HazMat Smart-Strip
Chemical Agent Indicating Device

Requirement: A user friendly wearable chemical indicator that can be worn by first responders such as Private Citizens, Police officers, Firefighters, EMS, Hospital workers, USAR Teams, and the military. Current technology requires responders to place a number of indicator strips taped to their clothing in an effort to detect a contaminated atmosphere (aerosolized) or surface (liquid). In addition current technology is very small and not designed for responders to use in the field while dressed in chemical protective clothing. The need is for an easy to use, cost effective, reliable, detection medium that allows the user simple means to read results instantly in the field.

Technical Description: The HazMat Smart Strip is equipped with a peal and stick backing or can be clipped to the responders clothing ensemble. The devices consisting of eight specifically designed reagent strips what when in contact with a category of products produces a visible color change. Key advancements over current technology include simple protocols, broad-based compatibility, intuitive response, the proper selection and combining of eight reagents to one unit for ease of use. The eight reagents are self-contained and activated by removing the protective covering that is designed to preserve the indicator layer until ready for use. All of the reactive components have been directly integrated within the layers to remove any requirement for applying additional strips of reagents, or buffer solutions, as is the case with conventional technologies. The color-developing indicator layer contains is a chemical sensitive paper that transitions from the color standard that is placed around each indicator strip (Border) in the presence of one of the eight categories of chemicals.

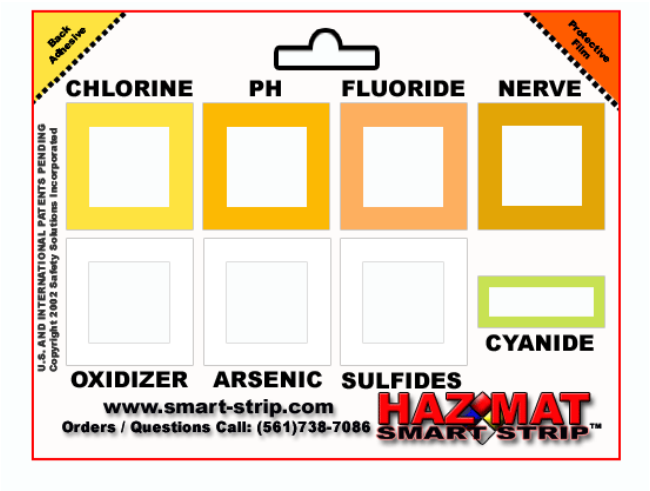

Table 1 illustrates the effect of certain types of chemical with the reagent strips and their performance.

Reagent	Paper Color	Positive Indication	Sensitivity level
Chlorine	yellow / peach	blue / white / blue halo	1 ppm
PH	orange	red / blue	Above or below neutral
Fluoride	pink	yellow / white	20 ppm
Nerve	tan	gold / red / green	In contact with G, H, V agents
Oxidizers	white	blue / violet	1 ppm
Arsenic	white	yellow / brown / black	.5 ppb
Hydrogen Sulfide	white	brown / black	5 ppm
Cyanide	green	blue	.2 ppm

Reaction Time: Instantaneous

Training: One benefit of the HazMat Smart Strip is its ease of use. Training can be conducted before use and requires minimal instructional time.

Contact:

Details are available at www.smart-strip.com

Advantages & Limitations: Advantages include a single self-contained sensor technology that is both reliable and easy to read in the field. Limitations include potential self life considerations (two years).

Applicable Standards and Test and Evaluation Results:

The HazMat Smart Strip uses technologies that have been tested in various markets. The Department of Defense has tested the nerve agent component with positive results. In addition the other components are currently utilizes by a number of other industries both nationally and internationally. End-user feedback, third-party observations, and laboratory analyses were considered in the development of the HazMat Smart-Strip.

The HazMat Smart- Strip seems to be a proven technology that has been shown to be viable in detecting warfare grade nerve agents, and other chemical agents by independent laboratories.

Alternative Products: M8, M9, PH Paper, Chemical classifier, colorimetric tubes, various electronic monitoring devices

Contacts at using Departments and Organizations: The HazMat Smart-Strip is in use by several federal agencies, local governments, and hospitals. Contacts are currently unavailable due to the classified nature of the product.