

DHS Science and Technology Directorate

Cell-All: Placing Chemical Threat Detection in the Hands of Everyone with a Cell Phone

Detection in the Palm of the Hand

A lightweight, affordable, energy-efficient technology, Cell-All puts chemical threat detection within reach of everyone who has a cell phone. Cell phones with Cell-All technology can detect and alert individuals and public safety authorities to the release of specific toxic chemicals into the environment, facilitating emergency response.

Serving the Individual, Responder, and Community

Under development by the U.S. Department of Homeland Security Science and Technology Directorate, the Cell-All environmental sensor and related applications enable smart phones to detect the presence of hazardous chemical compounds. Users have the option of using the sensor in a personal mode, which provides for an individual alert, or opting-in to a network service, providing anonymous reports of the environmental conditions to local responders. This network service allows responders to view alerts from a network of sensors in areas where people congregate and gain a better idea of the actual environment they will face upon response -- improving preparedness and saving lives.

Cell-All provides for improved indications and warning for determining the presence of hazardous chemicals for response preparedness, standardized environmental sensor interfaces and communications, and voluntary opt-in features that protect individual privacy and civil rights. Sensors can be used to enable future information and personal health applications that are being developed for cell phone users industry wide.

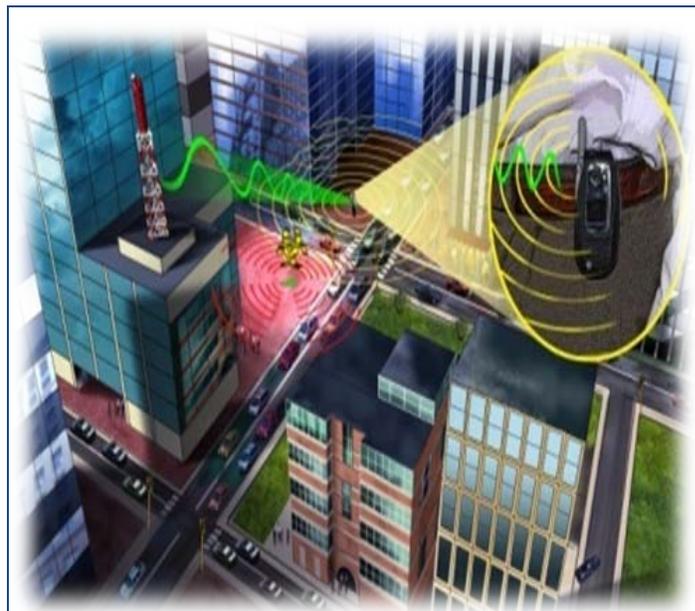
Success Through Partnerships

DHS S&T's partners in the development and testing of Cell-All have included: NASA Ames Research Center; California Environmental Protection Agency; Los Angeles Fire Department; Los Angeles Police

Department; Qualcomm; Synkera; and NC4. Training demonstrations at the FEMA Center for Domestic Preparedness and the Los Angeles Fire Department's Frank Hotchkin Memorial Training Center examine characteristics of multiple devices in networks, carrier characteristics, operations center concepts, and overall performance of the agent detection network.

Next Steps

S&T developed 5 Cell-All first generation prototypes in the project's first year, and will have a total of approximately 100 second generation prototypes by the end of 2011. First generation prototypes of Cell-All focused on minimizing the size of the cell phone sensor. These devices provided evidence that small, low-cost multi-use sensors could be produced to provide functional toxic gas detection to meet the power budgets and cost targets established by the cellular phone industry. Second generation devices were built to optimize research resources to demonstrate a network response to hazardous chemicals. These Phase II prototypes will be demonstrated under field conditions.



Cell-All capability



**Homeland
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