



FINAL WORKSHOP REPORT

CBRNE STANDARDS

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, EXPLOSIVES

A PUBLICATION OF THE
ANSI HOMELAND SECURITY STANDARDS PANEL

NOVEMBER 2012



Workshop Report

CBRNE Standards

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Report prepared November 2012

1.0 Background

Reliable CBRNE countermeasures equipment is essential for the protection of life, health, property, and commerce. With an eye toward this critical aspect of national preparedness, in 2011 the Office of Science and Technology Policy (OSTP) collaborated with the U.S. Departments of Homeland Security (DHS) and Commerce (DOC) to release the *National Strategy for CBRNE Standards*,¹ outlining the federal vision and goals for the coordination and implementation of CBRNE equipment standards by 2020.

Since 2003, the American National Standards Institute (ANSI) Homeland Security Standards Panel (HSSP)² has worked to accelerate the development of voluntary standards for homeland security and emergency preparedness in support of the DHS Science and Technology Directorate.



As part of that continuing effort, the HSSP convened the workshop: *CBRNE Standards*, on September 11, 2012, in Arlington, VA. This interactive workshop provided an opportunity for all participants – government, standards developers, program developers, and small businesses – to engage in an open dialogue and gain knowledge about all related issues and challenges.

2.0 Executive Summary

The focus of the workshop was on the implementation of the national strategy by private-sector stakeholders and included feedback from the implementers.

The one-day event opened with introductory remarks highlighting the importance of the public-private partnership in order to address gaps and standards based solutions for CBRNE. In order to meet needs for continued CBRNE standardization and implementation, the community must not only define the problems that need to be solved, but also define the end goals and what roles the government and industry will play in achieving them.

¹ http://www.whitehouse.gov/sites/default/files/microsites/ostp/chns_cbrne_standards_final_24_aug_11.pdf

² <http://www.ansi.org/hssp>

This introductory discussion was followed by a panel discussion, *National Strategy & Federal Implementation of CBRNE Standards*, which provided an overview of the National Strategy for CBRNE Standards and the status of implementation of the six goals of the national strategy. The next panel, *Implementation of CBRNE National Strategy by Standards Development Organization (SDO) Stakeholders*, posed a series of questions to panelists including their view on the National Strategy and its implementation. The final panel, *Implementation of CBRNE National Strategy by Conformity Assessment and Testing Organization Stakeholders*, provided the opportunity for panelists to provide their views on the National Strategy and how its implementation impacts their organizations.

The day concluded with closing remarks by the workshop co-chairs focused on the importance of standards and conformance-based solutions in the CBRNE arena. Specifically, the co-chairs cited the need for a suite of standards that applies across a range of hazards and supports the concept of interoperability.

3.0 Welcome and Opening Remarks

Opening remarks were provided by:

- Phil Mattson, Acting Director, Office of Standards, U.S. Department of Homeland Security (DHS)
- Robert J. Ingram, Battalion Chief, WMD Branch Chief, Fire Department, City of New York
- Mary Saunders, Director, Standards Coordination Office, U.S. Department of Commerce, National Institute of Standards and Technology (NIST)

Mr. Mattson opened the meeting by thanking all of the speakers and attendees for their participation, noting that he was looking forward to a productive meeting.

Chief Ingram began his remarks by remarking upon the significance of having this meeting on September 11, and asked the meeting participants to take a moment to recognize the day. Chief Ingram then highlighted the importance of receiving support from federal partners in order to have first responder representation at standards meetings. In addition, Chief Ingram noted that CBRNE standards are needed for first responders specifically in the area of biological threat detection and hand-held detectors. He concluded his remarks by adding that it is important for standards-based solutions for CBRNE to move forward in order to ensure the safety of first responders.



First responders need standards for biological threat detection and hand-held detectors.

Ms. Saunders began her remarks by emphasizing that the model for the ANSI-HSSP is based on a public-private partnership. Ms. Saunders noted that standards gaps in the area of CBRNE need to be identified, and an end goal must be determined in order to decide what role each agency will play in achieving the end goal. Ms. Saunders added that it is important for both the private and public sectors to be involved in determining standards gaps and goals early in the process. Ms. Saunders concluded her remarks by stating that NIST participates significantly in standards development work, and is always available as a resource to assist any organization with their standardization priorities.

4.0 Panel Discussion – National Strategy and Federal Implementation of CBRNE Standards

Panelists included:

- Phil Mattson, Acting Director, Office of Standards, DHS
- Franca Jones, Assistant Director, Chemical & Biological Countermeasures, White House Office of Science and Technology Policy (OSTP)
- Tod Companion, Program Manager for Standards, Office of Standards, Science and Technology Directorate (S&T), DHS
- James C. Cooke, Director, Deputy Secretary of the Army, Test & Evaluation Office, U.S. Department of Defense
- Keith Holtermann, Director, National Training, Education, and Exercise, Federal Emergency Management Agency (FEMA)
- Jonathan Szalajda, Branch Chief for Policy and Standards Development, National Institute for Occupational Safety and Health (NIOSH)

Implementing the National Strategy for CBRNE Standards – Need for Public-Private Partnership

The *National Strategy for CBRNE Standards* specifies high-level goals, identifies lead activities, and provides a foundation to bridge current gaps. The strategy can be applied to equipment used by first responders for CBRNE detection, protection, and decontamination. The strategy is intended to be used to guide first responders in the procurement of materials, and to provide the end users with confidence that the equipment works correctly. The national strategy also aims to provide guidance to the commercial sector so that they can develop equipment that meets the end-user needs.

Coordination and Interoperability Imperative

Coordination between the public and private sectors is necessary in order to develop CBRNE products that are most effective for the end user. Since CBRNE devices are inherently designed to operate across multiple platforms by various users, interoperability is essential and should be a core requirement of all performance standards.

Interoperability should be a core requirement of all performance standards.

Interoperability ties directly into training and con-ops for devices and should be drawn from established device usability requirements. Making interoperability a core standards requirement is a way to invest in voluntary consensus standards by creating a business case for the private sector to adopt the standards.

Can Military CBRNE Standards Work for First Responders?

The Department of Defense has developed several existing military-specific CBRNE standards, including twenty-six test and evaluation standards and two interagency test operations procedures. Through collaboration with private-sector stakeholders, the hope is that these can become national standards. Through such collaboration, the standards can be evaluated for their responsiveness to end-user needs and various operational environments.



Specifically, the first responder community must partner with the Department of Defense in order to obtain the requirements for the use of military equipment and ensure that the equipment meets first-responder needs. A first step would be for the emergency responder community to obtain military capability development documents, so that both groups can collaborate on joint development of equipment.

Training Needed

The *National Strategy for CBRNE Standards* can be supported by developing national training and certification to ensure that end users are capable of responding to and recovering from CBRNE incidents. The Center for Domestic Preparedness houses a large training facility and teaches several CBRNE-related courses. Training and certification bodies and facilities should consider credentialing based on current CBRNE standards, as well as stay abreast of future standards development activities in the CBRNE domain.



CBRNE-specific training and credentialing based on current standards is needed.

Measuring Up with Performance Requirements

In order for performance to be measured, a suite of standards-based capabilities need to be developed for CBRNE that include performance requirements. SDOs and the testing community must work together to develop both the standards and testing methods to be included in this CBRNE standards suite.

5.0 Panel Discussion – Implementation of CBRNE National Strategy by SDO Stakeholders

Panelists included:

- Christian Dubay, P.E., Vice President & Chief Engineer, National Fire Protection Association (NFPA)
- Jim Bradford, Executive Director, AOAC International
- Dr. Alim A. Fatah, Program Manager/Physical Scientist, NIST, representing ASTM International
- Michael P. Unterweger, Chairman IEEE ANSI N42, Group Leader, NIST
- Harry Massey, Industry Director, National Electrical Manufacturers Association (NEMA)
- Ken Willette, Division Manager, Public Fire Protection, NFPA

U.S. Standards or International Standards?

U.S.-domiciled SDOs have a strong interest in making their current and future CBRNE standards international standards through partnership with the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). For example, the IEC has already formed a working group to address radiation/nuclear standards. As the U.S. member body to ISO, and via the U.S. National Committee, to the IEC, ANSI can act as the bridge to assist SDOs looking to have their national standards adopted as international standards.

Knowledge is Power

Each SDO has an area of focus that is an asset to that organization. It would be extremely helpful for the development of CBRNE standards to have SDOs collaborate with the government, specifically the Department of Defense, in order to help leverage information.

SDOs should also consider collaborating with each other in order to co-locate their meetings on related topics. This would allow for a cross pollination of standardization efforts which could result in additional CBRNE standards development. It would also create more awareness of the specific topics that other SDOs are working on, which would help avoid duplication of standardization efforts.

Access to Standards

Some end users of CBRNE standards have identified the cost of those standards as an impediment to usage. Participants recommended that SDOs work with CBRNE stakeholders to explore ways to make the standards reasonably available to the community of need.



Cross-pollinate CBRNE standardization efforts and reduce duplication by co-locating meetings on related topics.

Priority: First Responder Equipment

Standards that focus on cost-effective solutions for first responders should be a priority for SDOs and DHS. As personal protective equipment technology improves, there will be a need to adjust existing standards and create new standards that take the advances and innovations into account.

6.0 Panel Discussion – Implementation of CBRNE National Strategy by Conformity Assessment and Testing Organization Stakeholders

Panelists included:

- Gordon Gillerman, Director of Standards Services, NIST
- Cheri Hautala-Bateman, GRaDER® Program Manager, Domestic Nuclear Detection Office, DHS
- Chris Tillery, Director, Office of Science & Technology, National Institute of Justice
- William Haskell, Project Officer, Policy & Standards Development Branch (PSDB), National Personal Protective Technology Laboratory (NPPTL) / NIOSH
- Patricia Gleason, President, Safety Equipment Institute (SEI)
- David E. Mills, Principal Engineer, Initiating and Indicating Devices, Product Safety, Underwriters Laboratories (UL) LLC

Whose Requirements Drive Standards and Conformance?

While it is true that user requirements drive technology, manufacturers must be able to consistently meet those requirements. When manufacturers participate actively in the standards development process, the most effective standards and certification programs result. Users are assured that products will meet their needs, and manufacturers are assured that they can meet the requirements described in the relevant standards.

Harmonizing Standardization Discrepancies

Inevitably, some discrepancies will arise in CBRNE standards and technologies. To the greatest extent possible, SDOs, conformity assessment bodies, and the CBRNE community should harmonize these discrepancies to save time, money, and frustration for all parties. One further suggestion is to create an interoperable conformity assessment system, which would allow for the broadest acceptance of one set of compliance test results. A clear articulation of the business case for conformance should be part of this system, which would increase the number of organizations that adopt standards and testing procedures.

What Is Conformity Assessment?

Conformity assessment can verify whether a particular product meets a given level of quality or safety. And it can provide information about the product’s characteristics, the consistency of those characteristics, and the performance of the product.

Conformity assessment activities include accreditation, certification, inspection, registration, supplier’s declaration of conformity, and testing.

7.0 Closing Remarks and Next Steps

Closing remarks were delivered by Chief Robert Ingram and Mr. Phil Mattson. Chief Ingram thanked all of the attendees for their participation and noted that there is clearly a need for more communication between various agencies in order to develop useful CBRNE standards. He added that it is important that workshops continue in order to make progress on CBRNE standards development.

Mr. Mattson began his remarks by thanking the ANSI HSSP co-chairs, the Department of Homeland Security staff, NIST staff, and ANSI staff for their efforts in this successful workshop.

Mr. Mattson noted that one action item for everyone in attendance is to socialize the national CBRNE strategy to the broader community to provide examples of how the strategy is being addressed in the federal government, and how those lessons can be applied to SDOs when developing standards.

Mr. Mattson emphasized the need for end users to communicate their needs to SDOs and to offer feedback on finished standards to ensure that key issues are being addressed. He added that highlighting the business case for the use of standards may boost successful implementation. But he also noted that a key implementation challenge remains – enforcement of compliance to the standards. Mr. Mattson suggested that SDOs and industry work together to determine how information is shared and how existing capabilities can be leveraged.

Mr. Mattson concluded his remarks by stating that there have been several actions items for SDOs, industry, and government identified at this workshop and it is important for those communities to communicate in order to keep track of the work being done in this area. Mr. Mattson suggested that a follow-up workshop on CBRNE standards be held to determine if the needs identified at this workshop are being addressed and identify next steps that can be taken.

8.0 Acknowledgements

Recognition and appreciation are due to the following:

- Phil Mattson, Acting Director, Office of Standards, DHS, and Robert J Ingram, Battalion Chief, WMD Branch Chief, Fire Department, City of New York for their leadership of this workshop.
- Mary Saunders, Director, Standards Coordination Office, U.S. Department of Commerce, NIST, for her opening remarks.
- All of the speakers listed on the agenda (see Appendix 1) for sharing their expertise and introducing key ideas and concepts utilized during the panel discussions.

9.0 Next Steps

Get first responders more involved

First responders must take a more active role in the development of CBRNE standards. As the predominant group of end users for CBRNE equipment, first responders are uniquely qualified to share expertise and best practices with the standardization community.

One suggestion is for the first responder community to partner with the Department of Defense in order to obtain the requirements for the use of military equipment and ensure that the equipment meets first-responder needs.

Focus on interoperability

Since CBRNE devices are inherently designed to operate across multiple platforms by various users, participants felt that interoperability is essential and should be a core requirement of all performance standards.

Workforce development

Training and certification bodies and facilities should consider credentialing based on current CBRNE standards, as well as stay abreast of future standards development activities in the CBRNE domain.

Make it easier

SDOs should try to cross-pollinate CBRNE standardization efforts and reduce duplication by co-locating meetings on related topics. This will make it easier and more cost effective for stakeholders to participate.

Measuring conformance

An interoperable conformity assessment system would allow for the broadest acceptance of one set of compliance test results. A clear articulation of the business case for conformance should be part of this system, which would increase the number of organizations that adopt standards and testing procedures.

Appendix 1 Agenda

	<p>ANSI Homeland Security Standards Panel (ANSI-HSSP)</p>	<p>A Workshop on: CBRNE Standards (Chemical, Biological, Radiological, Nuclear, and Explosives)</p>
<p>Workshop Co-Chairs:</p> <ul style="list-style-type: none"> • Phil Mattson, Acting Director, Office of Standards, U.S. Department of Homeland Security (DHS) • Robert J Ingram, Battalion Chief, WMD Branch Chief, Fire Department, City of New York 		<p>Final Agenda</p> <p>Tuesday, September 11, 2012</p> <p>Location: Capital Conference Center 3601 Wilson Boulevard Arlington, VA 22202</p>
<p>8:30am – 9:00am</p>	<p>Registration Desk Opens</p>	
<p>9:00am – 9:30am</p>	<p>Welcome & Opening Remarks</p> <ul style="list-style-type: none"> • Phil Mattson, Acting Director, Office of Standards, U.S. Department of Homeland Security (DHS) • Robert J Ingram, Battalion Chief, WMD Branch Chief, Fire Department, City of New York • Mary Saunders, Director, Standards Coordination Office, U.S. Department of Commerce, National Institute of Standards and Technology (NIST) 	
<p>9:30am-12:30pm</p>	<p>National Strategy & Federal Implementation of CBRNE Standards</p> <p>In pursuit of the President’s goal of national preparedness, it is essential that the Nation has reliable chemical, biological, radiological, nuclear, and explosives (CBRNE) countermeasures equipment that can be used with confidence for the protection of life, health, property, and commerce. The National Strategy for CBRNE Standards, which describes the Federal vision and goals for the coordination, prioritization, establishment, and implementation of CBRNE equipment standards by 2020 was created by the Cabinet-level National Science and Technology Council. It represents the Federal consensus regarding the development of standards for CBRNE equipment used by Federal, state, local, and tribal responders for CBRNE detection, protection, and decontamination. The <i>Strategy</i> is the result of a process that included the identification of current research efforts and practices with respect to performance specifications and test methods, as well as standards-development needs of all relevant Federal entities. The panel will provide an overview of the national strategy and the status of implementation of the six goals of the national strategy.</p> <p>Moderator:</p> <ul style="list-style-type: none"> • Phil Mattson, DHS <p>Presenters:</p> <ul style="list-style-type: none"> • Franca Jones, Assistant Director, Chemical & Biological Countermeasures, White House OSTP • Tod Companion, Program Manager for Standards, Office of Standards, Science and Technology Directorate (S&T), DHS 	

	<ul style="list-style-type: none"> • James C. Cooke, Director, Deputy Secretary of the Army, Test & Evaluation Office, U.S. Department of Defense • Keith Holtermann, Director, National Training, Education, and Exercise, Federal Emergency Management Agency (FEMA) • Jonathan Szalajda, Branch Chief for Policy and Standards Development, The National Institute for Occupational Safety and Health (NIOSH)
12:30pm-1:30pm	LUNCH
1:30pm-3:00pm	<p>Implementation of CBRNE National Strategy by Standards Development Organizations (SDOs) Stakeholders</p> <p>Panelists will be posed a series of questions, including their views on the National Strategy, how the implementation of the strategy impacts their organization and how they have/will implement it in their organization's programs.</p> <p>There will be Q&A by the audience following the panel.</p> <p>Moderator:</p> <ul style="list-style-type: none"> • Christian Dubai, Vice President & Chief Engineer, National Fire Protection Association (NFPA) <p>Panelists:</p> <ul style="list-style-type: none"> • Jim Bradford, Executive Director, AOAC International • Dr. Alim A. Fatah, Program Manager/Physical Scientist, NIST, representing ASTM International • Michael P. Unterweger, Chairman IEEE ANSI N42, Group Leader, NIST • Harry Massey, Industry Director, National Electrical Manufacturers Association (NEMA) • Ken Willette, Division Manager, Public Fire Protection, NFPA
3:00pm-3:15pm	Afternoon Break
3:15pm-4:45pm	<p>Implementation of CBRNE National Strategy by Conformity Assessment and Testing Organization Stakeholders</p> <p>Panelists will be posed a series of questions, including their views on the National Strategy, how the implementation of the strategy impacts their organization and how they have/will implement it in their organization's programs.</p> <p>There will be Q&A by the audience following the panel.</p> <p>Moderator:</p> <ul style="list-style-type: none"> • Gordon Gillerman, Director of Standards Services, NIST <p>Panelists:</p> <ul style="list-style-type: none"> • Cheri Hautala-Bateman, GRaDER Program Manager, Domestic Nuclear Detection Office, DHS • Chris Tillery, Director, Office of Science & Technology, National Institute of Justice • William Haskell, Project Officer, Policy & Standards Development Branch (PSDB), National

	<p>Personal Protective Technology Laboratory (NPPTL) / NIOSH</p> <ul style="list-style-type: none"> • Patricia Gleason, President, Safety Equipment Institute (SEI) • David E. Mills, Principal Engineer, Initiating and Indicating Devices, Product Safety, Underwriters Laboratories (UL) LLC
4:45pm-5:30pm	<p>Closing Remarks/Adjournment</p> <ul style="list-style-type: none"> • Phil Mattson, , Acting Director, Office of Standards, DHS • Robert J Ingram, Battalion Chief, WMD Branch Chief, Fire Department, City of New York
Immediately following end of workshop	<p>Networking Cocktail Reception</p> <p>Join us on the Terrace adjoining the conference room</p>

Appendix 2 Roster of In-Person Attendees

First Name	Last Name	Organization
Douglas	Bates	Internal Revenue Service
Angela	Benware	SURVICE Engineering Company
James	Bradford	AOAC
Joseph	Broz	NORC At the University of Chicago
Travis	Bruns	Smiths Detection
Donald	Bryan	Mitre
Gregory	Cade	National Fire Protection Association (NFPA)
Jessica	Carl	American National Standards Institute (ANSI)
John	Carrano	Carrano Consulting, LLC
Mick	Castillo	Center for Domestic Preparedness
Peter	Chiaro	U.S. Department of Homeland Security (DHS)
David	Colman	U.S. Department of Homeland Security (DHS)
Tod	Companion	U.S. Department of Homeland Security (DHS)
James	Cooke	U.S. Department of Defense
Bert	Coursey	National Institute of Standards and Technology (NIST)
Michelle	Deane	American National Standards Institute (ANSI)
Bruce	DeGrazia	GHSA
Daniel	Driscoll	Dept. of Navy NSWC Dahlgren
Christian	Dubay	National Fire Protection Association (NFPA)
Robert	Eckroade	W.L. Gore & Associates, Inc.
John	Edwards	Smiths Detection
Alim	Fatah	National Institute of Standards and Technology (NIST)
Gordon	Gillerman	National Institute of Standards and Technology (NIST)
Patricia	Gleason	Safety Equipment Institute (SEI)
William	Haskell	National Institute for Occupational Safety and Health (NIOSH)
Cheri	Hautala-Bateman	U.S. Department of Homeland Security (DHS)
Megan	Holste	DUSA-TE
Keith	Holtermann	Federal Emergency Management Agency (FEMA)
Jeffrey	Horlick	National Institute of Standards and Technology (NIST)
Larry	Hudson	National Institute of Standards and Technology (NIST)
Joselito	Ignacio	U.S. Department of Homeland Security (DHS)
Robert	Ingram	Fire Department City of New York (FDNY)
Franca	Jones	White House Office of Science and Technology Policy

First Name	Last Name	Organization
Lisa	Karam	National Institute of Standards and Technology (NIST)
Michael	Kienzle	W.L. Gore & Associates, Inc.
Konstantin	Kostadinov	Oceana
John	Kulick	Siemens USA
Charles	Laljer	Mitre
Sue	Liblong	The Tauri Group
George	Lozos	Smiths Detection
Harry	Massey	National Electrical Manufacturers Association (NEMA)
Phil	Mattson	U.S. Department of Homeland Security (DHS)
Jonathan	McGrath	U.S. Customs and Border Protection
J. Clay	McGuyer	U.S. Army
David	Mills	Underwriters Laboratories
Tony	PolICASTRO	Smiths Detection
Karen	Reczek	National Institute of Standards and Technology (NIST)
Mark	Reuther	Proengin Inc.
Heinrich	Reyes	U.S. Army
Hillary	Sadoff	U.S. Department of Homeland Security (DHS)
Mary	Saunders	National Institute of Standards and Technology (NIST)
Petr	Serguievski	U.S. Army Dugway Proving Ground
Peter	Shebell	U.S. Department of Homeland Security (DHS)
Renee	Stevens	U.S. Department of Homeland Security (DHS)
Mark	Stolorow	National Institute of Standards and Technology (NIST)
Paul	Summers	U.S. Customs and Border Protection
Jonathan	Szalajda	National Institute for Occupational Safety and Health (NIOSH)
Anna	Tedeschi	Strategic Analysis Inc.
Chris	Tillery	National Institute of Justice
Michael	Unterweger	National Institute of Standards and Technology (NIST)
Kenneth	Willette	National Fire Protection Association (NFPA)
Kristen	Williams	U.S. Customs and Border Protection