both quantitative and qualitative results from tests performed by the US Army Research, Development and Engineering Command at the Edgewood Chemical Biological Center, by NIOSH and by independent qualified laboratories for overall protective performance, for effectiveness against toxic gases, submicron particulates and heavy dusts, and physical threats such as molten drip, radiant heat and inhalation temperature. This comprehensive data is available on the manufacturer's website at www.ElmridgeProtection.com.

The manufacturer also indicates that they have been designated as a Qualified Anti-Terrorism Technology by the U.S. Department of Homeland Security, Office of the Safety Act.

It is recommended that those interested in the iEvac consult the manufacturer for further details and specifications on this product. The manufacturer contact information is listed below.

Website: www.ElmridgeProtection.com
Phone: 561-244-8337
Email: ira@elmridgeprotection.com