



# Archived Content

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# Wearable Smart Chemical Sensor: Morphix Technologies



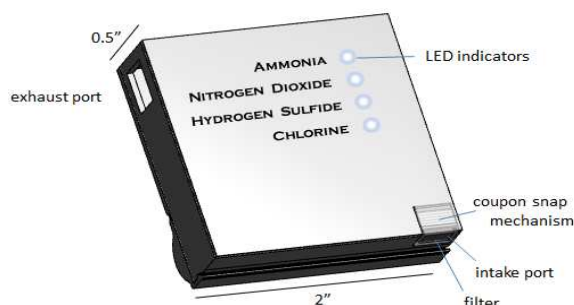
Homeland  
Security

Science and Technology

## RELIABLE, WEARABLE CHEMICAL DETECTION FOR FIRST RESPONDERS

A recent Department of Justice sponsored study "Assessment of Portable HAZMAT Sensors for First Responders" concluded that "there does not exist a commercial off-the-shelf device that meets the first responder needs in full. This effort has not been able to identify any commercially available equipment that is unobtrusive and able to detect a wide range of gases."

First responders under duress need a simple, low-cost, rugged device which can detect the presence of harmful levels of Toxic Industrial Chemicals (TICs) with high fidelity while avoiding nuisance levels of TICs and false alarms due to ubiquitous environmental contaminants (e.g. smoke, diesel exhaust).



Wearable Chemical Detection Badge concept

## DEVELOPMENT OF A FIELD-ABLE CHEMICAL DETECTION DEVICE PROTOTYPE

This program is directed toward the development and demonstration of a wearable chemical detection badge capable of detecting and alarming (through visual and audible/vibratory cues) in the presence of relevant concentrations of TICs. The proposed wearable badge consists of a reusable detection device and a consumable colorimetric sensor that will be inserted in the reusable device. Morphix Technologies is designing and developing this detection system in collaboration with Pergamon Corporation.

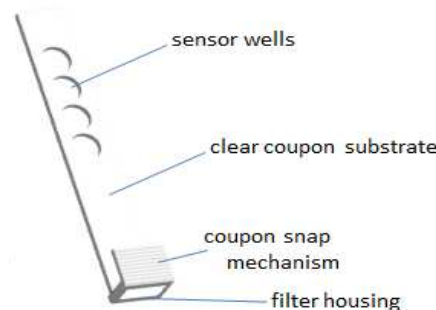
## SAVING LIVES WITH SIMPLE, RUGGED CHEMICAL DETECTION TECHNOLOGY

The technology under development will warn first responders of the presence of dangerous levels of TICs (1/2 IDLH/ ~AEGL-2 alarm threshold) in the field under harsh

environmental conditions and in the presence of environmental contaminants. This low-cost, robust capability will facilitate effective missions while protecting the first responder from dangerous chemical threats. The detection technology is forward adaptable to additional chemical threats of interest.

## ACCOMPLISHMENTS TO DATE

- Demonstrated Phase I proof-of-concept chlorine sensor under harsh environmental conditions and in the presence of environmental contaminants
- Developed Phase II proof-of-concept sensors: further refined second round prototypes to ensure proper operation of switching voltage regulator received from Pergamon, worked with Pergamon to resolve the switching voltage regulator issue, and completed environmental conditions testing with second round device prototypes



Wearable Chemical Detection Badge  
Sensor Coupon

## UPCOMING MILESTONES

- Operational Field Testing through the Naval Research Laboratory, Fall 2020
- Future efforts will be directed toward the development of class sensors to indicate a broad range of chemicals, thus providing increased protection

## PERFORMERS/PARTNERS

Federal, state, and local first responders, Pergamon Corp.

