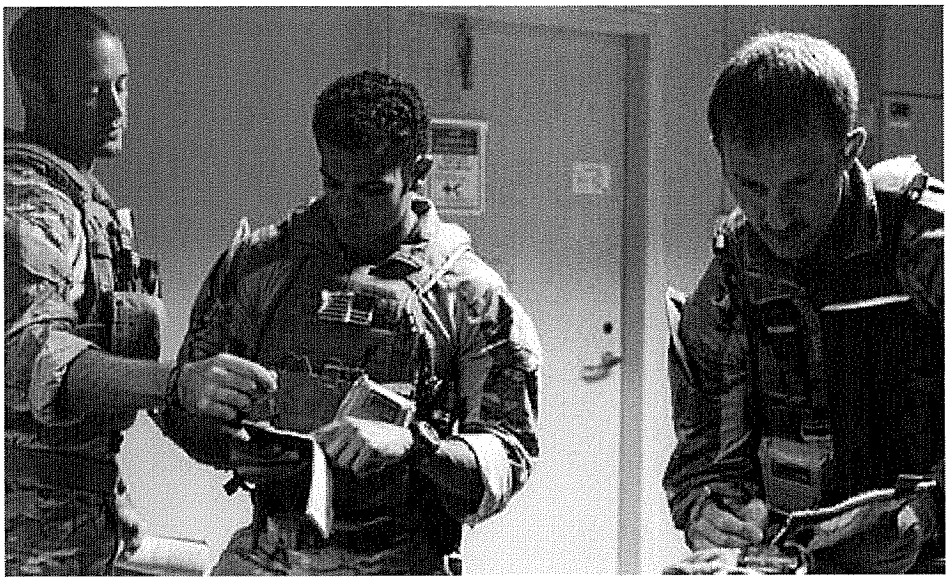
IARPA Wants a Hand-Held Laser Gun That Can Detect Chemicals 100 Feet Away



An explosive ordnance disposal technician provides a mission brief during radiological detection training at undisclosed location in the U.S. Navy's 5th Fleet area of responsibility, Sept. 10, 2013. // U.S. Navy

The U.S. Intelligence Advanced Research Projects Activity wants to develop a hand-held, laser-based remote sensor that could detect and identify chemical weapons, explosives, narcotics and potentially even biological agents – all from up to 100 feet away.

The intelligence community's research arm has awarded funding through the U.S. Air Force to five companies – LGS Innovations, Physical Sciences, Photonics Inc., Block Engineering Inc. and Leidos Inc. – through its Standoff Illuminator for Measuring Absorbance and Reflectance Infrared Light Signatures program.

The creative acronym – SILMARILS – comes from "Lord of the Ring's" magical lore. IARPA's goals for the project are anything but fictional.

Current technologies for detecting narcotics, explosives and other dangerous chemicals requires physical contact between humans and X-ray-based machinery like those stationed within major airports that scan suitcases and luggage.

In other cases, a human must swab samples of a substance and run them through a similar machine, which is time and labor consuming and risky.

IARPA aims to lower that risk and potentially speed up the detection of dangerous chemicals.

"This machine would use infrared lasers to measure the signature of chemical agents and different molecules so that it's much safer, practical way of interrogating a surface, like the bottom of someone's shoe, footprints and those kinds of things," said Kevin Kelly, chief executive officer of LGS Innovations, which could earn as much as $11 million over four years through SILMARILS.

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Key goals for SILMARILS indicate the device must produce a steerable "eye-safe, visually unobservable illumination beam," and must be of "human-portable size," while drawing power at low enough levels to be battery operated.

If the device can be produced and later miniaturized, it may end up resembling a gun or grocery-store scanner, Kelly told *Nextgov*, and its uses might provide law enforcement major ammunition against crime.

Real-time identification of chemical substances is also a program goal, although today's definition of real-time is anything less than a minute, Kelly said.

Should any of the competing companies get result in reducing time to mere seconds, the notion of real-time would allow for even more potential uses, such as a network-connected device that could compare chemical signatures identified with those in a database.

The device could have the potential to be used in drive-by vehicle systems with obvious potential users including law enforcement, national security personnel, airport security officials and others.

Kelly said LGS has also had some success using lasers to detect pathogens, and a device that can identify biological agents as well as chemical and explosive substances might open doors to new markets.