



## CBRNE Up to Standards

*A firefighter approaches a burning building . . . an emergency medical services worker reaches victims of an accident involving a chemical spill . . . a law enforcement officer investigates the opening of a suspicious package filled with powder. Foremost on their minds: whether their respiratory equipment is working properly and providing the protection they need to stay alive.*

In 1999—2 years before the equipment needs of emergency responders were brought to the forefront by the events of September 11, 2001—the Federal Government initiated a program to coordinate the development and implementation of standards and testing programs for the protective equipment emergency responders need in incidents involving chemical, biological, radiological, nuclear, or explosive (CBRNE) devices.

Congress directed the Office of Justice Programs' National Institute of Justice (NIJ) to do this work under the Anti-Terrorism and Effective Death Penalty Act of 1996. NIJ funded the National Institute of Standards and Technology (NIST) Office of Law Enforcement Standards (OLES) to do the work in accordance with the national strategy developed by the Interagency Board for Equipment Standardization and Interoperability. OLES established the First Responder CBRNE Personal Protective Equipment Standards Development Program. Although the program initially focused on chemical and biological protective equipment, it was later expanded to include work on radiation and explosives detection and decontamination.

"In the event of an incident involving CBRNE agents or weapons, first responders need adequate protection so they can help victims without becoming victims themselves," says program manager Phil Mattson, who joined the project in 2001. "This initiative, which strives to 'establish minimum standards of performance, quality, and reliability, and then test equipment to determine if it complies with the standards,' was incorporated into OLES' Critical Incident Technologies Program in 2002."

The program was subsequently transferred to the U.S. Department of Homeland Security from NIJ. "The program

continued without missing a beat," Mattson says. "You probably can't say that about too many programs."

Whether NIST is working on standards for respirators, radiation detectors, or bomb suits, the basic approach is the same: determine a reasonable threat level that first responders might face, using studies and modeling. In the case of respirators, for example, the National Institute for Occupational Safety and Health and the U.S. Army Edgewood Chemical Biological Center used extensive modeling to determine reasonable exposure limits for known chemical warfare agents.

"Not surprisingly, many of the respirators on the market failed. The manufacturers simply didn't know what

### **CBRNE STANDARDS FOR LAW ENFORCEMENT AND CORRECTIONS**

Efforts to develop CBRNE (chemical, biological, radiological, nuclear, or explosive) standards have focused primarily on fire services and emergency medical services. Much less attention has been given to developing specific standards for law enforcement and corrections. Phil Mattson, program manager of the Critical Incident Technologies Program at the National Institute of Standards and Technology, believes the time has come to bring the development of standards for law enforcement to the forefront.

"We are ready to develop the requirements; the challenge is to identify the appropriate way to get law enforcement and corrections input so the equipment performs according to the needs of their missions," Mattson says.

Jim Wong, visiting scientist at the Office of Justice Programs' National Institute of Justice, agrees with

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the equipment needed to do,” Mattson says, adding that once limits were determined, the manufacturers quickly incorporated results into new models and provided retrofit kits for existing ones.

“But you do have to be careful that you don’t set standards that no one can meet. Rather,” Mattson explains, “standards should spur development of more effective technologies by quantifying essential performance criteria and establishing communication between equipment users and manufacturers, thus raising the bar for equipment performance. The equipment user guides, in similar fashion, give first responder agencies important information that will help them make informed purchasing decisions and take proper care of their equipment.”

***For additional information about the Critical Incident Technologies Program, contact Phil Mattson, 301-975-3396 or philip.mattson@nist.gov. For general information about the National Institute of Standards and Technology or the Office of Law Enforcement Standards, visit [www.nist.gov](http://www.nist.gov) and [www.eeel.nist.gov/oles/](http://www.eeel.nist.gov/oles/), respectively.***

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#### ***CBRNE (continued)***

Mattson’s assessment: “It’s imperative that we solicit input from the various law enforcement disciplines. In fact, we recently organized a workshop aimed at defining law enforcement requirements for chemical/biological personal protective equipment ensembles.”

Wong says the workshop generated a list of tasks that law enforcement and corrections personnel need to be able to perform while wearing this type of equipment. Input also focused on such areas as wear cycles, exposure times, environmental conditions, and ergonomic requirements.

“Law enforcement has a lot of unique missions, ranging from the routine patrol of the cop on the street to the duties of the bomb squad,” Mattson says. “We need their participation and input to make this work.”

***For more information on efforts by the National Institute of Justice to identify public safety technology needs and requirements, contact Jim Wong at [James.Wong@usdoj.gov](mailto:James.Wong@usdoj.gov).***



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