

# Army makes finding chem-bio detection devices a snap

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ABERDEEN PROVING GROUND, Md. (June 25, 2015) -- The U.S. Army is refining its tools for quickly finding the best Chemical, Biological, Radiological and Nuclear detection device for any situation. U.S. Army Edgewood Chemical Biological Center scientists developed the Global Chemical, Biological, Radiological and Nuclear Detector Market Survey and online database. The website focuses on using the equipment instead of choosing it.

"Recently, a number of similar databases have been released, but the size and methodology we employ make this a superior product in every way," said Dr. Peter Emanuel, ECBC Biosciences Division chief. "Since this is now an app inside of the biosurveillance portal, it will be sustained as it is associated with a program of record."

ECBC researchers scrutinized hundreds of CBRN detection and identification devices using a weighted model based on nearly 100 questions, from size and battery life to sensitivity and time to detection.

Results are available from the CBRN Library and posted to the WMD Detector Selector website where after checking a few boxes about the potential use of the device. Results are posted in order of relevance, easing the decision making-process and providing information to the people who need it most and fast.

When Emanuel and Dr. Matthew Caples created the first market survey in 2007, it was published as a 664-page textbook. In the past eight years, the team increased the number of detectors they analyzed, expanding from just biological detectors, to all-hazard detectors. Today, the market survey analyzes more than 400 detectors. Publishing the survey simply in a hard copy book format, reached a breaking point when the print shop informed Emanuel that the only way to publish all of their results was in two, 500-plus page textbooks.

In 2015, the survey shed some pounds by transforming from a 664-page book into the WMD Detector Selector website (see related links), an interactive database that gives the survey a greater size and complexity with searchable functions. On the database, users can learn more about detectors through answering simple fields such as scenario use, type of detector, size, diagnostic approval and more.

The Joint Program Executive Office for Chemical and Biological Defense facilitated another Market Survey transformation, when they funded ECBC to develop the WMD Detector Selector into an app that could be integrated into the Biological Identification Capability Sets of the Joint U.S. Forces Korea Portal and Integrated Threat Recognition's Biosurveillance Portal.

Developing the survey is a precise process, capturing the usefulness of each technology, using four scenarios, Emanuel said.

- Field and man portable
- Mobile laboratory and field laboratory
- Diagnostic laboratory and Point of care

- High sensitivity, high throughput analytical laboratory

Each detector vendor is responsible for filling out surveys on their own equipment. The intent of the vendor completing their own survey is to ensure the information is accurate and up to date. Each multiple choice survey question is aligned to a performance scale; the scales provide a means of measuring how well each technology "performs" relative to each criterion. The final step in developing the evaluation model is to weight the criteria. The weights indicate the relative value of a criterion, as defined by its performance scale, compared to the other criteria. Because each scenario is concerned with different objectives and requirements, the criteria weights vary depending on the scenario.

"The program is required to constantly conduct market surveys to select systems," Emanuel said. "The users have told us that the searchable website is invaluable, and have thanked us for giving them this tool. It [Market Survey] has become a valuable asset to conduct market research, numerous users have told us that."