



**Homeland  
Security**

Science and Technology

# TechNote

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 assessments and validations 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?"

For more information on this and other technologies, contact the SAVER Program Support Office.

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## HazMat/CBRNE Mobile Apps

*Hazardous Material (HazMat) and Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) events result when substances such as toxic chemicals, biological agents, radiological or nuclear materials, or explosives pose a threat to life, property, and/or the environment. These events are differentiated by the fact that a CBRNE event is considered to be a deliberate, malicious act with the intention to maim, kill, and disrupt, whereas a HazMat event is accidental. Many of the procedures, equipment, and training used for a HazMat event are also used for a CBRNE event. The scene of a HazMat/CBRNE event must be quickly evaluated to determine the appropriate strategic and tactical response to minimize the impact of the event. Access to relevant, timely, and accurate information is critical to minimizing the impact of the event.*

*This TechNote focuses on HazMat/CBRNE related software applications that are installed on mobile devices, such as smartphones and tablets. These applications, known as mobile apps, provide information that can be critical when responding to incidents involving hazardous materials.*

*HazMat/CBRNE mobile apps can be helpful to emergency personnel by providing information on emergency response procedures, potential medical hazards, recommended first aid, responder exposure limits, and identifying and establishing protective zones.*

### App Overview

A mobile app is similar to software installed on a personal computer, but it is developed for a mobile device operating system (OS) such as Windows<sup>®</sup>, Android, or Apple<sup>®</sup> iOS<sup>®</sup>. These apps are able to integrate with many features on a mobile device, enabling them to capitalize on the functionality of global positioning system (GPS) technology, e-mail, a built-in camera, and a notification system.

Mobile apps have been developed specifically for use by the emergency response community to provide guidance to personnel responding to HazMat/CBRNE events. However, many mobile apps can be useful during these crises even though they were not originally developed specifically for use in HazMat/CBRNE events. For example, a map-based app developed to display wind conditions may provide information relevant to determining isolation and down-wind protection zones.

Not all apps have been verified for accuracy or completeness, therefore due diligence should be performed to verify that a mobile app provides accurate information for the intended use. Some apps state that they are intended for educational purposes only. Although mobile apps do not consistently undergo traditional verification and validation testing, many app stores require compliance with their quality and content guidelines. Mobile apps should only be downloaded from trustworthy sources.

## Apps for the Emergency Responder

Government sponsored and commercially developed mobile apps can be useful in the preparation for, response to, and recovery from HazMat/CBRNE events. The following are examples of mobile apps that might assist emergency responders, even though some of them may not have been developed for this purpose.



**FiRST (First Responder Support Tools)**

Photo courtesy of FEMA

*FiRST (First Responder Support Tools)*, sponsored by the U.S. Department of Homeland Security, Science and Technology, provides access to map-based HazMat spill evacuation areas and standoff distances for improvised explosive devices (IEDs). It integrates with other apps to retrieve current wind information, HazMat reference data, and data related to the effective range of an IED.

*Wireless Information System for Emergency Responders (WISER)*, by the National Library of Medicine (NLM), provides an extensive list of hazardous substances, their properties, medically related data, emergency response procedures, tools to identify substances, and symptoms of exposure.

*ERG 2012*, by the U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA), is the mobile app version of the *2012 Emergency Response Guidebook*. It is used to aid emergency responders in quickly identifying the hazards associated with material(s) in an incident. The guide also provides information on protective clothing and guidelines for protecting the general public during the initial phase of a HazMat/CBRNE event.

*Mobile Radiation Emergency Medical Management (Mobile REMM)*, by Health and Human Services (HHS), NLM, National Cancer Institute (NCI), and Centers for Disease Control and Prevention (CDC), provides guidance related to the clinical diagnosis and treatment for victims of radiological and nuclear emergencies. Mobile REMM contains a subset of key files from the complete online version of REMM.

*Google Earth™* and *Google Maps™*, by Google Inc., are three-dimensional mapping apps that incorporate GPS, navigation, street views, traffic information, and latitude and longitude coordinates.

*The NIOSH Pocket Guide to Chemical Hazards (NPG)*, an app by ThatsMyStapler Inc., is based on the *NIOSH Pocket Guide to Chemical Hazards* available from the National Institute for Occupational Safety and Health (NIOSH). The NPG provides general industrial hygiene information related to chemicals. Using the app, responders can search the NPG by chemical name, Chemical Abstract Service (CAS) number, or trade name in order to safely recognize and respond to chemical hazards. The developer states the app is to be used for educational purposes only.

*iTriage®*, by Healthagen®, provides symptom lookup, recommended treatment, directories and directions to hospitals and healthcare facilities, medication lookup, and an appointment maker. Healthcare providers can pay a fee to iTriage to increase their visibility within this app. All medical information is verified by the Harvard Medical School.

*Radiation Calculator*, by Tobias Magnander, calculates radiation dose rates. Isotopes and shielding materials can be added, deleted, or modified by the user.

*WindAlert®*, by WeatherFlow Inc., is used to locate, monitor, analyze, and share wind speed and direction data on interactive maps.

*AccuWeather*, by AccuWeather, shows current weather conditions for a wide range of locations, provides alerts regarding severe weather, and interfaces with Google Maps.

## Summary

Mobile apps are continuously being introduced by individuals, government agencies, and commercial firms. Government agency websites such as <http://sis.nlm.nih.gov> and <http://apps.usa.gov> provide a trustworthy resource for emergency response personnel interested in using this technology. Regardless of whether a mobile app is obtained from a government or commercial organization, it should be researched to verify that it will perform as expected in an emergency situation.