



## ***The InterAgency Board***

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**FY 2009–2010 Annual Report  
2010 Standardized Equipment List**



## **Dedication**

Dedicated to those brave Americans who stand forever vigilant to protect this country from those who would attempt to deny us our freedom. May their strength give us strength.

# IAB Champions



Arlington County (VA) Fire Department  
 ASTM International  
 Bellevue (WA) Fire Department  
 Boston (MA) Fire Department  
 Broward County (FL) Sheriff's Office  
 Centers for Homeland Defense and Security  
 Charlotte (NC) Fire Department  
 Chemical Biological Incident Response Force  
 Chicago (IL) Fire Department  
 Chicago (IL) Police Department  
 City of Tulsa (OK) Security  
 Cincinnati (OH) Fire Department  
 Cincinnati (OH) Urban Area  
 Cleveland (OH) Emergency Management Clinic  
 Collier County (FL) Sheriff's Office  
 Cook County (IL) DHS Emergency Management  
 Contra Costa County (CA) Office of the Sheriff  
 Cornell University  
 Cuyahoga County Department of Justice Affairs  
 Dartmouth College  
 Delaware Emergency Management Agency  
 Department of Defense, Joint Program Executive Office for Chemical and Biological Defense  
 Department of Defense, Research, Development and Engineering Command, Edgewood Chemical and Biological Center  
 Department of Health & Human Services, Centers for Disease Control and Prevention  
 Department of Health & Human Services, National Institutes of Health, Environmental Health Sciences

Department of Health & Human Services, Office of the Assistant Secretary for Preparedness & Response  
 Department of Homeland Security, Domestic Nuclear Detection Office  
 Department of Homeland Security, Federal Emergency Management Agency, Grants Preparedness Directorate  
 Department of Homeland Security, Federal Emergency Management Agency, National Preparedness Directorate  
 Department of Homeland Security, Federal Emergency Management Agency, Office of Policy & Program Analysis  
 Department of Homeland Security, Office of Health Affairs  
 Department of Homeland Security, Office of Health Affairs, BioWatch Program  
 Department of Homeland Security, Office of Infrastructure Protection, Emergency Services Sector  
 Department of Homeland Security, Science & Technology Directorate, Command, Control & Interoperability Division  
 Department of Homeland Security, Science & Technology Directorate, Interagency & First Responder Programs  
 Department of Homeland Security, Science & Technology Directorate, Test & Evaluation and Standards Division  
 Department of Justice, Office of Justice Programs, National Institute of Justice and Bureau of Justice Assistance  
 DeWitt (NY) Fire District  
 Disaster Mortuary Operational Response Team  
 District of Columbia Fire and Medical Services  
 Edgewood Chemical Biological Center

Environmental Protection Agency  
 Fairfax County (VA) Explosives Ordnance Disposal  
 Fairfax County (VA) Fire and Rescue Department  
 Fairfax County (VA) Police Department  
 Federal Bureau of Investigation – HMRU  
 FEMA – Urban Search & Rescue Communications Working Group  
 Georgetown University, Walsh School of Foreign Service  
 George Washington University  
 Grand Rapids (MI) Fire Department  
 Homeland Security Studies and Analysis Institute  
 Huntingdon County (PA) Emergency Management Agency  
 International Association of Chiefs of Police  
 International Association of EMS Chiefs  
 International Association of Fire Fighters  
 International Personnel Protection  
 Kettering (OH) Fire Department, Ohio Task Force 1  
 Lawrence (KS) Police Department  
 Lawrence Livermore National Laboratory  
 Lewis and Clark City-County (MT) Health Department  
 Long Island University  
 Los Angeles County (CA) Fire Department  
 Los Angeles County (CA) Sheriff's Department  
 Los Angeles (CA) Police Department, Counter Terrorism Training Unit  
 Louisiana State University  
 Louisiana State University, Health Sciences Center  
 Louisville (KY) Metro Police Department



- Maryland State Police
- Massachusetts Department of Fire Services
- Massachusetts Department of Public Health, Bioterrorism Response Laboratory
- Miami-Dade (FL) Police Department
- Montgomery County (MD) Fire and Rescue
- Mt. Erie (WA) Fire Department
- National Bomb Squad Commanders Advisory Board
- National Disaster Medical System, Disaster Mortuary Operational Response Team
- National Fire Academy
- National Fire Protection Association
- National Guard Bureau, 44th Civil Response Team
- National Guard Bureau, US Army Chemical School
- National Interagency Fire Center, National Interagency Incident Communications Division
- National Institute for Occupational Safety and Health, National Personal Protective Technology Laboratory
- National Institute of Standards and Technology, Office of Law Enforcement Standards
- National Naval Medical Center
- National Veterinary Response Team 2
- Naval Postgraduate School
- Naval Surface Warfare Center, Asymmetric Defense Systems Department
- New Castle County (DE) Department of Public Safety, Emergency Medical Services
- New York City (NY) Fire Department
- New York City (NY) Fire Department, FDNY Training Academy, Haz Tac Operations
- New York State Department of Public Health
- New York State Emergency Management Office
- New York State Police
- Northern Virginia Emergency Response System
- Orange County (CA) Fire Authority
- Orange County (CA) Sheriff's Department
- Oregon State Department of Public Health, Emergency Preparedness
- Orlando (FL) Fire Department
- Orlando (FL) Police Department
- Phoenix (AZ) Fire Department
- Placer County (CA) Community Clinics
- Placer County (CA) Health and Human Services
- Proconsul, Principal Consultant
- Responder Knowledge Base
- Rhode Island Department of Health, Bioterrorism Response and Special Pathogens Laboratory
- Sacramento County (CA) Sheriff's Department
- Sarasota County (FL) Fire Department
- Seattle (WA) Fire Department
- Seattle (WA) Police Department
- Seattle (WA) Public Utilities
- Seminole County (FL) Sheriff's Office
- Snohomish County (WA) Fire District #7
- South Carolina Law Enforcement Division
- South Central (PA) Regional Task Force
- Technical Support Working Group
- Texas Task Force 1
- Transpiration Safety Administration
- Troy (MI) Police Department
- United States Army Center for Health Promotion and Preventative Medicine
- United States Army Natick Soldier RDEC
- United States Army Public Health Command
- United States Army Research Laboratory
- United States Capitol Police
- United States Central Command, J5, Combating WMD Division, Cooperative Defense Branch
- United States Coast Guard
- United States Coast Guard, National Strike Force
- United States Fire Administration, National Fire Academy
- United States Marine Corps, Chemical Biological Incident Response Force
- United States Marine Corps, Emergency Management/CBRN
- United States Marshals Service
- United States Northern Command
- United States Public Health Service
- University of Connecticut
- University of Montana, College of Health Professions and BioMedical Science
- University of Toledo
- USMC 3d Marine Aircraft Wing
- Virginia Department of Emergency Management
- Walker County (GA) Emergency Services
- Washington Metro Transit Police Department
- West County (MO) EMS & Fire District
- Yale Emergency Medicine
- Yale University School of Medicine



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## 2010 IAB Chair

ALAN DENNIS VICKERY

*Assistant Chief of Risk Management and Safety  
Seattle (WA) Fire Department*

A.D. Vickery, a 42-year veteran of the Seattle Fire Department, is currently the Assistant Chief of Risk Management and Safety, dealing with all aspects of the department in regards to risk management and safety including fires, hazardous materials, emergency medical services, special operations, and homeland security. He was previously Deputy Chief of Special Operations responsible for all operational issues for the department, as well as specialty teams, the Hazardous Materials Unit, Marine Firefighting Unit, Technical Rescue Unit, Emergency Preparedness, Metropolitan Medical Strike Team, Urban Search and Rescue, and Homeland Security Planning. Alan has served as a Firefighter/Paramedic, the head of the Fire Investigation Unit, and on both engine and ladder companies. He is recognized for his proactive role in preparing first responders to safely perform their jobs using the latest technology available.



## 2010 IAB Deputy Chairs

JAY HAGEN

*Emergency Preparedness Officer  
Seattle (WA) Fire Department*

Battalion Chief Jay Hagen has recently returned to the Operations Division of the Seattle, Washington Fire Department. During his 20-year career as a first responder, he has been assigned to the Operations, Fire Prevention, Training, and Administrative divisions. A 2002 graduate of the University of Montana, Jay has studied organizational communications and business management. In March 2006, he earned a Master of Arts degree in Homeland Security and Defense from the Naval Postgraduate School in Monterey, California, where he represented his classmates as president. Jay recently concluded a 1-year assignment as a Senior Research Fellow at the Department of Homeland Security's Office of Grants and Training, working in the technical assistance division. He began focusing on equipment and interoperability issues during this period. Jay returned to the Seattle Fire Department in August 2007 as the Emergency Preparedness Officer, where he is responsible for homeland security and emergency preparedness.



DAVID MCBATH

*Staff Inspector – Field Command  
New York State Police*

Staff Inspector David McBath is a 25-year veteran in law enforcement, currently assigned to the Field Command (operations) section at New York State Police Headquarters. He assists executive staff in the management of uniform force and special operations activities statewide. He served as Deputy Chair of the InterAgency Board, a voluntary group of various state, local, and federal government representatives and organizations from all emergency response disciplines that collaborate to strengthen the nation's ability to prepare for and respond safely and effectively to emergencies, disasters, and chemical, biological, radiological, nuclear, and explosive (CBRNE) incidents. He has also served on the National Institute of Justice, Special Technical Committee for Law Enforcement CBRNE PPE Standards Development.



2009 saw the culmination of 2 years' work on restructuring the IAB to better meet the needs of the responder community and our federal partners.

A new charter and bylaws were formally adopted. This charter created a Leadership Team composed of the Chair and two Deputy Chairs elected from the membership. Together they share the responsibility for fulfilling four major administrative functions: agenda setting, strategic planning, external relations, and communications.

The IAB works through its SubGroups. Each SubGroup has Co-Chairs from a state or local jurisdiction and federal partners.

The leadership of the IAB is supported by the Federal Agency Coordinating Committee (FACC), which provides the interface between the sponsoring federal agencies and the IAB. The updated bylaws detail the day-to-day functioning of the IAB to include terms of office, elections, membership, and participation eligibility, work management, and meetings.

Additionally, the IAB is now on a set planning schedule. The Executive Committee (composed of the SubGroup Co-Chairs) meets with the Leadership Team in August to vet and develop a work plan for the coming year based on SubGroup priorities; the October Board Meeting sets the agenda for the coming year based on the developed work plan; the February Board Meeting allows the SubGroups to collaborate and continue to advance work plan priorities; and at the June Board Meeting, the SubGroups provide progress reports in accomplishing the year's goals, elections are held in accordance with the bylaws, and next year's SubGroup priorities are identified.

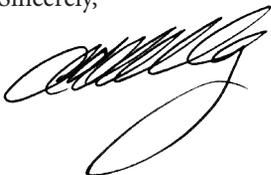
I would like to thank Robert Ingram (FDNY), IAB's previous Chair, for his vision and guidance in updating the IAB Charter and Bylaws, and Amy Donahue, PhD (University of Connecticut), Interoperable Communications and Information Systems, for her expertise and commitment to ensuring the documents provided appropriate guidance to all aspects of the IAB's needs and the Battelle support staff for their patience, persistence, and expertise.

As a member of the IAB since its inception, I have seen a small group of responders focused on advising the Justice Department and the Department of Defense on HazMat Team equipment and training needs blossom into the current IAB which provides advice from multiple disciplines to multiple federal agencies on all aspects of ensuring responders' needs are met.

For the first time in IAB history, the incoming Chair will be a law enforcement officer, Dave McBath from the New York State Police. His two Deputy Chairs will be Jay Hagen, Seattle Fire Department, and John Delaney, Arlington County Fire Department. This excellent team has the full support of the IAB and federal partners.

The IAB has never lost focus on its core mission, protecting the health and safety of those men and women who are responding every day to protect our citizens and this country from harm. Bless the IAB.

Sincerely,



A.D. Vickery, IAB Chair



### **1. Name**

This organization shall be called the InterAgency Board (IAB).

### **2. Purpose**

The IAB is a voluntary collaborative panel of emergency preparedness and response practitioners from a wide array of professional disciplines that represent all levels of government and the voluntary sector. The IAB provides a structured forum for the exchange of ideas among operational, technical, and support organizations to improve national preparedness and promote interoperability and compatibility among local, state, tribal, and federal response communities. Based on direct field experience, IAB members advocate for and assist the development and implementation of performance criteria, standards, test protocols, and technical, operating, and training requirements for all-hazards incident response equipment with a special emphasis on Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) issues. The IAB also reviews and comments on broader emergency preparedness and response policy, doctrine, and practices.

### **3. Mission**

The mission of the InterAgency Board is to strengthen the nation's ability to prepare for and respond safely and effectively to emergencies, disasters, and CBRNE incidents.

### **4. Origin**

The IAB has worked to improve standardization and interoperability since October, 1998, when it was sanctioned by the Attorney General of the United States and co-founded by the Department of Defense's Consequence Management Program Integration Office and the Department of Justice's Federal Bureau of Investigation Weapons of Mass Destruction Countermeasures. The IAB was originally designated The InterAgency Board for Equipment Standardization and Interoperability to emphasize its particular attention to equipment requirements. In recent years, the Board's name was simplified to The InterAgency Board to emphasize its interdisciplinary nature and the breadth of interoperability issues it addresses.

The IAB was conceived out of a concern that responders struggled to make sound equipment decisions because performance characteristics were not well understood, standards to specify equipment requirements were lacking, and equipment interoperability and compatibility were weak. These conditions undermined the capability of the response community, and endangered its ability to respond to terrorist attacks, particularly events involving weapons of mass destruction. The IAB's early vision was prescient: less than three years later the supreme importance and profound challenges of interoperability were underscored by the devastating attacks of September 11, 2001. These challenges persist to this day.

### **5. Stakeholders**

The IAB's goal is to improve the safety and welfare of responders and citizens by enabling an effective, integrated response system. The IAB serves a broad range of constituents, including response practitioners and other decision-makers at all levels of government; across the public, private, and nonprofit sectors; in all disciplines and professions; and in all regions of the country. Two sets of stakeholders are particularly central to the IAB's efforts, responders and federal agency partners. The IAB is first and foremost a responder organization. The IAB serves the local, state, tribal, and federal emergency response community at large. The federal partners participate in the IAB's work, and some of them provide the financial sponsorship that allows the IAB to function.

## 6. Vision and Criteria for Success

The IAB seeks to be the source for emergency responder insight about any policy, doctrine, practice, standard, research and development program, or training and exercise program that affects interoperability, compatibility, capability, and standardization. The IAB is a trusted, authoritative, representative, and valid repository of field perspectives, operational knowledge, and technical expertise.

The IAB purposely comprises a very diverse body of emergency preparedness and response experts, but is unified by a set of criteria that frame its goals, shape its decisions, and guide its actions. These criteria are:

- The IAB emphasizes interoperability, compatibility, capability, and standardization
- The IAB fosters a multidisciplinary perspective
- The IAB facilitates effective intergovernmental partnerships
- The IAB is a credible voice of the responder community
- The IAB is proactive
- The IAB shares field operational experiences and practices.

## 7. Scope of Activities

**The IAB will accomplish its mission and fulfill its vision by:**

- Serving as a conduit for direct feedback from responders currently practicing in the field on the front lines of emergency response at all levels of government. The IAB offers an honest, unfiltered, unvarnished view of what responders do, what they need, and how federal programs and policies affect them now and will affect them in the future.
- Serving as an honest broker that aggregates the diverse views of responders. The Board as a whole is unencumbered by particular professional or agency agendas. The IAB's goals and objectives are set by consensus of its membership, which is representative of the federal, state, and local emergency response communities. It is therefore broad in scope, and able to voice the perspectives, views, and concerns of responders nationwide without undue influence from the particular interests of any one discipline, organization, or professional association.
- Convening established experts knowledgeable about emergency preparedness and response issues, particularly related to equipment, including requirements, standards, performance, operability, interoperability, and compatibility. This expertise assists, guides, and informs agencies, associations, and manufacturers seeking to design, develop, test, evaluate, and deploy existing and new equipment and capabilities. It helps organizations that sponsor research and development programs formulate grant guidance and evaluate program effectiveness. It helps response agencies make decisions about equipment by providing insight about performance and operational, training, and maintenance requirements.
- Representing a broad array of professional response disciplines, sectors, and levels of government, explicitly shunning parochialism in favor of a true multidisciplinary perspective. The IAB is also wide-ranging in the size, type, and geographic location of organizations it represents. This enables the diverse array of public safety professionals to come together as a unified and integrated emergency preparedness and response system.
- Creating a forum that brings diverse agencies and perspectives together. This enhances cooperation, reduces redundancy, resolves conflicts, and thus improves the safety, efficiency,

and effectiveness of programs. The IAB is a nexus of disciplines and agencies that allows people to talk to each other and work together to solve problems. This culture of professional openness allows the group to develop viable solutions to equipment standardization and training challenges because all relevant players interact freely, honestly, and without fear of retribution.

- Being proactive. The IAB identifies local, national, and global trends that affect the response community, in order to understand the implications of policy and operational choices. This allows the IAB to help the field adapt early to emerging trends, address looming threats, and take advantage of promising opportunities.

## **8. Organization Structure**

The IAB is comprised of members that may include federal officials or elected officers of state, local, and tribal governments (or their designated employees with authority to act on their behalf), acting in their official capacities. Each IAB member participates as an affiliate of their home organization and their involvement must be formally sanctioned by that organization. At the same time, members also bring their expertise in their respective fields to bear on the work of the IAB, and members therefore also offer perspective and expert insight from their disciplines and specialties. Members are appointed and serve as described in the IAB's Bylaws. Members must be willing and able to actively participate and contribute regularly to the work products of the IAB. Members are expected to respond to requests for information and assistance from the IAB leadership. Members must maintain current field and disciplinary knowledge and expertise.

The IAB is led by a Chairperson (Chair), who is elected from among the IAB membership and serves as described in the IAB's Bylaws. The Chair is an actively serving member of the state and local response community. To reduce the burden on the Chair and assure the IAB has the leadership capacity it needs, there are two Deputy Chairs. The Deputy Chairs are also elected from among the IAB membership and serve as described in the IAB's Bylaws. The Deputy Chairs are actively serving members of the state and local response community. The Chair and Deputy Chairs together share responsibility for fulfilling four major administrative functions that allow the IAB to operate effectively: agenda setting, strategic planning, external relations, and communications. To help accomplish these functions, the Chair may delegate responsibility for these functions. The Chair may also decide to form ad hoc committees and work groups drawn from the membership.

The IAB operates through SubGroups. Each SubGroup has a Co-Chair from a state or local government who is assisted by a Co-Chair from a federal department or agency. The SubGroup Co-Chairs are elected and serve as described in the IAB's Bylaws. The SubGroups develop their own internal organization as they see fit to accomplish their work. This may include the formation of teams or working groups within or across the SubGroups. SubGroups will vary in size according to their work plans and the particular expertise they require, but should be no less than 15 and no larger than 25 voting members. The IAB's SubGroups are: Equipment; Health, Medical and Responder Safety; Information Management and Communications; Science and Technology; Standards Coordination; Strategic Planning; and Training and Exercises. SubGroups may be formed or dissolved as necessary to accomplish the IAB's goals and objectives.

Leadership of the IAB is guided by the Federal Agency Coordinating Committee (FACC), which is a coordination committee that provides the interface between the IAB and sponsoring federal government agencies. The FACC consists of the federal officials from agencies and departments that contribute funding to support the IAB. The IAB Chair and Deputy Chairs interact directly with and are ex officio members of the FACC.

To assure that the Board functions coherently and to coordinate its work, the Chair, Deputy Chairs, SubGroup Co-Chairs, and FACC Chair form an Executive Committee.

## **9. Business Processes**

The IAB shall conduct its mission in accordance with an IAB work management plan developed annually by the Executive Committee, as described in the IAB's Bylaws.

IAB work is conducted during three formal Board meetings annually, SubGroup/Committee meetings, and additional meetings of specially designated working groups as needed. Formal IAB meetings shall be held exclusively between Federal officials and elected officers of state, local, and tribal governments (or their designated employees with authority to act on their behalf) acting in their official capacities. Meetings are solely for the purposes of exchanging views, information, or advice relating to the management or implementation of federal programs established pursuant to public law that explicitly or inherently share intergovernmental responsibilities or administration per Pub. L. 104-4, Sec 204 (b) (2) as implemented by OMB memorandum M-95- 20, as amended.

## **10. Funding and Resources**

Financial support for the IAB is provided through sponsorship by federal agencies. The FACC is responsible for securing and coordinating these financial contributions. In part, these resources fund a program office, operated under a contract with one of the IAB's federal partners, that provides administrative support for the IAB.

## **11. Process for Amendments**

This Charter may be altered, amended, or abrogated at an announced meeting of the InterAgency Board or at a meeting specifically called for that purpose, upon majority vote by the members of the Board. In the event of a tied vote, or an impasse to a decision, the Chair will convene the Executive Committee, which will vote on the proposal. If resolution due to a tied voted or impasse continues, then the existing Charter will remain in effect.

## IAB Demographics

In 2010, the IAB conducted a demographic survey of its membership. The results are shown in this section.

IAB membership comprises approximately 170 dedicated professionals. Almost 80 percent of the membership are or have been emergency responders or receivers. State, local, and federal responders from various disciplines as defined by Homeland Security Presidential Directives are represented. These disciplines include fire service, law enforcement, medical/health, emergency management, emergency communications, military, and public works. The majority of first responders are still active, have been in service for over 26 years, and work in mid-grade supervisor or executive level positions.

The remaining 20 percent of the membership are valuable Subject Matter Experts (SMEs) representing government, academic, professional association, and information technology disciplines.

The graphics below show a detailed breakdown of the IAB membership.

### 1. Membership Including Federal Representatives

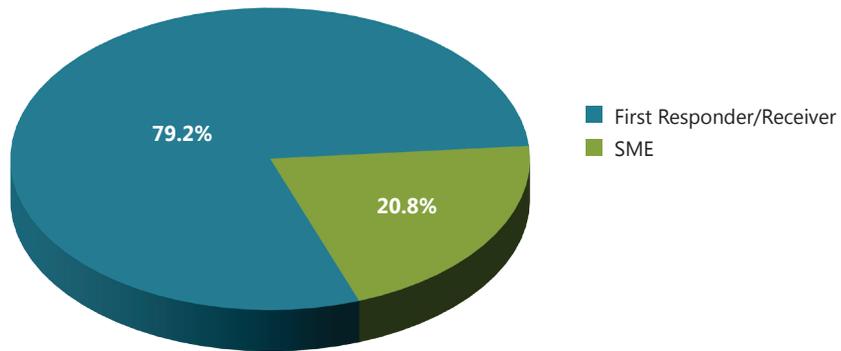


### 2. Membership Not Including Federal Representatives



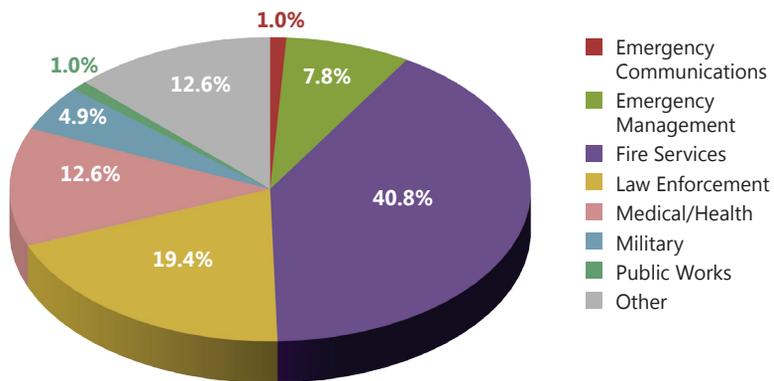
### 3. First Responder/Receiver Versus SME

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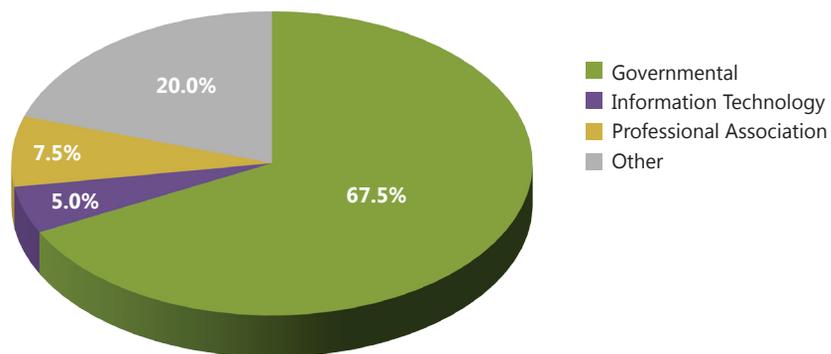
### 4. First Responder/Receiver Discipline Breakdown

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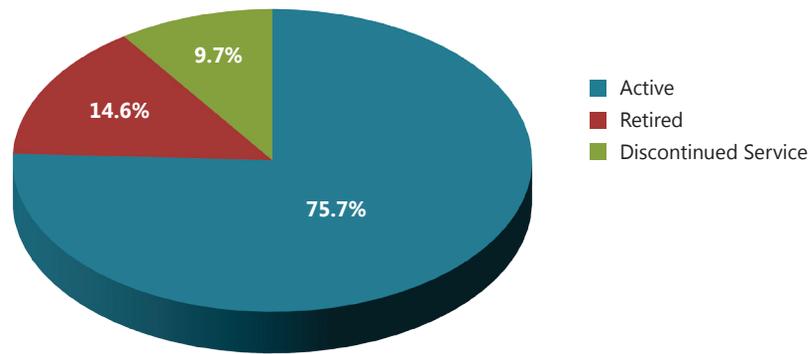
### 5. SME Discipline Breakdown

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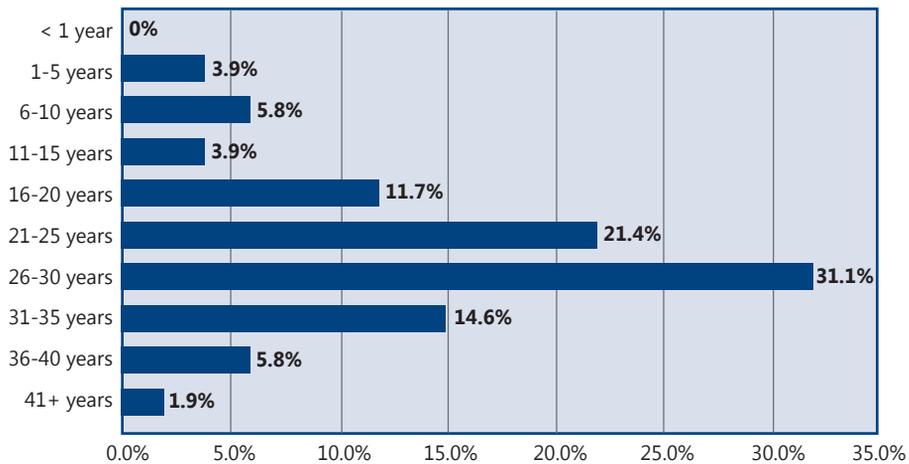
## 6. First Responder/Receiver Status

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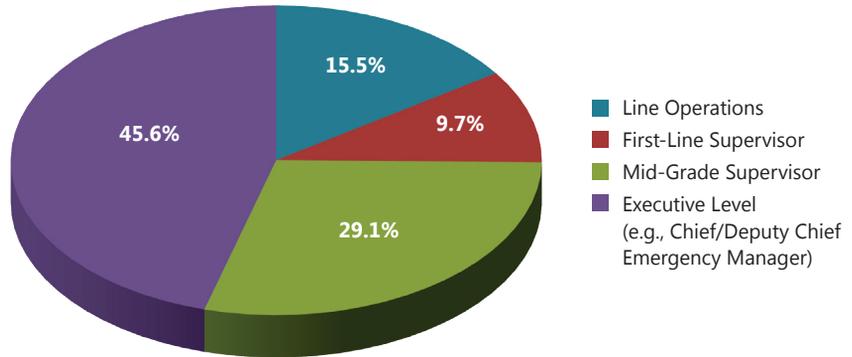
## 7. First Responder/Receiver Length of Service

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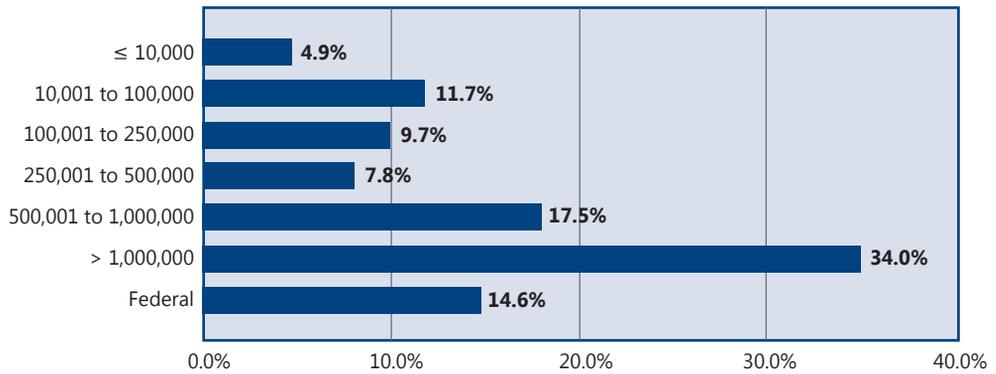
## 8. First Responder/Receiver Operational Level

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## 9. First Responder/Receiver Jurisdiction Size

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# Out of Many, One:

## Mission, Vision, Values, and Focus

### PURPOSE

This document articulates the mission, vision, values, and strategic emphasis of the InterAgency Board (IAB). It serves as the basis for the IAB's ongoing strategic planning effort. This document is not static, but will evolve as the IAB's work progresses.

### BACKGROUND

The IAB is a voluntary collaborative panel of emergency preparedness and response practitioners from a wide array of professional disciplines that represent all levels of government and the voluntary sector. The IAB provides a structured forum for the exchange of ideas among operational, technical, and support organizations to improve national preparedness and promote interoperability and compatibility among local, state, and federal response communities. Based on direct field experience, IAB members advocate for and assist the development and implementation of performance criteria, standards, test protocols, and technical, operating, and training requirements for all-hazards incident response equipment with a special emphasis on Chemical, Biological, Radiological, Nuclear, and Explosive issues. The IAB also informs broader emergency preparedness and response policy, doctrine, and practice.

### MISSION

The mission of the InterAgency Board is to strengthen the nation's ability to prepare for and respond safely and effectively to emergencies, disasters, and CBRNE incidents.

The IAB will accomplish this by:

- Emphasizing interoperability, compatibility, and standardization
- Fostering a multidisciplinary perspective
- Facilitating effective intergovernmental partnerships
- Being a credible voice of the responder community
- Being proactive
- Sharing field operational experiences and practices.

### VISION

The IAB seeks to be the source for emergency responder insight about any policy, doctrine, practice, standard, research and development program, or training and exercise program that affects interoperability, compatibility, and standardization. The IAB will continue to be a trusted, authoritative, representative, and valid repository of field perspective, operational knowledge, and technical expertise.

## VALUES

The IAB purposely comprises a very diverse body of emergency preparedness and response experts, but is unified by a set of core values that frame its goals, shape its decisions, and guide its actions. These values are:

### Ground Truth

The IAB is a conduit for direct feedback from responders currently practicing in the field on the front lines of emergency response at all levels of government. The IAB offers an honest, unfiltered, unvarnished view of what responders really do, what they really need, and how federal programs and policies affect them now and will affect them in the future.

### Independence

The IAB is an honest broker that aggregates the diverse views of responders. The Board as a whole is unencumbered by particular professional or agency agendas. The IAB's goals and objectives are set by consensus of its representative membership of the federal, state, and local emergency response communities. It is therefore broad in scope, and able to voice the perspectives, views, and concerns of responders nationwide without undue influence from the particular interests of any one discipline, organization, or professional association.

### Credibility

The IAB convenes established experts knowledgeable about emergency preparedness and response issues, particularly related to equipment, including requirements, standards, performance, operability, interoperability, and compatibility. This expertise assists, guides, and informs agencies, associations, and manufacturers seeking to design, develop, test, evaluate, and deploy existing and new equipment and capabilities. It helps organizations that sponsor research and development programs formulate grant guidance and evaluate program effectiveness. It helps response agencies make decisions about equipment by providing insight about performance, and operational, training, and maintenance requirements.

### Diversity

The IAB is broadly representative of professional response disciplines, sectors, and levels of government, explicitly shunning parochialism in favor of a true multidisciplinary perspective. The IAB is also wide-ranging in the size, type, and geographic location of organizations represented. This enables the diverse array of public safety professionals to come together as a unified and integrated emergency preparedness and response system.

### Collaboration

The IAB is a forum that brings diverse agencies and perspectives together. This enhances cooperation, reduces redundancy, resolves conflicts, and thus improves the safety, efficiency, and effectiveness of programs. The IAB is a nexus of disciplines and agencies that allows people to talk to each other and work together to solve problems. This culture of professional openness allows the group to develop viable solutions to equipment standardization and training challenges because all relevant players interact freely, honestly, and without fear of retribution.

### Proactive Orientation

The IAB identifies local, national, and global trends that affect the response community, in order to understand the implications of policy and operational choices. This allows the IAB to help the field adapt early to emerging trends, address looming threats, and take advantage of promising opportunities.

## STRATEGIC EMPHASIS

In support of our mission and values, the IAB will pursue the following areas of emphasis:

### 1. Equipment

- a. Continue to update and sustain the Standardized Equipment List (SEL).
- b. Support the Responder Knowledge Base (RKB).
- c. Identify gaps in capability.
- d. Participate in requirements development processes.
- e. Prioritize equipment needs.

### 2. Science and Technology

- a. Identify innovative government- and industry-based technologies applicable for use by emergency responders.
- b. Promote the transition of technologies for use by emergency responders.
- c. Collaborate on requirements development processes.
- d. Promote research, development, testing, and evaluation (RDT&E) agendas to meet emergency responder needs.

### 3. Standards Coordination

- a. Identify and document applicable standards, from internal (IAB) and external sources.
- b. Recommend potential solutions in terms of standards, equipment development, training, practices, or policies.
- c. Prioritize standards requirements, and related interoperability and compatibility issues.
- d. Identify existing standards, performance requirements, and test methods that could streamline the development of new standards or be modified to meet the needs of responders.
- e. Identify potential conflicting requirements and facilitate reconciliation of these issues.
- f. Participate in standards development and revision processes.
- g. Inform emergency responders about appropriate application of standards.
- h. Draft and disseminate studies, white papers, and other reports on standards, interoperability issues, and compatibility issues.
- i. Recommend and promote the adoption and use of standards.
- j. Identify and inform responders about relevant standards activities, comment periods, and programs that are addressing interoperability and compatibility issues.

### 4. Strategic Planning

- a. Inform policymakers about operational requirements and environments.
- b. Provide insight about the field context, operations, and tactics of emergency response.
- c. Participate in forums working to develop or improve policy, doctrine, and practice.
- d. Help responders understand emerging policy, doctrine, and practice.
- e. Identify, share, and validate smart practices and lessons learned.
- f. Assist with vetting, testing, evaluating, and launching emergency response initiatives.

## 5. Training and Exercises

- a. Identify performance improvement needs related to Emergency Support Functions.
- b. Provide subject matter expertise to support the development of training and exercise programs.
- c. Provide end-user guidance and operational lessons learned to support training and exercise program development and improvements.
- d. Facilitate the implementation of training and exercise programs and standards that support individual competencies and organizational capabilities.
- e. Advocate for standardized national guidance for responder and equipment training and exercises.

## 6. Information Management and Communications

- a. Identify needs and gaps in the Responder Information Environment.
- b. Identify gaps in available information technology needed to support responders.
- c. Participate in efforts to identify gaps, improve systems and strategies for information management, including the gathering/collection, administration, sharing analysis/visualization, and protection of information.
- d. Identify gaps and challenges related to information collection, classification, storage, security and dissemination that effect incident prevention and emergency preparedness response.
- e. Educate emergency responders about the National Strategy for Information Sharing and how to collect, receive, and share essential elements of information.
- f. Identify gaps, and provide decision support material for interoperable communications technologies, policies and strategies

## 7. Health, Medical, and Responder Safety

- a. Identify gaps and needs for providing safe and effective care.
- b. Evaluate the efficacy and appropriateness of existing and future health and safety related products, processes, practices, and information.
- c. Serve on working groups that address health and safety.
- d. Develop recommendations about how to identify control, reduce, or eliminate responder safety hazards, prevent injuries, and reduce mortality.
- e. Develop a medical concept of operations for planning, managing, and recovering from incidents that cause physical and/or physiological harm.
- f. Analyze threat scenarios and make recommendations about how to protect the health and safety of responders and victims.

## The InterAgency Board Structure

The InterAgency Board is organized into a Leadership Team, one committee, and seven SubGroups. The Federal Agency Coordinating Committee is chaired by a Federal representative and composed of supporting federal government partner representatives. Each SubGroup is co-chaired by a State and Local first responder and a Federal representative, and staffed with SMEs in that SubGroup's area of interest. In addition, each SubGroup is responsible for maintaining its subsection of the Standardized Equipment List.

This information reflects the IAB chairmanship for the majority of Fiscal Year 2010. Elections are conducted during the spring meeting, every May/June. For the current list of IAB Leadership Team and Co-Chairs, please visit the IAB public website at [www.iab.gov](http://www.iab.gov).

### The InterAgency Board Leadership Team

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The IAB Chair and Deputy Chairs are selected from the ranks of the local and state membership. These representatives administer, organize, and facilitate the actions of the IAB.

#### *State & Local Chair*

Alan D. Vickery, Seattle (WA) Fire Department

#### *State & Local Deputy Chairs*

Jay Hagen, Seattle (WA) Fire Department

David McBath, New York State Police

### Federal Agency Coordinating Committee

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The FACC is a coordination committee that provides the interface between the IAB and the sponsoring federal government agencies. It coordinates the interests and initiatives of the federal community with the first responder community.

#### *Federal Chair*

Kathleen M. Higgins, Department of Homeland Security, Science & Technology Directorate, Command, Control & Interoperability Division

### Equipment SubGroup

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The ESG addresses standardization and interoperability issues relating directly to protection, operational, and support equipment for emergency responders. This SubGroup's responsibilities include the maintenance and publication of the IAB SEL, the development of equipment-driven priorities for research and development and standards development, and the coordination with other SubGroups to ensure proper use of equipment in various mission environments.

#### *State & Local Co-Chair*

Douglas E. Wolfe, Sarasota County (FL) Fire Department

#### *Federal Co-Chair*

William Haskell, National Institute for Occupational Safety and Health, National Personal Protective Technology Laboratory

## Health, Medical, & Responder Safety SubGroup

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The HMRS SubGroup provides safety guidance to the IAB on health, medical, and responder equipment, supplies, pharmaceuticals, operations, and training needed to respond to CBRNE events. This SubGroup reviews and makes recommendations to the IAB on needs for new or modified equipment performance and operational standards.

### *State & Local Co-Chair*

Earl Hall, University of Montana, College of Health Professions and Biomedical Science

### *Federal Co-Chair*

Bill Powers, Department of Homeland Security, Office of Health Affairs

## Information Management & Communications SubGroup

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The IM&C SubGroup develops and advocates protocols and technologies for effective, timely, accurate, and secure information management and communications capabilities, addressing the full range of incidents at all phases of operations. This SubGroup identifies gaps in the responder information and communication environments and recommends mitigating solutions and standards.

### *State & Local Co-Chair*

Leonard Edling, Chicago (IL) Fire Department

### *Federal Co-Chair*

Michael Tuominen, National Interagency Fire Center, National Interagency Incident Communications Division

## Science & Technology SubGroup

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The S&T SubGroup identifies interagency first responder research and development requirements and innovative technologies that address CBRNE detection, individual protection, collective protection, medical support, decontamination, communications systems, information technology, and miscellaneous operational support. This SubGroup is responsible for developing and updating the IAB S&T Requirements Matrix for the SEL, reporting and assessing federal requirement initiatives, and producing the annual IAB priority and demographic survey data.

### *State & Local Co-Chair*

Ken Brennan, Fairfax County (VA) Police Department

### *Federal Co-Chair*

Gabe Ramos, Technical Support Working Group

## Standards Coordination SubGroup

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The SCSG coordinates standards projects within IAB, external organizations, and first responder community, and works to establish minimum performance standards to which critical equipment can be tested, evaluated, and certified. This SubGroup helps to provide first responders with objective guidance for making informed decisions regarding the purchase and proper use of that equipment in order to instill greater confidence in emerging technologies.

### *State & Local Co-Chair*

Timothy Fisk, Orlando (FL) Police Department

### *Federal Co-Chair*

Philip Mattson, Department of Homeland Security, Science & Technology Directorate, Test & Evaluation and Standards Division

## Strategic Planning SubGroup

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The SPSG identifies, monitors, evaluates, and coordinates IAB feedback on strategic national plans, programs, and policy initiatives that affect the emergency responder community. This SubGroup informs policymakers about emergency responders' operational outcomes, interprets emerging policies to coordinate IAB position, and maintains a prioritized list of organizations of interest to IAB to develop a strategic engagement plan.

### *State & Local Co-Chair*

Mark Anderson, Bellevue (WA) Fire Department

### *Federal Co-Chair*

Michael Walter, Department of Homeland Security, Office of Health Affairs

## Training & Exercises SubGroup

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The T&E SubGroup improves responder mission performance by conducting a cross-disciplinary review of, and providing end-user input on, training doctrine, standards, and guidance developed for the first responder community. T&E is responsible for identifying performance improvement needs related to operational, training, and exercise activities, and facilitating the implementation of training and exercise programs that support individual competencies and organizational capabilities.

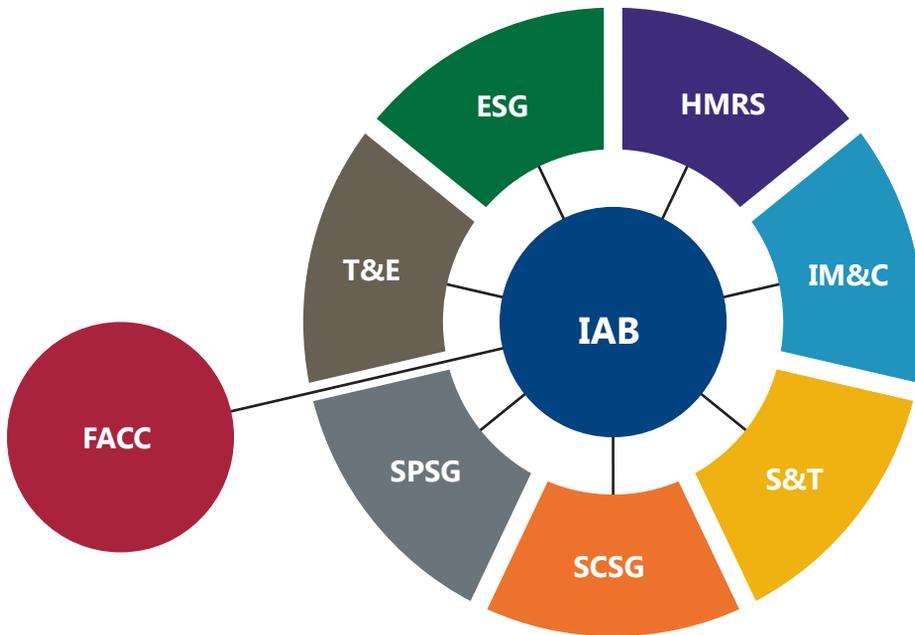
### *State & Local Co-Chair*

James Turner, Delaware Emergency Management Agency

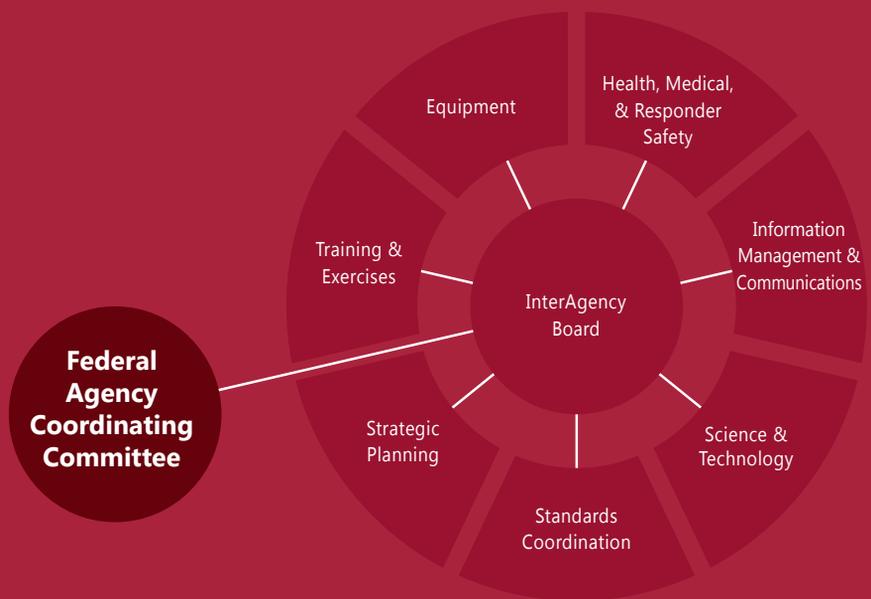
### *Federal Co-Chair*

Teresa Embrey, Technical Support Working Group

## Organization Chart



-  The InterAgency Board (IAB)
-  Federal Agency Coordinating Committee (FACC)
-  Equipment SubGroup (ESG)
-  Health, Medical, & Responder Safety SubGroup (HMRS)
-  Information Management & Communications SubGroup (IM&C)
-  Science & Technology SubGroup (S&T)
-  Standards Coordination SubGroup (SCSG)
-  Strategic Planning SubGroup (SPSP)
-  Training & Exercises SubGroup (T&E)



# Federal Agency Coordinating Committee

## PURPOSE

The Federal Agency Coordinating Committee (FACC) provides the interface between the IAB Chairs and the sponsoring federal government agencies. It coordinates the interests and initiatives of the federal community with the first responder community.

The FACC provides the funding for operation of the IAB, representing both the previous structure and the transition to the new organization. Multiple federal agency representation allows the IAB to maintain its independence as an organization as well as to best use the resources and expertise of the federal community.

# Federal Agency Coordinating Committee

## Membership

The FACC includes the Department of Defense (DoD), the U.S. Department of Homeland Security (DHS)—which includes the Federal Emergency Management Agency (FEMA) National Preparedness Directorate and Grants Preparedness Directorate; the Office of Health Affairs; BioWatch and the Science and Technology Directorate's Test & Evaluation and Standards Division (TSD); and the Command, Control, and Interoperability Division (CCI)—and the National Institute for Occupational Safety and Health (NIOSH)/National Personal Protective Technology Laboratory (NPPTL).

## DoD Chemical and Biological Defense

The Assistant to the Secretary of Defense (ATSD) for Nuclear and Chemical and Biological (NCB) Programs leads the DoD Chemical and Biological Defense Program (CBDP). Acquisition and advanced development of chemical and biological defense-related materiel is the responsibility of the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD). The Special Assistant to the Secretary of Defense (Chemical and Biological Defense) (DATSD-CBD) assists in the oversight of this program. The CBDP is a key part of a comprehensive national strategy to counter the threat of chemical and biological (CB) weapons as outlined in The National Strategy to Combat Weapons of Mass Destruction (WMD), December 2006.

Chemical and Biological defense capabilities must support the diverse requirements of military

operations supporting national security as well as homeland security missions. The CBDP funds research to exploit leading-edge technologies to ensure that U.S. forces are equipped with state-of-the-art capabilities to defend against CB threats far into the future.

Through the Joint Project Managers and various programs within the JPEO-CBD, the CBDP has significantly strengthened protection of the DoD installations against chemical, biological, radiological, and nuclear (CBRN) threats. These programs are diverse, and many provide equipment and training to DoD personnel who respond to CBRN events alongside civilian emergency responders.

As one of the founding organizations of the IAB, the DoD continues to support all facets and areas of the IAB. Department of Defense personnel serve on the FACC, participating in the development the overall IAB strategy, and hold memberships in all IAB SubGroups and Committees.

## Department of Homeland Security, Federal Emergency Management Agency

The 2006 Post-Katrina Emergency Management Reform Act (PKEMRA) mandated the creation of the single directorate to unify FEMA's preparedness, mitigation, response, and recovery missions. The PNP includes the National Preparedness Directorate (NPD), Grant Programs Directorate, National Continuity Programs, and the Office of the National Capital Region.

The NPD oversees the coordination and development of the capabilities and tools necessary to prepare for terrorist incidents

## CHAIR

### KATHLEEN HIGGINS

*Department of Homeland Security,  
Science and Technology Directorate  
Command, Control, and Interoperability Division*



and natural disasters. The NPD provides strategy, policy, and planning guidance to build prevention, protection, response, and recovery capabilities among all levels of government throughout the nation. NPD programs leverage training courses, exercises, and technical assistance to ensure that homeland security capabilities are standardized and incorporated within a common framework. As part of FEMA, NPD closely coordinates with other FEMA offices and directorates, agencies, and departments to produce a unified approach to emergency management. NPD works with the IAB to keep the Responder Knowledge Base up to date.

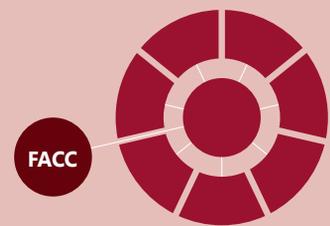
The FEMA Grant Programs Directorate (GPD) manages federal assistance to measurably improve capability and reduce the risks the nation faces in times of man-made and natural disasters. The GPD works with the IAB to provide regular updates and harmonization of the AEL with the SEL.

### **Department of Homeland Security, Office of Health Affairs, BioWatch**

The OHA serves as the DHS's principal authority for all medical and health matters. OHA provides health, medical, and scientific expertise to support the DHS mission of preparing for, responding to, and recovering from all threats.

OHA serves as the principal advisor to the Secretary and the FEMA Administrator on medical and public health issues. OHA leads DHS's workforce health protection and medical oversight activities, leads and coordinates DHS's biological and chemical defense activities, and provides medical and scientific expertise to support DHS's preparedness and response efforts.

The BioWatch Program enables DHS to detect biological attacks by managing an early warning system to rapidly detect dangerous pathogens in the air. This program deploys detection devices in more than 30 major metropolitan areas throughout the nation. The BioWatch Program provides public health experts with a warning of a biological agent release before exposed individuals become clinically symptomatic ("ill"). This "detect-to-treat" approach gives public health officials an opportunity to respond aggressively to eliminate or substantially mitigate the potentially catastrophic impact of a biological agent's release on a population.



### **Membership**

DONALD BULEY  
*Department of Defense  
Joint Program Executive Office Chemical and Biological Defense*

BERT COURSEY  
*Department of Homeland Security,  
Science and Technology Directorate  
Test & Evaluation and Standards Division*

DONALD GRANT  
*Department of Homeland Security, Federal Emergency  
Management Agency, National Preparedness Directorate*

ELIZABETH HARMAN  
*Department of Homeland Security, Federal Emergency  
Management Agency, Grants Preparedness Directorate*

WILLIAM HASKELL  
*National Institute for Occupational Safety and Health,  
National Personal Protective Technology Laboratory*

MICHAEL WALTER  
*Department of Homeland Security  
Office of Health Affairs, BioWatch*

# Federal Agency Coordinating Committee

## **Department of Homeland Security, Science & Technology Directorate, Test & Evaluation and Standards Division**

The DHS S&T Directorate serves as the primary R&D arm of homeland security. The S&T Directorate's mission is to improve homeland security by providing its customers—the operating components of DHS and state, local, tribal, and territorial emergency responders and officials—with state-of-the-art technology to help them accomplish their missions. DHS S&T manages an integrated program of science and technology, from basic research to product transition, guided by a risk-diverse, multi-tiered, invested strategy based primarily on the stated needs of customers balanced with emerging technology opportunities. The Office of Standards within the TSD is the organization through which DHS adopts standards; it is important to note that the first standards adopted by DHS were those adopted by the IAB. The S&T Office of Standards provides the majority of the funds that support the standards development requirements identified by the IAB.

## **Department of Homeland Security; Science and Technology Directorate; Command, Control, and Interoperability Division**

Through a practitioner-driven approach, the CCI creates and deploys information resources—standards, frameworks, tools, and techniques—to enable seamless and secure interactions among homeland security stakeholders. Managed by DHS's S&T Directorate, CCI is working with its Federal partners to strengthen capabilities to communicate, share, visualize, analyze, and protect information. CCI delivers on its mission through the following five thrust areas: Basic/Futures Research; Office for Interoperability and Compatibility; Cyber Security; Knowledge Management Tools; and Reconnaissance, Surveillance, and Investigative Technologies.

CCI aims to ensure that its stakeholders have comprehensive, real-time, and relevant information to create and maintain a secure and safe nation. The Virtual USA initiative, developed in partnership with the emergency preparedness

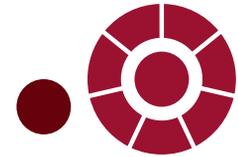
and response community, aims to accomplish this goal with the creation of a cost-effective nationwide capability that significantly improves information sharing and decision-making during emergencies and day-to-day operations. Based on current and emerging technologies, Virtual USA integrates existing information-sharing frameworks and technologies to enable collaboration at the local, tribal, state, and federal levels by providing critical context for information—thereby making it actionable.

## **National Institute for Occupational Safety and Health, National Personal Protective Technology Laboratory**

NIOSH conducts a range of efforts in the areas of research, guidance, information, and service. The NIOSH program portfolio focuses on relevance, quality, and impact achieved through strong involvement of partners and stakeholders through the entire research continuum (conceiving, planning, conducting, translating, disseminating, and evaluating). The programmatic and support structures provide a foundation for staff to carry out its mission to maintain national and world leadership to prevent work-related illnesses and injuries.

The NIOSH program portfolio is organized into eight sectors representing industrial sectors and 24 cross-sector programs around adverse health outcomes, statutory programs, and global efforts. The mission of the Personal Protective Technology (PPT) cross-sector is to prevent work-related illness and injury by advancing the state of knowledge and application of PPT. PPT includes the technical methods, processes, techniques, tools, and materials that support the development and use of personal protective equipment (PPE) worn by individuals to reduce the effects of their exposure to a hazard.

NPPTL was established by NIOSH in 2001 when Congress underscored the need for improved PPE and encouraged research for PPT. NPPTL leadership serves as the Program Manager for the NIOSH PPT Cross-Sector Program. NPPTL is organized into three branches: Technology Evaluation, Technology Research, and Policy and Standards Development.



- The Technology Evaluation Branch performs testing, evaluation, and quality assurance checks. More than 8,500 approvals have been issued to approximately 88 approval holders at more than 100 manufacturing sites in 18 countries. There are 88 approvals for various CBRN respirators, including 24 models of CBRN SCBA respirators from four manufacturers to the NFPA 1981, 2007 Edition. The objective of the respirator certification program is to ensure that workers have access to respiratory protection that meets appropriate standards. Products are evaluated for compliance with applicable provisions of standards before manufacturers are permitted to label the respirator as NIOSH-approved. The quality program conducts periodic audits of respirator performance and investigates reported problems with deployed units to ensure continued compliance of previously approved respirators.
- The Technology Research Branch conducts research in areas related to respiratory protection, sensors for PPTs, human performance, and PPE ensembles, including ensembles for first responders that provide improved protection against CB agents. This research supports the development of new test methods and innovative technology for improved PPE, and assessment of performance of PPE against emerging hazards such as nano-particulates and pandemic influenza. Some of the group's projects include a facial anthropometrics program to establish respirator fit test panels, develop test headforms and respirator sizing systems, and understand the facial characteristics that affect respirator fit. In addition, the branch is working on further developing and applying mathematical models and chemical micro-sensors to help estimate service life durations and determine optimal change-out schedules for respirator cartridges. Human physiology and ergonomic studies are conducted to assess the burden imposed by respirators and protective clothing ensembles and to develop countermeasures to that burden. Researchers are developing innovative methodology for evaluating overall integrity of protective ensembles against aerosol

hazards. Other research involves new test methods for chemical-protective clothing.

- The Policy and Standards Development Branch develops and updates standards to ensure the safety and health of respirator users. This includes respirator standards for protection against CBRN hazards. This group is working on a quality assurance module that will align the 42 CFR Part 84 standards with contemporary quality assurance practices and procedures. Criteria for total inward leakage are being established as a requirement for the certification of respirators. This branch also develops guidance documents to assist first responders in the selection and use of respirators and protective ensembles designed to protect against CBRN hazards.

NPPTL applies state-of-the-art science to meet the increasingly complex occupational safety and health challenges of the 21st century. Our strategic research programs help to ensure that the development of new personal protective technologies keep pace with the changing needs and requirements of employers and workers.

## Role and Functions

The FACC provides the funding for operation of the IAB. Continued representation by multiple federal agencies allows the IAB to maintain its independence as an organization as well as to best use the resources and expertise of the federal community. Those agencies/departments that fund the IAB have voting rights on the FACC.

Upon unanimous agreement between the federal partners, DHS S&T served as the FACC Chair of the IAB. The FACC Chair is elected on an annual basis.

The FACC leverages ongoing federal RDT&E efforts to meet responder requirements as identified by the IAB. The IAB Chair and Deputy Chairs and the FACC work together to prioritize initiatives within the IAB and the federal community. The FACC also coordinates ongoing IAB initiatives within the federal community to ensure task completion and to prevent duplication of efforts. This interagency relationship benefits both the IAB and the

# Federal Agency Coordinating Committee

federal community by improving protection and response.

The FACC reviews and approves the annual operating budget of the IAB and maintains a support staff to facilitate operations. The FACC meets with the IAB Chair and Deputy Chairs on a regular basis to review SubGroup recommendations and action items

## Highlights from 2009–2010

- Publications of the IAB Annual Report, the Research & Development Priority List, and the Standardized Equipment List (SEL), a voluntary guideline of generic equipment recommended by the IAB for preparing and responding to CBRNE and all-hazards events.
- Position papers on Anthrax Vaccine Absorbed (March 2009), Gap Analysis of First Responder Response to an Environmental Biological Threat Incident (September 2009), and H1N1 Pandemic, EMS, and First Responder Health and Safety Issues (November 2009), among others.
- Member participation at various conferences including, but not limited to: Advisory Panel on DoD Capabilities for Support of Civil Authorities after Certain Incidents, National Disaster Medical Systems Conference, National Urban Areas Security Conference, Biodetection Technologies Conference, National Sheriffs' Association 2010 Conference, FEMA Scoping Workshop, and NIOSH CBRN Respirator Guidance Intervention Development Priority Project.
- Provided feedback to DHS BioWatch Outdoor Guidance document, NIJ Duty Holster Standard for Law Enforcement.
- Completed strategic reorganization, which expanded focus to address training, policy, and other first responder community needs.
- Revised IAB Charter; IAB By-Laws Adopted February 2010 and finalized in March 2010. New documents considered governing documents for IAB workflow, process, and management.
- Established and completed first workplan cycle with IAB Executive Committee and membership. Began second round of cycle in May 2010.

- Featured in DHS Science and Technology R-Tech Newsletter (May 2010).
- Management of over 25 IAB meetings, work sessions, or related meetings with IAB member participation.
- Provided multiple federal agencies funding for continued operation of the IAB.
- Ongoing coordination with the Standards Coordination SubGroup to address the IAB's lists of priorities, particularly with the development of CBRNE equipment standards, and to coordinate this development with other public and private standards development organizations, both within and outside the federal government.
- The FACC looks forward to the addition of two new federal partners who will officially begin their participation in FY11.

## Review of FY 2010 Workplan

A critical component of the IAB strategic planning process is to set the agenda for the upcoming fiscal year. The final product of this process, referred to as the workplan, represents a formal approach to develop, plan, document, and prioritize a set of projects that meet the needs and mission of the IAB. The FACC is integral to this process. Each FACC sponsor submits a list of priorities that are vetted amongst all FACC sponsors and aligned with the SubGroup priorities as appropriate.

For FY10, seventeen FACC priorities were submitted, and each were aligned with at least one SubGroup priority. Many of the priorities received substantial support and have moved forward as planned. The remaining federal priorities that were not completed have been carried over to the FY11 workplan. Reasons for priority carry-over may include some or all of the following: long-term timelines, limitations due to time and/or resources, and changes in political priorities over the year.

Overall, the FACC was pleased with the support received from the SubGroups and the work accomplished to date. They are encouraged by the workplan schedule and progress and look forward to continuing this cycle during FY11.

## Federal Agency Coordinating Committee

**KATHLEEN HIGGINS**

*Department of Homeland Security,  
Science and Technology Directorate  
Command, Control, and Interoperability Division*

Kathleen Higgins' career in criminal justice and public safety began soon after she earned her undergraduate degree in analytical chemistry from the University of Rhode Island. She found her work as a freshman toxicologist at the RI Department of Health challenging and in the years that followed earned a Master of Science in Forensic Chemistry at Northeastern University, co-founded a private forensic laboratory in Boston, and served as a Senior Chemist with the MA State Police Crime Laboratory. She also lectured at the MA Criminal Justice Training Center and at Northeastern University, where she was made coordinator of the graduate and undergraduate forensic science programs.

In the late 1980s, Ms. Higgins left the field of forensic science to manage materials-development programs for the U.S. Postal Service Engineering and Development Center, including one that produced the improved papers, inks, and self-sticking adhesives of today's postage stamps. She earned a Meritorious Service Honor Award for her efforts, but public safety and criminal justice remained her passion, and in 1994 she accepted an invitation to serve as Director of the Office of Law Enforcement Standards at the NIST.

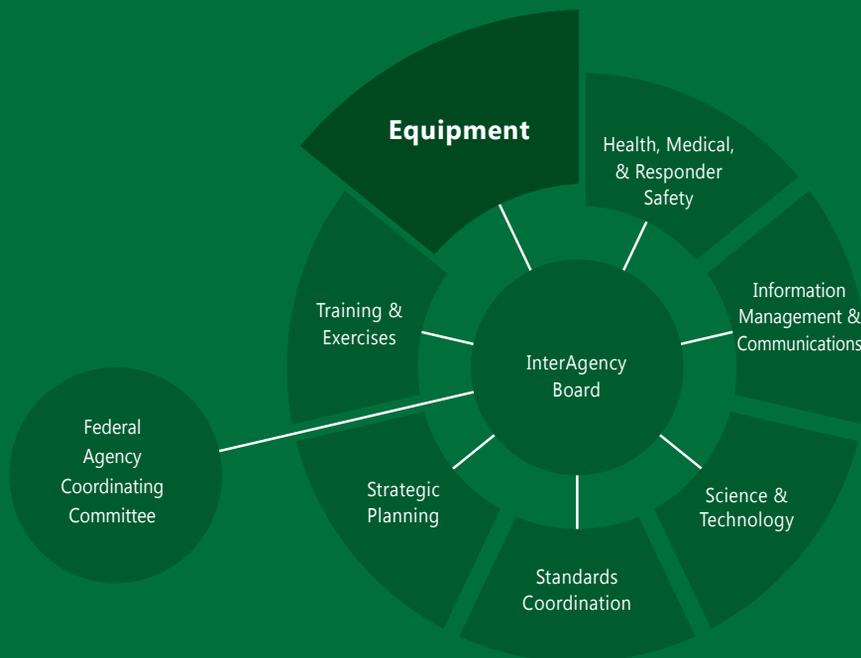
She has been widely recognized for her efforts. In 2001 NIST's parent agency, the

Department of Commerce, awarded her its Silver Medal for Outstanding Achievement, and in 2002 George Washington University honored her with the prestigious Arthur S. Fleming Award for extraordinary service to the Federal Government and the nation. In 2003 she was asked to serve as Assistant to the NIST Director for Homeland Security and to chair NIST's Homeland Security Strategic Working Group. During that time, she represented NIST at more than a dozen conferences on homeland security and even today serves as the U.S. representative to the ISO's Strategic Advisory Group on Security. In 2010, she received the honorary title of Fellow when ASTM International presented her with its Award of Merit, the highest society award granted to an individual member for distinguished service and outstanding participation in ASTM International committee activities.

In late 2007, Ms. Higgins accepted the position of Director of the Office for Interoperability and Compatibility in CCI, where she served for about a year before accepting her current position as Chief, Stakeholder Relations.

Ms. Higgins is the author of several forensic science journal articles, a former Fellow of the American Academy of Forensic Sciences, ex officio Chair of ASTM's E54 Committee on Homeland Security Applications, member of the Homeland Security Committee of the International Association of Chiefs of Police, and former Federal Co-Chair of the SCC, and current Chair of the FACC of the IAB for Equipment Standardization and Interoperability.



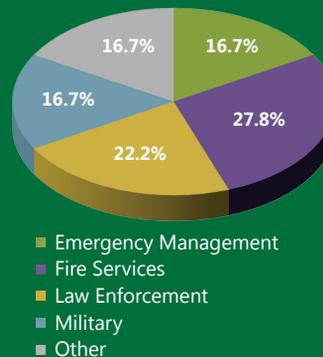


# Equipment SubGroup

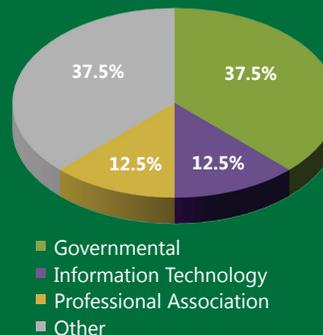
## MISSION

The mission of the Equipment SubGroup (ESG) is to develop, maintain, and update the Standardized Equipment List (SEL) for equipment items; to address the standardization and interoperability of responder equipment items for preparedness, prevention, mitigation, response, and recovery operations based on anticipated hazards, risk assessments, and job functions; and to review and make recommendations for new equipment research and standardization, closely coordinating its efforts with those of the other IAB SubGroups.

## PRIMARY RESPONDER ROLE\*



## SUBJECT MATTER EXPERT ROLE\*



\*Based on FY 2010 demographics data.

# Equipment SubGroup

## Roles and Functions

The ESG, the largest of the IAB SubGroups, addresses standardization and interoperability issues relating directly to protective, operational, and support equipment for emergency responders. ESG responsibilities include the maintenance and periodic publication of the IAB SEL (including the designation of example products and identification/incorporation of new technologies); the development of equipment-driven priorities for research and development (R&D) and standards development; and coordination with other SubGroups such as the Training & Exercise SubGroup to ensure proper training, equipment selection and use in various mission environments.

The equipment sections managed by the ESG are listed in the SEL. The majority of these equipment items and associated information are aligned with the Authorized Equipment List (AEL) maintained by the DHS/FEMA Grant Programs Directorate.

## SEL Equipment Oversight Areas

- 1 – Personal Protective Equipment
- 2 – Explosive Device Mitigation/Remediation
- 3 – Operational and Search & Rescue
- 4 – Information Technology
- 5 – Cyber Security Enhancement Equipment
- 6 – Interoperable Communications Equipment
- 7 – Detection
- 8 - Decontamination
- 9 – Medical Equipment
- 10 – Power

- 11 – Reference Materials
- 12 – CBRN Incident Response Vehicles
- 13 – Terrorism Incident Prevention Equipment
- 14 – Physical Security Enhancement Equipment
- 15 – Inspection and Screening Systems
- 17 – CBRN Prevention/Response Watercraft
- 18 – CBRNE Aviation Equipment
- 19 – CBRNE Logistical Support Equipment
- 20 – Intervention Equipment
- 21 – Other Equipment

## Membership

The ESG includes a wide range of members and Subject Matter Experts (SMEs) from emergency response organizations, federal partners, and standards development organizations. This synergistic membership creates the ability to push forward initiatives for system-wide improvements in the SEL and advocacy and participation in equipment performance and certification standards development. The current composition of the SubGroup is as follows:

- State and Local Organizations: 52 percent  
Representing the fire service, law enforcement, emergency medical service, medical first receivers, hazardous device operations, hazardous materials, search and rescue, and water operations.
- Federal Partners: 48 percent  
Representing National Institute for Occupational Safety and Health (NIOSH), U.S. Coast Guard, Environmental Protection Agency, Federal Bureau of Investigation, Department of Defense, and the U.S. Army Public Health Command.

### CO-CHAIR

**DOUGLAS E. WOLFE**

*Sarasota County (FL) Fire Department*

### FEDERAL CO-CHAIR

**WILLIAM HASKELL**

*National Institute for Occupational Safety and Health  
National Personal Protective Technology Laboratory*



The ESG has wide representation from standards development, labor and professional organizations such as the National Fire Protection Association (NFPA), ASTM International, International Association of Fire Fighters (IAFF), National Tactical Officers Association, and the National Bomb Squad Commander's Advisory Board. These organizations have membership or SME status in the ESG.

This membership enhances partnerships among local, state, federal, military, and professional organizations and the standards development community; through these partnerships, protective clothing, equipment, expertise, technologies, and standards are being developed. Ongoing federal and military R&D programs continue to be leveraged and, in some cases, fast-tracked for the benefit of the emergency response and public safety community. Bringing all of the stakeholders to the table in a cooperative manner has been, and will continue to be, essential to the success of this SubGroup.

## Initiatives and Progress

In 2010, the ESG focused on the following major strategic initiatives:

- Continued revisions and updates to the SEL and supporting the DHS/FEMA Grant Programs Directorate and the Responder Knowledge Base staff with the AEL.
- Support the IAFF project developing next generation self-contained breathing apparatus (SCBA) breathing air cylinder technology under contract to the Department of Homeland Security's (DHS) Science and Technology Directorate.
- Supported the development of NFPA 1952: Standard on Surface Water Operations Protective Clothing and Equipment, 2010 Edition, and continue to support the proposed NFPA 1953: Standard on Protective Clothing and Equipment for Contaminated Water Operations. ESG members and SMEs participate on numerous NFPA Technical Committees to revise existing equipment standards and develop new standards. The NFPA Staff Liaison for these technical committees is also an SME for this SubGroup.



## Membership

ERIC ASHBURN  
*Walker County (GA) Emergency Services*

TAUSEEF BADAR  
*USMC 3d Marine Aircraft Wing*

GARY BENNETT, DVM  
*Cornell University*

ED BERGAMINI  
*Fire Department New York*

CHARLIE BRANNON  
*National Naval Medical Center*

RICHARD BYTNER  
*New York State Police*

TIM DORSEY  
*West County (MO) EMS & Fire District*

MIKE GEDERT  
*Disaster Mortuary Operational Response Team*

THOMAS GROEL  
*Federal Bureau of Investigation – HMRU*

CHRIS HAYS  
*Orange County (CA) Sheriff's Dept.*

MARTIN HUTCHINGS  
*Sacramento County (CA) Sheriff's Department*

ERIC IMHOF  
*Contra Costa County (CA) Office of the Sheriff*

JEFF MARCUS  
*Los Angeles (CA) Fire Department*

ANDREZJ MIZIOLEK  
*U.S. Army Research Laboratory*

IRENE RICHARDSON  
*United States Army Public Health Command*

AXEL RODRIGUEZ  
*United States Army Natick Soldier RDEC*

PETER STEVENSON  
*Environmental Protection Agency*

RON WATSON  
*Los Angeles County (CA) Fire Department*

FOREST WILLIS  
*United States Coast Guard, National Strike Force*

JOHN WILSON  
*National Guard Bureau – 44th Civil Response Team*

## Subject Matter Experts

JEREME ALTENDORF  
*United States Coast Guard*

ED BAILOR  
*United States Capitol Police (Ret.)*

RYAN BELLACK  
*Department of Homeland Security – Office of Health Affairs*

RICHARD DUFFY  
*International Association of Fire Fighters*

DON HEWITT  
*Principal Consultant – Proconsul*

JAMIE LESINSKI  
*Los Angeles (CA) Fire Department*

DR. ALEX KLISTOFF  
*Placer County (CA) Community Clinics*

BOB MASSIE  
*United State Marine Corps – Emergency Management/CBRN*

JEFFREY STULL  
*International Personnel Protection*

BRUCE TEELE  
*National Fire Protection Association*

# Equipment SubGroup

- ESG members and SMEs participated on the National Institute of Justice (NIJ) Special Technical Committee that developed the *NIJ Standard 0116.00, CBRN Protective Ensemble Standard for Law Enforcement*, and continue to support the development of *NIJ CR-0116.00, Law Enforcement CBRN Protective Ensemble Certification Program Requirements*, and *NIJ Guide 0116.00, Law Enforcement CBRN Protective Ensemble Selection and Application Guide*.
- Support the development of the proposed NIJ Bomb Suit Standard for Law Enforcement (NIJ Standard 0117.00). This proposed standard will set minimum performance requirements for protective bomb suits worn by law enforcement bomb technicians while performing operations to dispose of improvised explosive devices.
- A member of the ESG represents the IAB on the DHS Explosives Standards Working Group.
- Continued advocacy for the development of data to provide guidance relating to effects of dermal exposure values necessary to aid in the proper design and selection of CBRN protective ensembles.
- Continued support of improvements in existing performance requirements and test methods for measuring chemical resistance of ensemble materials and next-generation respirators against chemical warfare agents (CWAs) and toxic industrial chemicals (TICs).
- Support of the DHS Science and Technology Directorate with personnel location and tracking for the emergency responders research and development program and supporting contracts.
- Lead role in development of the position paper "InterAgency Board Comments on National Preparedness to Radiological Incidents" requested by the FEMA Administrator.

## Performance Criteria and Standards Gaps Identified by the ESG

During 2009/2010, the ESG identified the following priorities for standards development:

### Hazard Protection Equipment Standards

Continues to emphasize the urgency for the development of performance criteria and a standard for protective bomb suits including ballistic fragment, blast overpressure, and CBRN hazard protection.

### Dermal Exposure Standards for TICs

Requested standards for dermal exposure to TICs. The proper selection of personal protective equipment (PPE) is related to dosage-based dermal exposure limits which currently do not exist. Realistic values need to be developed to allow for the subsequent development of newer PPE technologies that are lighter weight, that are less stressful, and that can be worn for longer durations. Establishment of dermal exposure limits based on cumulative dosage is essential to the fielding of new PPE technologies.

### Combination Respiratory Protective Equipment

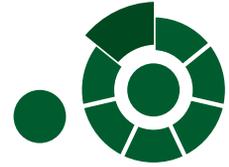
Establish respiratory protective CBRN performance standards, test methods, and certification process for combination units such as APR/SCBA and PAPR/SCBA.

### CBRN PAPR Standard for Moderate- and High-Flow-Rate Operations

A standard is required for CBRN Powered Air-Purifying Respirators (PAPRs) used in moderate- and high-flow-rate operations. Current industrial PAPR systems may not allow for adequate flow rates during high exertion activity typical of emergency response personnel. This standard is included in the NIOSH modular revision approach to 42 CFR Part 84 Respiratory Protective Devices including CBRN respiratory protective devices.

### Respiratory Protective Devices for Infectious Diseases

Refined guidance is needed for the selection of appropriate respiratory protective devices (RPDs) for protection against infectious diseases and current recommendations for respirators against infectious disease need to be updated. Responders need adequate user-relevant guidance on protection during operations in a pandemic environment.



### **Performance Criteria and Standard for Underwater Operations Protective Clothing and Equipment**

There is a specific need for this type of standard, particularly for underwater port security and contaminated water diving operations. ESG supports the development of the proposed NFPA 1953 Standard for Protective Clothing and Equipment for Contaminated Water Operations.

### **CBRN Respirator Selection, Use, and Maintenance**

The emergency responder community has a need for guidance and information on the selection, use, and maintenance of CBRN respirators to ultimately reduce the incidence of respiratory-related injury for nearly 4 million career and volunteer corrections, emergency medical services, fire fighting, and law enforcement responders.

## **Future and Continued Initiatives**

- Continue to expand the ESG efforts in developing an all-hazards approach to all sections of the SEL with a special focus on equipment related to agricultural response operations.
  - Ensure that the development of all standards relating to the performance and testing of PPE include mandatory requirements for independent third-party testing and certification of products and equipment.
  - Support NIOSH with gathering respirator surveillance information and in development of respirator use guidance documents for emergency responders.
  - Continue to serve as the primary emergency response community advocate throughout the development of the proposed Homeland Security Presidential Directive 22, National Strategy for Chemical Protective Equipment Research and Development in the United States.
  - Advocate the development of improved Personal Alert Safety Systems that incorporates wireless 3-D personal accountability and tracking capabilities.
  - Continue to support the development of body-worn environmental temperature and physiological status monitoring sensors
- to provide the responder, safety officer, and incident commander with the ability to proactively identify responder health risks and environmental hazards.
- Respond to the continued urgent need for respiratory protective equipment performance requirements and standards for use during firefighting overhaul operations. Research is required to establish guidelines for monitoring and decision making that would identify the critical combustion by-products and permissible levels as well as common hazards, together with specific criteria for transitioning from SCBA to APR or PAPP.
  - Support NFPA and NIOSH-NPPTL in the development of the proposed wildland firefighting respirator standard; most wildland firefighting operations are conducted without any respiratory protective equipment or with equipment that is not tested or certified.
  - Develop performance criteria needed for firefighter emergency escape devices for use when SCBA breathing air is depleted. Several items are currently being sold that are not tested or certified for actual fire inhalation hazards. Proper breathing air management principles would dictate that personnel never place themselves into a position of low-air operations; however, lost or trapped firefighters may have no option but to use such a emergency device.
  - Research and establish appropriate action for PPE and operational equipment needs for emergency response to crop and animal disease outbreak.
  - Support NIOSH at the local or state level in conducting a multi-phase program to develop and perform: (1) Evaluation Study—systematic collection and analysis of response and safety plans and training materials to identify strengths, weaknesses, and gaps, and then recommend information regarding CBRN respirator selection, use, and maintenance; (2) Health Communication Guidance—establish, disseminate, and evaluate guidance materials tailored to specific response organizations; and (3) Decision Logic Treatise—define, publish, and evaluate a CBRN RPD decision logic treatise addressing proper selection, use, and maintenance of NIOSH-approved CBRN respirators.

## Equipment SubGroup

### CO-CHAIR

DOUGLAS E. WOLFE

*Captain, Special Operations Coordinator  
Sarasota County (FL) Fire Department*

Douglas Wolfe has served in the hazardous materials emergency response field for 25 years with Sarasota County Fire Department and coordinates its Special Operations and Domestic Security programs. During his tenure in the field, Douglas has been a national instructor for numerous organizations, including the National Fire Academy, where he has served as SME and co-authored numerous programs, including, "Advanced Life Support Response to Hazardous Materials Incidents," "EMS: Special Operations," "Emergency Response to Terrorism: Tactical Considerations," and "Chemistry for Emergency Response." In addition to the IAB, Douglas serves on the Florida SERC and Hazardous Materials Training Task Force as well as the Florida State Working Group for Domestic Security Equipment Subcommittee.

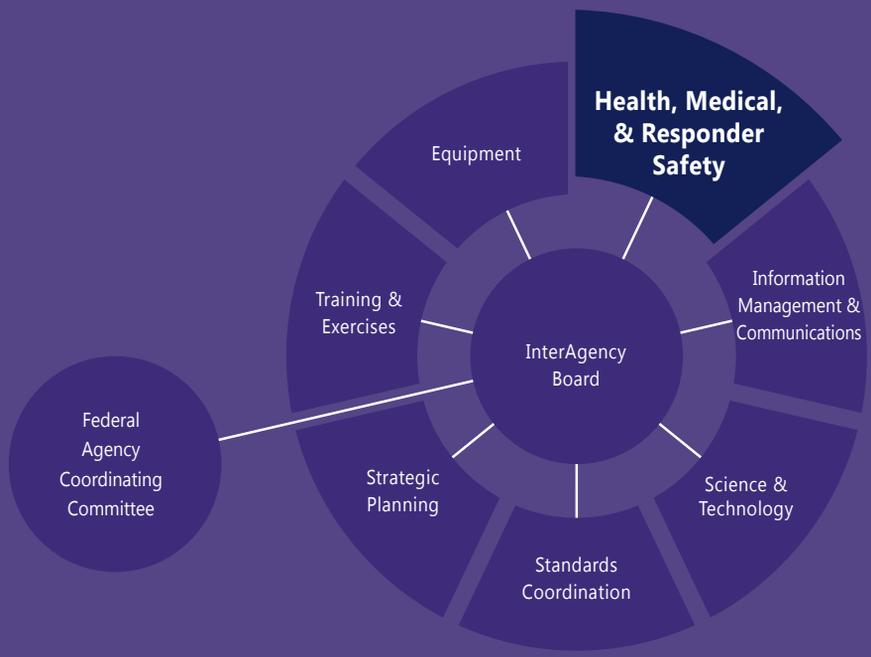
### FEDERAL CO-CHAIR

WILLIAM E. HASKELL III

*National Institute for Occupational Safety and Health  
National Personal Protective Technology Laboratory  
Centers for Disease Control and Prevention*

Bill Haskell is a member of the Policy & Standards Branch at the NIOSH National Personal Protective Technology Laboratory (NPPTL). NPPTL was established in 2001 by congressional directive to provide world leadership for the prevention and reduction of occupational disease, injury, and death for workers who rely on personal protective technologies. The NPPTL Mission is to prevent work-related illness and injury by ensuring the development, certification, deployment, and use of PPE and fully integrated, intelligent ensembles. Bill serves on the NFPA Technical Correlating Committee for Fire and Emergency Services Protective Clothing and Equipment and on NFPA technical committees for hazardous materials, electronic safety, structural/proximity, special operations, and emergency medical service protective clothing and equipment. Bill is a member of the ASTM International F23 Protective Clothing and E54 Homeland Security Committees and the IACP Homeland Security Committee. Prior to joining NPPTL, he worked for 24 years at the Army Research Laboratory and the Army Soldier Systems Center. Bill holds a Bachelor of Science degree in civil engineering and a Master of Science degree in plastics engineering from the University of Massachusetts at Lowell.



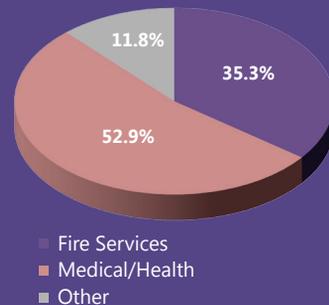


# Health, Medical, & Responder Safety SubGroup

## MISSION

The mission of the Health, Medical, and Responder Safety (HMRS) SubGroup is to provide guidance to the IAB on medical; public health; and incident health and safety equipment, supplies, and pharmaceuticals needed to respond to all-hazards events. This guidance is developed from member experience and discussion of relevant material. In addition, HMRS reviews and makes recommendations to the IAB on needs for new or modified equipment performance and operational standards. HMRS strives to understand and document generic medical, public health, and incident health and safety capabilities in the SEL and Responder Knowledge Database (RKB) in order to support responders, first receivers, and volunteers as they prepare for, respond to, and recover from all-hazards events.

## PRIMARY RESPONDER ROLE\*



## SUBJECT MATTER EXPERT ROLE\*



\*Based on FY 2010 demographics data.

# Health, Medical, & Responder Safety SubGroup

## Membership

The HMRS SubGroup members represent local, state, and federal organizations and academic institutions. They are familiar with local, state, and federal plans, procedures, programs, guidance, functions, systems, and capabilities for public health and medical response. Current members have operational experience with emergency medical systems, primary and emergency medical care, hospital systems and operations, the National Disaster Medical System, disaster medicine and response, public health, law enforcement and special events operations, and emergency management. HMRS attempts to maintain active members who are involved in the public health and medical aspects of incident response and the use of and operational considerations for equipment, supplies, and pharmaceuticals during incident response. HMRS also supports the other IAB SubGroups with public health and medical representatives. The HMRS SubGroup maintains contact with SMEs for assistance with specific topics or areas of interest. SMEs occasionally participate in HMRS meetings to expand the breadth of knowledge and resources available to the IAB as a whole.

## Role and Functions

The HMRS SubGroup participates in all aspects of the IAB. Due to the diversity of the mission, which includes consideration for and understanding of the care of casualties as well as the health and safety needs of personnel participating in the management of the incident—information exchange with each of the other IAB SubGroups is essential. Specifically, the functions and roles of

the HMRS include the following:

- Participating in SCC meetings to represent medical, public health, and incident health and safety interests.
- Participating in S&T Committee meetings to promote inclusion of medical, public health, and incident health and safety interests.
- Reviewing, improving, and updating the medical section of the SEL and RKB.
- Reviewing, improving, and updating other sections of the SEL and RKB for integration of medical, public health, and incident health and safety needs.
- Understanding and documenting current and potential gaps and needs in medical, public health, and incident health and safety equipment and supplies.
- Supporting the development of new standards or modification and integration of existing standards that are needed for the medical, public health, and incident health and safety aspects of the response.

The majority of the equipment and pharmaceuticals used in the medical management of victims of an all-hazards event are regulated by the U.S. Food and Drug Administration. Consequently, the compilation of equipment and pharmaceuticals in the medical portion of the SEL is commonly found in today's prehospital and clinical environments. However, the HMRS SubGroup also reviews and recommends reference, formal adoption, or change of other available performance standards, technical specifications, and standard guidance for SEL items.

Finally, HMRS recommends and supports efforts to provide equipment procurement guidance to public health and medical authorities that

### CO-CHAIR

#### EARL HALL

*University of Montana, College of Health Professions and Biomedical Science*

### FEDERAL CO-CHAIR

#### BILLY POWERS

*Department of Homeland Security, Office of Health Affairs*



is compatible and interoperable with the Department of Homeland Security Master Equipment List (MEL), RKB, and the IAB SEL.

## Accomplishments in 2010

The HMRS SubGroup responded to a request for clarification from the Chief Medical Officer (Dr. Alexander Garza), Department of Homeland Security (DHS), validating the IAB white paper (discussed in the 2008 IAB Annual Report) not to include anthrax vaccine in the SEL. The white paper has been posted to the IAB website ([www.iab.gov](http://www.iab.gov)).

At the request of the IAB Chair, in support of a request from FEMA Administrator the Honorable Craig Fugate, HMRS developed a personal protective equipment (PPE) white paper identifying “gaps” in respiratory PPE for infectious disease and the need for appropriating sufficient fiscal funds to maintain the federally funded equipment cache programs.

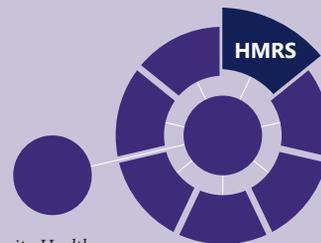
HMRS developed a white paper calling for the minimum use of N-95 respirators by all healthcare personnel (including EMS and first responders/ first receivers) during any confirmed or suspected Swine Influenza A (H1N1) outbreak. Included in the white paper was the IAB position to follow Centers for Disease Control and Prevention (CDC) guidelines for patient interactions, respirator program practices per the OSHA Respiratory Protection Standard, and use of other NIOSH approved respirators if N-95 respirators were not available.

## Training

The Health, Medical, and Responder Safety SubGroup continued adding information to a new field within the SEL titled “Training Requirements.”

## Initiatives and Progress (2011 and Beyond)

- Continue work on the Mortuary Operations subsection in the SEL for mass fatality management equipment and supplies.
- Consider HMRS issues that overlap with military Defense Support to Civil Authorities (DSCA).
- Other possible white papers explaining HMRS positions and/or concerns.
- Possible new mission and objectives as requested.



## Membership

### KNOX ADDRESS

*Louisiana State University Health Sciences Center – Shreveport*

### CHRISTINA BAXTER

*Technical Support Working Group*

### SANDY BOGUCKI

*Yale Emergency Medicine*

### KELLY BURKHOLDER-ALLEN

*University of Toledo*

### RICHARD BURTON

*Placer County (CA) Health and Human Services*

### NEAL DOLAN

*South Carolina Law Enforcement Division*

### RENEE FUNK

*National Institute for Occupational Safety and Health*

### STEPHAN GRAHAM

*United States Army Center for Health Promotion and Preventive Medicine*

### RANDY GRIFFIN

*DeWitt (NY) Fire District*

### KAREN HOUSE

*Department of Defense, JPM Guardian*

### KENNETH MILLER

*Orange County (CA) Fire Authority*

### JEFF RACE

*Haz Tac Operations, Fire Department City of New York, FDNY Training Academy*

### LAWRENCE TAN

*New Castle County (DE) Department of Public Safety, Emergency Medical Services*

### TOM WALSH

*Mt. Erie (WA) Fire Department*

## Subject Matter Experts

### SUSAN JONES-HARD

*Centers for Homeland Defense and Security*

### PAMELA KRAHL

*Chemical Biological Incident Response Force*

### DR. ROBERTA LAVIN

*United States Public Health Service*

### GREGG LORD

*George Washington University*

### PAUL MANISCALCO

*International Association of EMS Chiefs*

### BOB SHANK

*National Disaster Medical System, Disaster Mortuary Operational Response Team*

### STEVE SKOWRONSKI

*Center for Disease Control and Prevention*

### ANTHONY TOMASSONI

*Yale University School of Medicine*

### JANE WIXTED

*Emergency Management, Cleveland Clinic, Cleveland, Ohio*

# Health, Medical, & Responder Safety SubGroup

CO-CHAIR  
EARL HALL

*University of Montana, College of Health Professions and Biomedical Science*

Earl Hall is a retired Assistant Fire Chief of the Missoula, Montana Fire Department. During his time at the fire department he was also a Lifeflight Paramedic for the local Hospital. Earl responded to Hurricane Mitch in Honduras in 1998 and Hurricanes Katrina/Rita in 2005. After retirement from the Fire Department Earl worked as an Emergency Planning Coordinator for the Missoula County Health Department. In 2003 Earl became the Project Manager/Coordinator for two HHS/ASPR emergency preparedness grants at the University of Montana College of Health Professions and Biomedical Sciences where he helped develop and deliver emergency preparedness curriculum for pre and post graduate health sciences students and professionals. Earl currently lives in rural Montana and is active on the Avon Volunteer Fire Department.

FEDERAL CO-CHAIR  
BILLY POWERS

*Branch Chief, Mitigation and Capability Enhancement-Office of Medical Readiness*

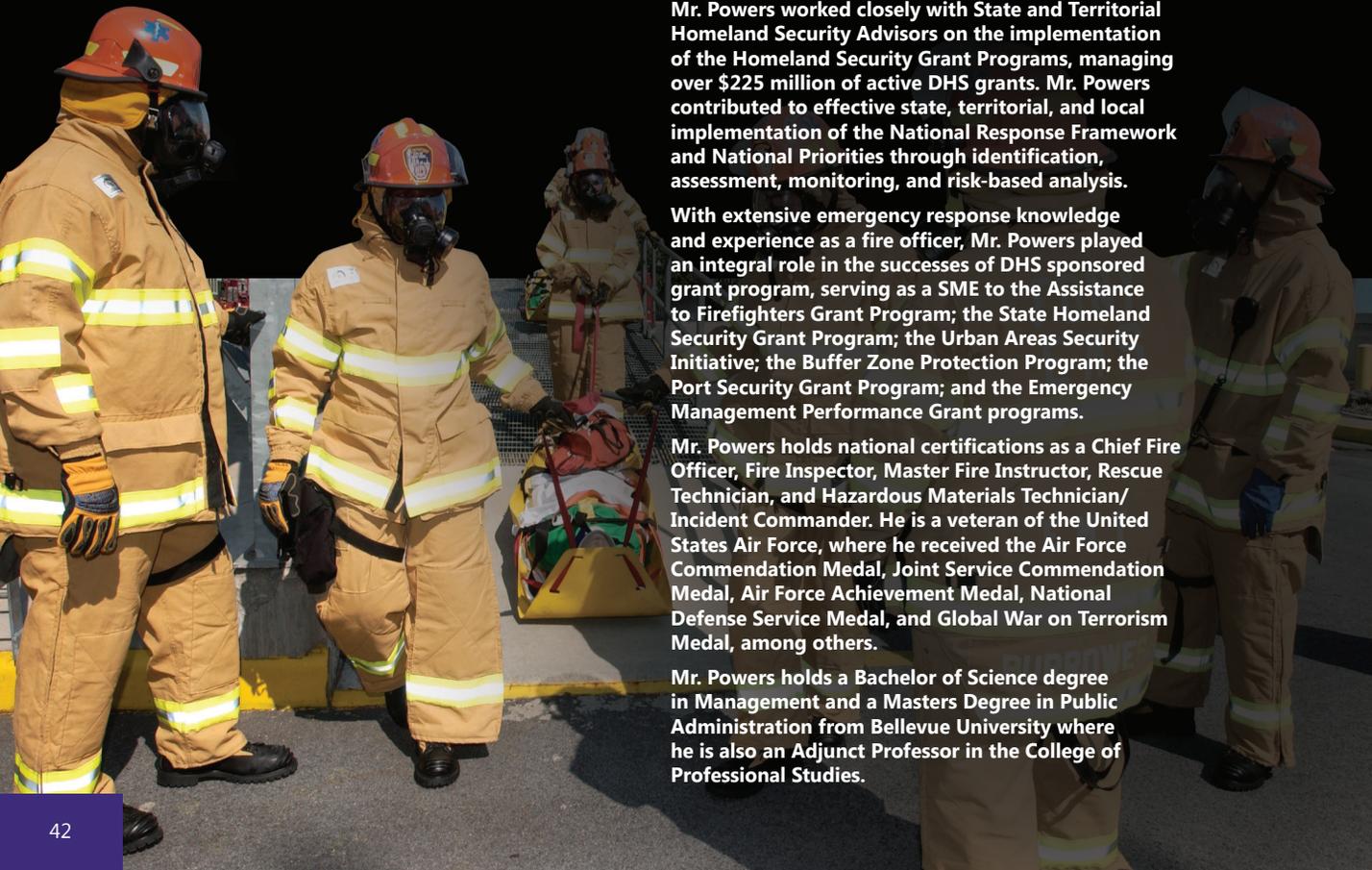
Mr. Powers joined the Department of Homeland Security (DHS) Office of Health Affairs (OHA) in April 2008 and serves as the Branch Chief for the OHA's Mitigation and Capability Enhancement division within the Office of Medical Readiness. He manages all-hazards grant coordination to promote health and medical readiness. Additionally, Mr. Powers leads an inter-governmental analysis of federal funding to ensure implementation of enhanced public health and medical capabilities. Previously, Mr. Powers served as a Professional Staff Member with the United States Senate Homeland Security and Government Affairs Committee (Susan M. Collins, R-ME, Ranking Member). Mr. Powers provided input and guidance on matters related to DHS implementation of a comprehensive national strategy to secure the United States from terrorist attacks and response to natural disasters. Additionally, Mr. Powers collaborated to co-author the successful bi-partisan-sponsored United States Fire Administration Reauthorization Act of 2008.

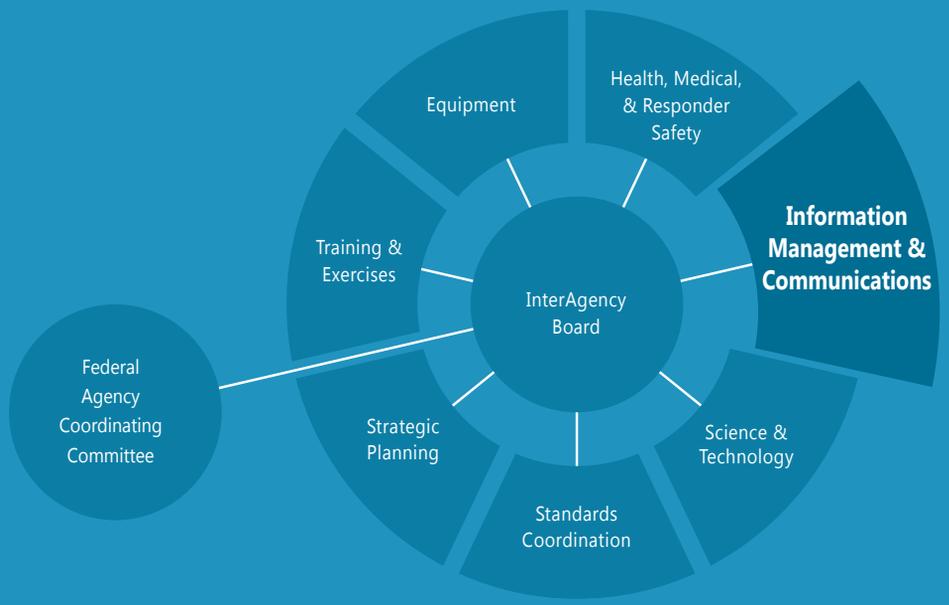
Prior to his work on Capitol Hill, Mr. Powers served as Preparedness Officer with the DHS Office for Domestic Preparedness. As a Preparedness Officer, Mr. Powers worked closely with State and Territorial Homeland Security Advisors on the implementation of the Homeland Security Grant Programs, managing over \$225 million of active DHS grants. Mr. Powers contributed to effective state, territorial, and local implementation of the National Response Framework and National Priorities through identification, assessment, monitoring, and risk-based analysis.

With extensive emergency response knowledge and experience as a fire officer, Mr. Powers played an integral role in the successes of DHS sponsored grant program, serving as a SME to the Assistance to Firefighters Grant Program; the State Homeland Security Grant Program; the Urban Areas Security Initiative; the Buffer Zone Protection Program; the Port Security Grant Program; and the Emergency Management Performance Grant programs.

Mr. Powers holds national certifications as a Chief Fire Officer, Fire Inspector, Master Fire Instructor, Rescue Technician, and Hazardous Materials Technician/Incident Commander. He is a veteran of the United States Air Force, where he received the Air Force Commendation Medal, Joint Service Commendation Medal, Air Force Achievement Medal, National Defense Service Medal, and Global War on Terrorism Medal, among others.

Mr. Powers holds a Bachelor of Science degree in Management and a Masters Degree in Public Administration from Bellevue University where he is also an Adjunct Professor in the College of Professional Studies.





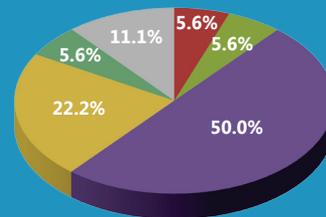
# Information Management & Communications SubGroup

Welcome to the Information Management and Communications (IM&C) SubGroup section of this year's IAB Annual Report. On behalf of the IM&C SubGroup, Co-Chairs Mike and Len hope that you may find the information pertaining to information management and communications-related technologies, software, processes, and more to be helpful and informative. We are pleased to affirm that there are significant national efforts underway to improve emergency incident information sharing and communications. IM&C SubGroup members have been involved in many of these efforts.

## MISSION

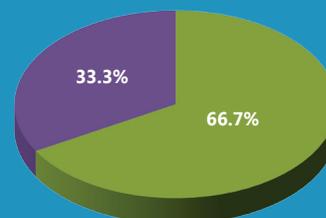
The mission of the IM&C SubGroup is to develop and advocate processes, protocols, and technologies for effective, timely, accurate, secure, and resilient information management and communications capabilities for addressing the full range of incidents at all phases of operations.

## PRIMARY RESPONDER ROLE\*



- Emergency Communications
- Emergency Management
- Fire Services
- Law Enforcement
- Public Works
- Other

## SUBJECT MATTER EXPERT ROLE\*



- Governmental
- Information Technology

\*Based on FY 2010 demographics data.

# Information Management & Communications SubGroup

## Roles and Functions

The IM&C SubGroup will accomplish its mission through the identification of needs and gaps in the responder information and communications environments in order to recommend and advocate for mitigating solutions and standards. The scope includes the following practices and technologies:

- System and strategy improvements for intelligence and decision support, including the collection, administration, sharing, analysis, and protection of information.
- Gaps and challenges related to information collection, sharing, classification, categorization, storage, security, and dissemination that affect incident prevention and emergency preparedness and response.
- Decision support materials and interoperable communications technologies, policies, and strategies.
- Effective development and integration of interoperable communications and decision support technologies and practices to provide indications and warnings and information/intelligence support for operations.

The primary means by which the IM&C SubGroup accomplishes its mission is through the quick, efficient, and beneficial exchange of information, whether voice or data (i.e., communications). In after-action reports for major incidents and drills throughout the nation, communications continues to be listed among

the top issues needing more work; at the same time, interoperability continues to be one of the most-used buzzwords in the realm of emergency response, on all levels.

Perhaps the greatest strength of the IAB is the emphasis on the practitioner, with the majority of the membership being current first responders from EMS, emergency management, fire, and law enforcement agencies. The standards and equipment guides are developed by first responders, for first responders. In this work, responder members are fortunate to have the support and input from the rest of the membership—representatives from state/federal government, academia, industry, and others. While working with the other IAB SubGroups, the IM&C SubGroup's role has always been one of developing a common or standardized operating picture for all the essential components of an emergency incident response. The unique quality of our effort is providing the information from the responder's perspective.

The IM&C SubGroup acknowledges there are many other groups focusing on improving incident communications. While involved and participating in many of these other groups' efforts, we believe it is our emphasis on the involvement of actual responders that makes the IAB and its IM&C SubGroup unique. Others of these groups are tasked with developing long-term solutions. Some are developing wide-reaching solutions, and some are mission-specific or discipline-specific. Because of our ability to speak to the end-user's perspective ("ground truthing"), members of the IM&C SubGroup provide expert advice and guidance to many of these other organizations.

### STATE AND LOCAL CO-CHAIR

#### LEN EDLING

*Chicago (IL) Fire Department*

### FEDERAL CO-CHAIR

#### MIKE TUOMINEN

*National Interagency Fire Center/National Interagency Incident Communications Division*



The two-way information flow is beneficial to all involved. Through this process, our federal partners are able to rapidly obtain feedback essential to improving the safety and security of our nation. First responders are rewarded through the timely dissemination of information regarding such issues as grant programs, technology trends, resources, and ongoing research and development. It is our goal to provide yet another means to get information out to those who may not otherwise receive it.

The IM&C SubGroup continues to emphasize standardization of equipment and methods used for communications by first responders, focusing on several vital areas:

- Computer-Aided Dispatch (CAD)-to-CAD interfaces
- Records Management System (RMS)-to-RMS interfaces
- CAD-to-RMS interfaces
- Skills and training of communications support personnel (Communications Unit Leader, Communications Unit Technician, etc.)
- Cybersecurity
- Intelligence sharing and exchange
- Common Operating Picture.

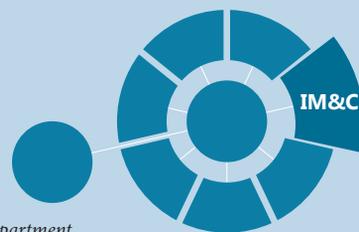
### All-Hazards Communications Unit Leader

During the past year, the IM&C SubGroup has continued its efforts in supporting the development and implementation of national standards relating to the training of those individuals responsible for supporting communications during incidents involving emergency responders.

### History

Following the Oklahoma City Bombing and other nationally significant events around the same time, many of the nation's emergency responders recognized that the effectiveness of emergency communications was being hindered by a multitude of issues. Specifically, the issues included:

- Little clarity regarding the actual scope of the problem— there was not a clear description



### Membership

- LEIF ANDERSON  
*Phoenix (AZ) Fire Department*
- DON BOWERS  
*Fairfax County (VA) Fire and Rescue*
- THOMAS CHIRHART  
*Department of Homeland Security*
- JAMES CRONKHITE  
*United States Northern Command*
- BERNARD DOCTOR  
*JPEOCBD*
- JOHN FREEBURGER  
*Montgomery County (MD) Fire & Rescue*
- MARK HOGAN  
*City of Tulsa (OK) Security*
- WALT KAPLAN  
*National Veterinary Response Team-2*
- JEFFREY KING  
*Department of Homeland Security*
- CHRIS LOMBARD  
*Seattle (WA) Fire Department*
- BOB MCKEE  
*Texas Task Force 1*
- GEORGE PERERA  
*Miami-Dade (FL) Police Department*
- WES ROGERS  
*Fairfax County (VA) Fire and Rescue*
- MARTY RYCZEK  
*Chicago (IL) Police Department*
- MARK SAXELBY  
*Los Angeles (CA) City Fire Department*
- WILLIAM SNELSON  
*United States Marshals Service*
- JOHN SULLIVAN  
*Los Angeles County (CA) Sheriff's Department*

### Subject Matter Experts

- JOSEPH BOOTH  
*Louisiana State University*
- SUSAN MCGRATH  
*Dartmouth College*
- JEFF RODRIGUES  
*Cook County (IL) DHS Emergency Management*
- LEROY SISLEY  
*FEMA-US&R Communications Working Group*
- KEELEY TOWNSEND  
*Department of Homeland Security*
- DAVID TRITCH  
*Kettering Fire Department/Ohio Task Force 1, FEMA Urban Search and Rescue*
- PAULA YOUNG  
*Cuyahoga County Department of Justice Affairs*

# Information Management & Communications SubGroup

or central collection of communications problems experienced at incidents.

- A lack of common terminology and definitions relating to communications—there were not established definitions and understanding for even the most basic terms, such as “interoperability.”
- A lack of technological tools—even if other mitigating factors like governance, standardized operating procedures, training/exercises, etc., had existed, the technology to support interoperable communications was scant.
- A lack of standards for the training, testing, and certification of those individuals responsible for managing communications at incidents.

In keeping with the mission of the IAB, the IM&C SubGroup worked toward these ends by:

- Emphasizing interoperability, compatibility, and standardization
- Fostering a multidisciplinary perspective
- Facilitating effective intergovernmental partnerships
- Preliminary work was started on addressing these issues when the events surrounding September 11th emphasized the importance of these efforts.

After September 11th, the Department of Homeland Security (DHS) sought to consolidate many of the efforts working toward improved interoperable communications with the creation of the SAFECOM program (<http://www.safecomprogram.gov/SAFECOM/>). The IAB was one of the entities brought into the effort.

While initial efforts focused on addressing technological deficiencies, communications challenges were “people problems” and it became readily apparent that it was going to take people to fix them. SAFECOM soon redirected efforts toward the people-related issues: governance, standard operating procedures, training/exercises, and usage. The IAB SubGroup primarily focused its efforts on the training/exercise aspects.

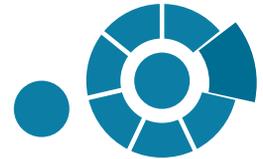
As a component of 2005 DHS Homeland Security Grant Program (HSGP) guidance, DHS required that all regions receiving funding from Urban Area Security Initiative (UASI) grants develop a regional Tactical Interoperable Communications Plan (TICP). In an addendum to the guidance, released midway through the grant cycle, DHS required regions to have trained Communications Unit Leaders (COMLs) to implement the TICPs.

At the time when DHS mandated the use of COMLs, the position did not exist. The wildland firefighting community had a COML position, but there was nothing of the sort for the all-hazards environment; there existed no description, no training curriculum, no guidance on how they would be utilized, and no national certification process.

Under direction from SAFECOM’s lead support agency, the DHS Office for Interoperability and Compatibility (OIC), the IAB, and the National Consortium for Justice Information and Statistics (SEARCH) developed a curriculum for training Type III, All-Hazards Communications Unit Leaders. The successful effort drew upon the talents and equal representation from all affected disciplines (dispatch, emergency medical, fire, law enforcement, etc.) at all levels of response (local, regional, tribal, state, and federal). During the development of the course, other issues came to light, including long-term sustainability, academic review, and certification. As SEARCH took the lead in the course development and implementation, the IAB has taken the lead in certification.

## Current Status

To date, the DHS course has been ongoing for about 24 months, and almost 2,000 individuals have been trained nation-wide. The course called for students to meet some pre-requisites, to take a 3-day/24-hour course, to go through a field practicum, and finally to go through some as-yet-to-be-defined process for final certification. Responsibility for the course is in the process of transitioning from the DHS’s Office for Emergency Communications to the Federal Emergency Management Administration’s (FEMA’s) instructional group, the Emergency Management Institute (EMI). SEARCH continues to administer the course.



Students have started reaching the practicum portion of the course, but there has been hesitation on the part of the state and federal governments to become the certifying entity.

Original DHS COML working group members, of which the IAB IM&C SubGroup made up about half, began to work on a solution through the creation of a national registry.

The goals of the registry effort were to:

- Create a national (not a federal) registry that would be better isolated from changes in administrations, organizational priorities, funding priorities, etc.
- House the registry at a neutral location capitalizing on the multi-jurisdictional, multi-level disciplinary input and support that allowed the program to become the success it has been thus far.
- Create a mechanism to allow the registry to be financially independent and self-supporting, not relying on federal grants, partner/member association assessments, etc.
- Institutionalize IAB model/values
- Emphasize practitioners, but not limit the registry to practitioners
  - All-inclusive, like the IAB, through governance and involvement
    - Avoids silos by including diverse group of practitioners
    - More than half of the governing body must be active practitioners from the emergency response community
- Focus on certification/credentialing of COML/COMT and associated programs, designed in a way to support the implementation, updating, and sustainability of the COML/COMT initiatives
  - No internal competition with other projects
  - No competition with training providers
  - Intent to remain involved in other aspects of COML effort, but only focused on certification/credentialing

- Establish one level of governance
  - Ensure that all groups are on equal standing at the governance level and each has a voice
- Establish a third-party (academic) approach
  - Acts as ground truthing or vetting to the level of training provided by others
  - Ensures a standard level of proficiency within industry, as recommended by practitioners.

## IAB Actions

After helping with the formal creation of the National Registry for Emergency Communications Technicians (a Virginia Corporation), the IM&C SubGroup has continued recruiting efforts to gain further participation and consensus amongst the emergency responder community. Outreach to other associations, departments, and individuals have been ongoing. At their last regularly scheduled meeting, the National Public Safety Telecommunications Council (NPSTC) voted unanimously to join the effort.

In addition, the IM&C SubGroup was proud to partner with Louisiana State University's (LSU's) Stephenson Disaster Management Institute (SDMI). SDMI has agreed to provide financing, provide a home for the registry and operational oversight, to issue credentials/diplomas, and to maintain the registry database. A better partner in the effort could not have been found.

The IM&C SubGroup has been working on the coordination of efforts between SEARCH (teaching the course), FEMA/EMI (owner of the course), and SDMI (the certifying entity). Throughout the next year, the SubGroup looks forward to continuing to improve the process for the National Registry and ensure further growth of the program.

# Information Management & Communications SubGroup

## Common Operating Picture and Intelligence Sharing

Members on the IM&C SubGroup discussed and undertook projects this year including drafting a concept of operations for Intelligence Preparation and its uses from the Virtual USA (vUSA), as well as examples of the data needed for and the reporting requirements for the state and local levels from vUSA.

## Intelligence Preparation for Operations—Concept of Operations

Intelligence preparation for operations (IPO), as seen pre-vUSA, could be enhanced by using the existing vUSA data streams. The core of the IPO process is analysis/synthesis—or the process of breaking down information into its constituent parts—processing it into manageable components, seeking linkages with related elements, providing context, and synthesizing the results into actionable intelligence via a single end-user terminal screen. That terminal should be made available at the state and local levels in their operations centers.

IPO is emerging as a civil analog to the military's intelligence preparation of the battlefield (IPB) to serve non-military response information needs. IPO provides a standard tool set for situational recognition, course-of-action development, and response rehearsal. This process bridges the gap between deliberate planning and crisis action planning for all facets of a unified, multi-organizational response organization.

## Key IPO Concepts

### Social Terrain

This is the population/demographic characteristics of an area. It includes the language spoken, cultural and ethnic backgrounds, and community political and social bonds. The goal is to understand the community and its diverse components. This is key to community policing and intelligence led policing.

### Terrain-Driven Planning

Terrain driven planning includes an understanding of key terrain, observation and fields of fire, cover and concealment, obstacles, and avenues

of approach because of the influence of physical terrain and geography on operations. This involves analyzing choke points in routes of ingress and egress, understanding peak travel times, and traffic patterns. All of this influences protective actions (both in-place-protection and evacuation). In an urban setting, this includes streets, freeways, and transit (bus and rail) systems, as well as the influence of natural and urban terrain on weather, traffic flow, and other elements affecting transportation and movement.

## Geosocial Intelligence

Geosocial intelligence is the interaction between people and terrain, or the natural and built environments. It is a result of the synthesis of geospatial information (both geographic information systems [GIS] data and geospatial intelligence such as overhead imagery, mapping products, and fate and transport models) with social terrain information (including demographics, cultural intelligence, and human terrain models).

This core drives IPO's four steps through the process of pulsing out requests for information (RFIs) at all steps.

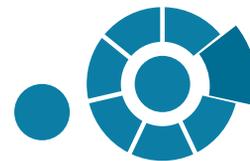
### Step 1: Define the Operational Space

The first step is defining the operational space. This includes identifying and ascertaining the critical infrastructure in named areas of interest (NAIs) possibly targeted by terrorists that will be covered by intelligence collection assets. This process includes evaluation of the local area keeping in mind that aspects of critical infrastructure may reside on a global scale or in several interrelated spatial domains.

### Step 2: Describe Operational Space Effects

The second step is defining the operational space effects. In this step, target folders are developed for key venues such as infrastructural or cultural locations. Population, terrain, weather, and cultural features, including cultural intelligence, are also assessed.

Geospatial intelligence—including potential infrastructural interactions, cascading impact, and the organizational dynamics of



all actors—is considered. Cyber intelligence and knowledge from advanced information systems and social network analysis are then added. The goal is an understanding of all geospatial and social dynamics influencing operations.

### Step 3: Evaluate Threats

The third step is to identify and evaluate the opposing force (OPFOR) or potential threat elements (PTEs) and the weapons they may employ by class (i.e., cyber, swarming, chemical, biological, radiological, nuclear, suicide bombing, etc.). This step is intended to identify threats, which include Indications and Warnings (I&W). The goal is achieving deep I&W knowledge driven by an assessment of a range of influences on the OPFOR and an assessment of social network structures.

In the conceptual I&W process, most I&W typically occurs just prior to an actual attack, typically from social network analysis and related tools such as non-obvious relationship awareness or analysis.

### Step 4: Determine OPFOR and Actions

The fourth step builds upon all the previous to develop potential OPFOR and friendly courses of action. This includes an understanding of current resources and situation statuses of all response forces actually deployed or that may be needed to address the situation. This is the step where completed intelligence products are disseminated. Actionable intelligence is the goal; products developed include “Mission Folders,” advisories, alerts, warnings, net assessments, and other tailored intelligence products.

### Foundations of IPO’s Core and Four Steps

All of the four steps, as well as the core, rely upon a foundation of intelligence knowledge, process, capabilities, and practice. First among these is a capability for acquiring or collecting information: sensors. The sensors could include a citizen’s report of suspicious activity to community police, other human collection means, Internet scanning, signals intelligence, geospatial tools, or other types of forensic intelligence support.

These ultimately involve the exploitation of real-time or near-real-time monitoring and/or virtual reach-back from multisensor arrays or field reconnaissance capabilities (e.g., cyber, chemical, biological, or radiological sensors or detectors).

Utilizing IPO relies upon knowledge of analytical tradecraft and concepts for understanding intelligence and conflict. These include an understanding of deception and counter-deception and of swarming and counter-swarming as tactics or approaches to conflict, as well as an understanding of the psychology of intelligence and decision dynamics. In addition, the IPO process must consider “centers of gravity” and “decisive points,” and be able to address both current and future operations at all steps.

Finally, all of these transactions occur along a notional “event horizon,” or overview of all aspects of an event or potential event. IPO incorporates three distinct focuses of intelligence production over the course of an event horizon: Trends and Potentials; Capabilities and Intentions; and, ultimately, an Operational Net Assessment to achieve all-phase, all-source fusion through all phases of operations. A more dynamic and practical way of viewing the event horizon is found in the Transaction Analysis Cycle.

In the drafting of the IPO plan, the IM&C SubGroup identified information that is either already part of vUSA and that could be utilized in the IPO, or that the group thought should be part of vUSA and that could be used for the listed means in the IPO Concept of Operations.

Information identified should be automatically taken from or delivered from parent data sources with minimal or no end-user actions required for inclusion in the vUSA platform.

Within the vUSA terminal or program, there should be an onscreen graphical method to define the operational space:

- Describe the operational space effect
  - Identify
  - Key venues and infrastructure
  - Population
  - Terrain
  - Weather

# Information Management & Communications SubGroup

- Cultural features
- Cultural intelligence
- Geospatial intelligence
- Cyber (electronics) intelligence
- Be able to exploit
  - Cyber intelligence
  - Social networking analysis.

## Uses

The data available from vUSA should be provided in live 24-hour, all-source feeds year-round to allow operational centers to monitor and possibly use applications to analyze information in real time. It should act as a true dashboard to aid in prioritization of needs during the event.

It should also function as a baseline preparation for the operational space and be utilized in the ongoing process of developing incident/event-specific real-time updates. It would provide tactical management and support of incident goals and objectives. It would be used to monitor or observe the collateral effects of or influences leading to an event.

This data setup would be beneficial during multiple incidents/events or during an expanding incident, allowing the operations center to monitor the event's impact on other resources, improve the center's ability and capacity for build-up of resources, and allow the center to better prepare for sector interaction and interdependencies. It will also assist the staff of the operations center in development of strategic goals and objectives.

## Types of Information in vUSA

### Resource Information

- What: Shelter, units, teams, communications resources, hospital beds, emergency response status, etc.
- Where: Location
- Status: Available, assigned, transition
- Event Information: IAP/CAD event record
  - Type
  - Location

- Sit/Stat
- Res/Stat.

### Current Information on Facilities/Infrastructure

- Flag if Key Infrastructure
- Map/GIS information
  - Pre-plans/response information
    - Example – Hazards
  - Tax assessments
  - Owner
  - Critical infrastructure consequence of impact
  - Debris removal plans, status, impact on others
  - Evacuation plans, status, impact on others.

### Outputs or Reports

(Beyond the real-time picture, what we need to know from vUSA)

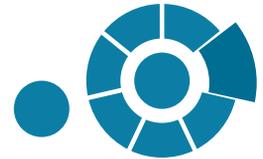
### Available Outputs

vUSA should have a report engine with common preset reports that also allows for more powerful reporting, allowing for development of reports from a large set of end-user commands as well as from a graphical interface with map and data identifier boxes.

### AAR Information Availability

The most labor intensive portion of an event is documentation of activity from forms collected during an event. That information is then used to populate forms for state or local entities to gain reimbursement from the federal government after a declared disaster is mitigated.

What is ultimately needed in vUSA goes far beyond just the IPO cycle or the collection of data with the intent to create the IAPs and AARs; the vUSA project needs to ultimately collect data during an event, account for all the activity that occurred in a response to the event, and enable the governing agency to process reimbursement requests more efficiently.



## **Governance of vUSA**

The model for data sharing may be based on the UASI style of regions on a large-scale Regional Catastrophic Planning Grant Program (RCPGP). Its imperative that the data from adjoining affected jurisdictions is shared real time without pause.

### **CAD-to-CAD Interface**

Prior to 2008, members of the IAB's IM&C Sub-Committee, then named Interoperable Communications and Information Sharing, understood that sharing data among disparate computerized information and decision support systems is key to efficient and effective incident management. The overall goal is to provide decision makers at all levels of the incident management organization with actionable information. Sharing information between systems removes the requirement of duplicate data entry, thereby increasing efficiency and accuracy.

Members of the IM&C subcommittee were key participants in the effort that updated the SAFECOM Interoperability Continuum to include data sharing, which establishes the most advanced method of data sharing as "standards-based," from one to many interfaces. If data information is going to be shared with more than one disparate system, standards are a key to success.

Sharing information between CAD systems is the logical choice for beginning the data sharing process for several reasons. Firstly, the CAD system is the first place where event or incident information is captured digitally. Second, CAD-to-CAD interfaces can provide many agencies with a daily enhancement to resource utilization and incident management.

For some time, emergency responders have been trying to develop standards that would better enable their respective dispatching centers to exchange data-specific information. One such effort began as Project 36 of the Association of Public-Safety Communications Officials. At about the same time, DHS sponsored the efforts of another group working on data exchange standards, the Organization for the Advancement

of Structured Information Standards, to expand the Common Alerting Protocol standard to include additional emergency-related messages. The expanded standard became known as Emergency Data Exchange Language (EDXL).

The National Information Exchange Model (NIEM)—which is most often included in U.S. Department of Justice and DHS grant requirements—is a national approach and common vocabulary for information exchange.

IM&C SubGroup members have focused their efforts on a single CAD system connected to many other systems via a single technical interface using a middleware for translations, one of many instances of a CAD-to-CAD implementation have been documented throughout the country. The National Capital Region (NCR) has created a Data Exchange Hub (DEH) and used the NIEM conformity for the individual data exchange processes. The DEH model for standards-based information sharing allows efficiencies and cost savings because only one system interface is required and the owner can share information with any other authorized system subscribed to the hub.

Three Northern Virginia fire and rescue departments are operating a CAD-to-CAD service via the NCR DEH to facilitate automatic aid response. Since implementation, the average 90 seconds it took to process phone calls between one dispatch center and another have been reduced to just a few seconds among all jurisdictions dispatching the requested resources. Resource status information and incident information can be used by emergency management or neighboring jurisdictions as the information is processed through the DEH.

The DEH architecture and implementation methodology is highly scalable and transitions well into the next steps of focused on Intelligence Preparation and its uses from the vUSA platform.

# Information Management & Communications SubGroup

CO-CHAIR  
LED EDLING

*Chicago (IL) Fire Department*

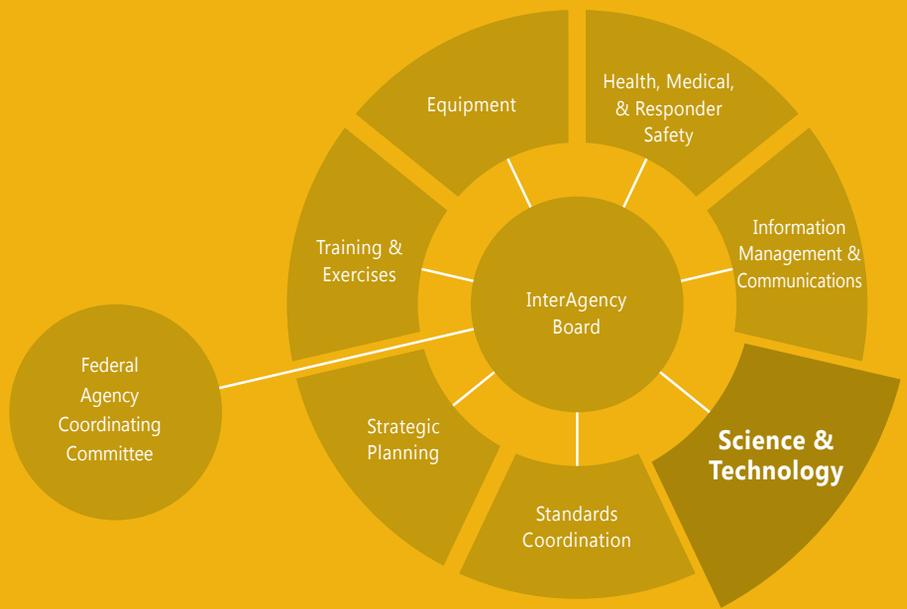
Commander Edling is a 16-year veteran of the Chicago Fire Department with 19 years of emergency response experience, including serving as a Firefighter, Paramedic, HAZMAT Technician, and HAZMAT Response Chief. He is also Deputy Chief of the Volunteer Merrionette Park Fire Department. In his current assignment as Administrative Assistant for the Deputy Fire Commissioner of Operations with the Chicago Fire Department, his responsibilities include working on various federal, state, and local committees and programs in the areas of hazardous materials, incident management teams, communications, and major incident response. In addition to serving as the Local/State Co-Chair of the IAB IM&C SubGroup, Edling co-chairs the Chicago/Cook County Interoperable Communications Committee.

FEDERAL CO-CHAIR  
MIKE TUOMINEN

*Branch Chief, Incident Communications Operations, National Interagency Fire Center, National Interagency Incident Communications Division*

Mike Tuominen has more than 20 years of experience in incident communications and serves at the national level as an operations specialist for all-risk incident communications involving both natural and human-caused disasters. During such incidents, he fills the role of Communications Technician, Communications Unit Leader, Communications Coordinator, Communications Duty Officer, or Technical Specialist. His duties include the management of all facets of emergency communications systems utilizing low-power, very-high-frequency, and ultra-high-frequency land mobile radio; high-frequency and satellite radio and telephone; and frequencies equipment and personnel resources for areas involved in severe multi-incident emergencies. He is also involved in training through the National Wildfire Coordinating Group for Incident Communications Technician S-258, Communications Unit Leader S-358, and Communications Coordinator, and was involved in the development of all-risk Communications Unit Leader and Communications Technician courses. Some of his recent assignments include Hurricanes Katrina and Rita, 2005; Alaska, Northern California, Northern Rockies, Northwest, Southern, and Southwest Fires, 2005 through 2010; Haiti Earthquake, 2010; North Dakota Flooding, 2010; and technical assistance to the Republic of Ghana, 2005.





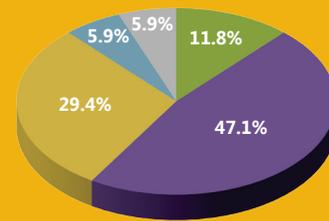
# Science & Technology SubGroup

## MISSION

The Science & Technology (S&T) SubGroup's mission is to identify interagency (local, state, federal, and tribal) research and development requirements and innovative technologies (fieldable in the next 6 months to 5 years) for first responders that address CBRNE focus areas including but not limited to:

- Detection
- Individual protection
- Collective protection
- Medical support
- Decontamination
- Communications systems/information technology
- Deterrence and prevention
- Security/situational awareness.

## PRIMARY RESPONDER ROLE\*



- Emergency Management
- Fire Services
- Law Enforcement
- Military
- Other

## SUBJECT MATTER EXPERT ROLE\*



- Governmental

\*Based on FY 2010 demographics data.

# Science & Technology SubGroup

## Roles and Functions

The primary functions of the S&T SubGroup are to develop and update the IAB S&T Requirements Matrix for inclusion in the SEL, coordinate IAB representation on federal requirements boards, record and prioritize requirements of individual SubGroups, report to SubGroups on federal requirement initiatives, provide an annual demographics report of the IAB membership, and assess innovative government- and industry-developed technologies. The IAB S&T Requirements Matrix (following this section) identifies future technology needs for detection, individual protection, collective protection, medical support, decontamination, communications systems, information technology, and operational equipment.

## Initiatives and Progress

During 2009–2010, the S&T SubGroup accomplished the following:

- Designated SubGroup Chairs as mission area leaders responsible for detailed review and prioritization of S&T needs and projects.
- Administered the Web-based survey to prioritize research and development (R&D) requirements from SubGroups.
- Conducted a statistical analysis of the IAB R&D requirements survey results and delivered a Prioritized Requirements List for official publication.

- Reviewed the 2009-2010 SEL Categories and updated the Summary of Current R&D Projects Matrix (also known as the S&T Matrix).
- Coordinated input into federal research and development agencies to leverage IAB-prioritized requirements.
- Administered the Web-based survey to gather IAB membership demographics data.
- Completed the demographic information survey of the IAB membership to assist in describing the interagency composition, skill sets, and representation in the IAB.
- Attended the following events:
  - Institute of Medicine Subcommittee on certification of non-respiratory personal protective technologies
  - TSWG PPE Conference
  - TSWG Explosives Detection Symposium and Workshop
  - InterAgency workgroup for Biological Threat Assays
  - NIOSH Workshop
  - MIT Lincoln Lab Tour
  - Technologies for Critical Incident Preparedness (TCIP) Conference
  - S&T Subgroup Mass Decon Equipment/Procedures Workshop.

### CO-CHAIR

**KENNETH BRENNAN**

*Fairfax County (VA) Police Department*

### FEDERAL CO-CHAIR

**GABRIEL RAMOS**

*Technical Support Working Group*



## Ongoing Initiatives in 2009–2010

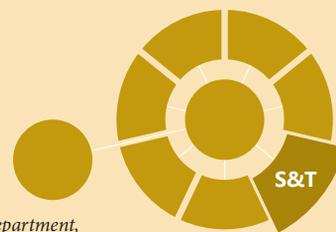
The S&T SubGroup has established a formal process to collect and prioritize IAB R&D requirements. This work will continue in 2011 and will involve a new requirements collection survey from all IAB SubGroups, followed by statistical analysis and prioritization based on the results of the survey.

Among its other activities, the S&T SubGroup will:

- Invite industry representatives and federal R&D labs/centers to deliver focused S&T briefings to the SubGroup
- Prepare S&T technical summaries of new and emerging technologies that will be published by the S&T SubGroup on the R&D Sharepoint Database
- Coordinate visits to industry R&D facilities and Federal R&D Labs/Centers.

The S&T SubGroup will continue work to support the S&T Matrix, a demographic database and analysis of the IAB membership. New demographic data were gathered in 2010. As federal agencies programs address prioritized IAB R&D requirements, the S&T Matrix will be updated to reflect the project name, managing agency/participants, and status of availability. A "Technology Readiness Level (TRL)" column will also be added to the S&T Matrix.

Work will continue to integrate the S&T Matrix as a content area of the Responder Knowledge Base allowing the information to be cross-referenced in SEL categories.



### Membership

CRAIG ADAMS

*Los Angeles Police Department,  
Counter Terrorism Training Unit*

SUSAN BALLOU

*National Institute of Standards and Technology, Office of Law  
Enforcement Standards*

BRETT BURDICK

*Virginia Department of Emergency Management*

DOUGLAS CARLEY

*Grand Rapids (MI) Fire Department*

BRYAN COOKE

*Fairfax County (VA) – Explosives Ordnance Disposal*

DEAN COX

*Fairfax County (VA) Fire Department*

JOHN DELANEY

*Arlington County (VA) Fire Department*

BILL DESO

*Department of Homeland Security*

VINCENT J. DOHERTY

*Long Island University/Naval Postgraduate School*

JOHN DONNELLY

*DC Fire and Emergency Medical Services*

CHRISTINA EGAN

*New York State Department of Public Health*

GERARD FONTANA

*Boston (MA) Fire Department*

RICHARD HARK

*Huntingdon County Emergency Management Agency*

NEIL HOLLORAN

*Naval Surface Warfare Center, Dahlgren Division, Asymmetric  
Defense Systems Department*

DAVID LADD

*Massachusetts Department of Fire Services*

MILT NENNEMAN

*DHS S&T Interagency and First Responder Programs*

DON OSTROWSKI

*Troy (MI) Police Department*

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Response Force*

THOMAS RICHARDSON

*Seattle (WA) Fire Department*

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*South Carolina Law Enforcement Division*

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*Technical Support Working Group*

VANESSA CASTELLANOS

*National Institute of Justice*

KRISTEN KORTE

*Department of Defense, Joint Program Executive Office for  
Chemical and Biological Defense*

NEAL POLLARD

*Georgetown University Walsh School of Foreign Service*

NANCY SUSKI

*Lawrence Livermore National Laboratory*

# Science & Technology SubGroup

## Identified Research and Development Priorities

The following prioritized R&D requirements were identified by the SubGroups in 2010 as capability gaps that should receive special consideration by R&D initiatives.

### 2010 IAB Research and Development Priorities

1. 3-D Tracking of Personnel
2. Seamless Communication with Environments that Interfere with Radio Transmissions
3. Handheld Standoff Chemical and Explosive Identifier
4. Noise-Filtering Digital Speaker/Microphone for SCBA Facepiece
5. Hands-Free Radio Intercom
6. Performance Criteria and Testing Protocol Validate SCBA Facepiece Performance in High-Temperature Environments
7. Incident Management Accountability System
8. Emergency Responder Body-Worn Integrated Electronics System Development
9. Personal Bluetooth-like Radio Interface
10. Vehicle-Borne Improvised Explosive Device (VBIED) Render-Safe Tool
11. Bomb Suit Protective Ensemble with SCBA Interface
12. Respiratory Escape Device for SCBA
13. Rapid System(s) to Decontaminate Vehicle Interiors
14. Device for Standoff Casualty Triage
15. Guide for Increasing Patient Transport Capability
16. Modeling, Simulation, Gaming Software Evaluation Tool
17. Equipment/Supply Guide for Relocating Special Needs Evacuees
18. Enhanced Decontamination Capability for Special Needs Victims
19. Weapons Contamination/Decontamination Study

### 2010 IAB Research and Development Priorities by SubGroup

#### ESG

1. Handheld Standoff Chemical and Explosive Identifier
2. Performance Criteria and Testing Protocol Validate SCBA Facepiece Performance in High Temperature Environments
3. Vehicle-Borne Improvised Explosive Device (VBIED) Render-Safe Tool
4. Bomb Suit Protective Ensemble with SCBA Interface
5. Respiratory Escape Device for SCBA
6. Weapons Contamination/Decontamination Study

#### HMRS

1. Emergency Responder Body-Worn Integrated Electronics System Development
2. Rapid System(s) to Decontamination Vehicle Interiors
3. Device for Standoff Casualty Triage
4. Guide for Increasing Patient Transport Capability
5. Equipment/Supply Guide for Relocating Special Needs Evacuees
6. Enhanced Decontamination Capability for Special Needs Victims

#### IM&C

1. 3-D Tracking of Personnel
2. Seamless Communication with Environments that Interfere with Radio Transmissions
3. Noise-Filtering Digital Speaker/Microphone for SCBA Facepiece
4. Hands-Free Radio Intercom
5. Personal Bluetooth (like) Radio Interface

#### S&T

1. Incident Management Accountability System

#### T&E

1. Modeling, Simulation, Gaming Software Evaluation Tool

## Improved Single Detector for CWAs and TICs

InterAgency Board  
Science and Technology SubGroup  
13 October 2009

### Improved Single Detector for CWAs and TICs

The InterAgency Board's Science and Technology (S&T) SubGroup is working to better inform its annual R&D requirements survey process. This report focuses on analyzing one R&D priority from the 2009 R&D Requirements List, with the goal of better informing the survey process. The requirement studied is an improved, single detector for chemical weapons agents (CWAs) and toxic industrial chemicals (TICs).

This limited pilot project incorporated conversations with subject matter experts (SMEs) for field chemical detectors, as well as a literature search aided by CBRNIAC (The Chemical, Biological, Radiological and Nuclear Defense Information Analysis Center). Time restrictions made it impossible to devote more than thirty hours to the project. The scope of the study was limited to portable, handheld detectors. Also, additional features of a detector such as radiation or biological hazard monitors were not considered. The structure of this report is to first characterize the current technologies available. The report ends by identifying emerging technologies which may become available for field use in the near future.

### Current Technologies

To acquire an improved technology, it is helpful to begin with a list of the features of the best imaginable technology. The ideal handheld chemical sensor envisioned by first responders included the following:

- Sensitive
  - Detects and identifies the chemical agent below IDLH, below AEL
- Few false alarms/High specificity
  - Device does not identify smoke, moisture, benign chemicals as CWAs/TICs
- All-in-one function
  - Ability to detect both CWAs and TICs – all types
  - Ideally also radiation, explosives, biohazards
- Allows remote (“down range”, standoff) chemical detection
  - Keeps first responders out of harm's way
- Fast start up and response time
  - Detector is quick to set up and provides instant feedback on presence of chemical agent
- Provides data on concentration of chemical agent
- Self-calibrating
- Contains programmable training module for simulated detection
- Supports GPS/RF communication
- Other:
  - low unit cost
  - alarm capability

- few training requirements
- durability/ruggedness of unit
- easily-supplied power/battery needs<sup>1</sup>

Some elements of this list were obtained from the 2007 DHS Guide for the Selection of Chemical Detection Equipment for Emergency First Responders, but other elements came directly from SMEs.

The next question became, what is now available in the marketplace? If handheld chemical detection equipment is divided into major classes, approximately eight groups emerge. They are the following, with examples next to each item in the list:

- Enzymatic Detection (M8/M9 paper, M256A1 kit, colorimetric tubes)
- Ion Mobility Spectroscopy (Advanced Portable Detector 2000)
- Infrared Radiation Detection (FLIR, FTIR)
- Raman Spectroscopy (DeltaNu's ReportR)
- Photo Ionization (MiniRAE 2000, MultiRAE Plus)
- Flame Photometry (FID/PID, Proengin SA detectors)
- Surface Acoustic Wave Detection (SAW MiniCAD mkII, JCAD)
- Electrochemical Detection (Draeger Pac III Monitor Single-Gas Detector)<sup>2</sup>

Once ideal requirements and actual technologies were clear, the next logical question became, is current technology close to achieving the ideal?

Below is a chart which maps five of the eight major categories<sup>3</sup> against what seemed to be the top three concerns for the field user.

	Enzymatic (paper)	Enzymatic (colorimetric tubes)	IMS	IR	Raman	Flame Photometry
Sensitive/ Specific	sensitive but prone to false positives	sensitive but prone to false negatives	sensitive but prone to false positives	varies	detects below AEL	sensitive but prone to false positives
All-in-one Function	does not detect vapor	but may be cumbersome	does not detect all TICs	does not detect all CWAs	does not detect vapor	does not detect all TICs
Remote	no	no	no	a few are remote units	no	no

The answer to question of how close real and ideal technologies are: not very close. No one instrument fulfills all or even most of the wishlist requirements. There is an inherent challenge in one handheld field instrument even detecting all CWAs and TICs. Thus, tradeoffs are necessary in choosing appropriate current technology.

Some factors to weigh in choosing a technology are the tradeoffs between:

- sensitivity and specificity (number of false alarms)
- standoff detection and sensitivity
- standoff detection and all-in-one functionality
- standoff detection and weight

- all-in-one functionality and quick response time
- all-in-one functionality and level of training needed

It's also essential to understand the specifics of individual requirements when considering which requirement is more important; a poorly-defined requirement could lead to a poorly-considered choice.

In particular, “standoff”, “remote” or “down range” detecting is not well-defined. Using “keeping first responders out of harm’s way” as a definition is ambiguous. Standoff would then be defined as different distances depending on what chemical agent is being detected – something that’s usually unknown before the detector is employed.

### **Emerging Technologies**

Our research also identified 3 specific developing technologies that will potentially meet some of the requirements identified by the IAB. Those technologies are hydroxy oximes, surface-enhanced Raman spectroscopy (SERS), and nanotube sensors. The remainder of the report discusses these three advances in handheld chemical agent detection technologies. Each of the three, if incorporated within current screening devices, would improve their sensitivity by an order of magnitude or more.

#### ***Hydroxy Oximes:***

New molecules that detect and destroy lethal organophosphorus nerve gases have been developed by U.S. researchers. Information on these engineered hydroxy oximes was published at the end of September 2009 in the journal *Angewandte Chemie*.<sup>4</sup> The technology of these new molecules, which detect sarin, tabun, and soban, is quicker and more sensitive than that of previous chemical sensors. Developed at the Scripps Research Institute, the hydroxy oximes react with nerve gases to produce a fluorescent dye. It is possible that measurements of fluorescence could provide quantitative information on the amounts of toxic nerve gas present at a disaster. To this end, the team from Scripps has begun design work on prototypes of badge-sized detectors.

The compounds might also be used as an active defense or antidote against organophosphorus nerve agents. When the nerve agent interacts with the detecting molecule, the nerve agent is transformed from a highly toxic chemical to a harmless one.

In sum, advantages for the field user of this technology are that it achieves quicker and more sensitive detection, by orders of magnitude. Also, measuring fluorescence could provide actual concentration levels of OP gases. To date, hydroxy oximes have been produced only in the research laboratory setting. However, researchers predict the technology will be commercially available within 5 years.

#### ***Surface-Enhanced Raman Spectroscopy:***

A promising development within the area of standoff detection is the maturation of surface-enhanced Raman spectroscopy (SERS). First responders may already be familiar with handheld Raman spectrometers such as ReportR (manufactured by DeltaNu). SERS technology is an enhanced version of Raman spectroscopy, taking advantage of a chemical phenomenon described thirty years ago, but unexploited until recently. The phenomenon, simply stated, is that any molecule coming extremely close to a roughened noble metal surface will display a greatly enhanced Raman spectrum. The latest techniques use noble metals such as gold and silver, shaped into nanoparticles so that surface area is maximized. These particles can maximize the spectra of chemical warfare agents, as well as those for explosives and biological pathogens. Sensitivity is so high that even individual microbes can produce a signal.

SERS products for defense and medical applications are expected to become available over the next several years. Challenges along the path of producing a market-ready SERS detector include: synthesizing more materials with high Raman enhancement properties; making direct assays work reliably in complicated mixtures; and finding ways to bring the analyte of interest and the SERS

substrate closer together so that the signal is enhanced.<sup>5</sup>

In sum, advantages for the field user of this technology are that it achieves quicker and more sensitive detection. Also, SERS promises all-in-one functionality, since noble metal nanoparticles combined with a Raman spectrometer can detect chemical agents, explosives, and biological pathogens.

To date, SERS has been tested only in the research laboratory setting. However, researchers predict the technology will be commercially available within 5 years.

### **Nanotube Sensors:**

Using carbon nanotubes for chemical detection is another flourishing area. Work from the lab of MIT professor Michael Strano has demonstrated that certain carbon nanotubes have record sensitivity to molecules mimicking organophosphate nerve toxins such as sarin. Strano's device can detect minute quantities and concentrations as low as 25 parts per trillion.

One detector built by Strano's lab used an array of carbon nanotubes aligned across microelectrodes. Each tube consists of a single-layer lattice of carbon atoms, rolled into a long cylinder with a diameter about 1/50,000 of the width of a human hair. The nanotube sensors act as a molecular wire, but require very little power – only about 0.0003 watts. One sensor could run essentially forever on a regular battery.

When a particular gas molecule binds to the carbon nanotube, the tube's electrical conductivity changes. Each gas affects conductivity differently, so gases can be identified by measuring the conductivity change after binding. The MIT researchers achieved new levels of sensitivity by coupling the nanotubes with a miniature gas-chromatography column etched onto a silicon chip smaller than a penny. The column rapidly separates different gases before feeding them into the nanotubes.

A previous problem with nanotube sensors was that the gas to be identified would irreversibly bind to the nanotube, eliminating its capacity to act as a sensor for other particles. The new MIT sensor is the first nanotube sensor at this level of sensitivity that does not require external energy to regenerate its sensor capacity. To achieve a "passively reversible" sensor, the team needed to decrease how strongly the nanotube sensor bound different gas molecules on its surface, and allow the sensor to detect a series of gas exposures in rapid succession. This task was accomplished by coating the nanotubes with amine-type molecules, which donate an extra pair of electrons to the nanotubes. The coating allows gas molecules to bind to nanotubes but detach a few milliseconds later, allowing another molecule from the column to move in.

The nanotube sensor technology, which could also detect mustard gas, ammonia and VX nerve agents, has potential to be used as a low-cost, low-energy device that could be carried in a pocket or deployed inside a building to monitor hazardous chemicals.

Different aspects of the work from this MIT lab were published in *Angewandte Chemie* and the *Journal of the American Chemical Society* in 2008.<sup>6</sup> Researchers from the University of Illinois at Urbana-Champaign developed the microcolumn technology.

Before the publication of the MIT work, nanosensors were already commercially available. In fact, one of the most promising is the Cyranose 320, manufactured by Smiths Detection. This device features an array of 32 nanosensors which can quickly and reliably detect volatile organic compounds. Unfortunately, this device is currently sold only for industrial applications, not for CWA/TIC detection. However, with a modified configuration, it could be used for field work.

In sum, advantages for the field user of nanosensor technology are that it achieves quicker and more sensitive detection. Also, nanotube sensors promise all-in-one functionality, since their tiny size allows multiple sensors to be combined within one detector. The lower power requirements for the device lead to a smaller battery being needed, which lowers device weight, which makes the overall device more portable.

### **Implications for Improved Chemical Sensors for First Responders**

Three key characteristics of an ideal handheld chemical detector are that it be highly sensitive, that it be comprehensive (i.e. consolidate multiple detection systems in a single device), and that it allow remote sensing. Each of the three technologies discussed has the promise to dramatically improve the sensitivity of chemical detection.

However, only the last two technologies (SERS and nanotube sensors) raise the prospect of a consolidated device; the technology of hydroxy oximes by itself could not produce a consolidated device. Nanotube sensors may hold the greatest promise of consolidating multiple sensors into one instrument. Advances in nanotechnology make the eventual development of such an instrument highly probable.

Turning to the final characteristic, only SERS would be expected to accomplish remote sensing. Using a Raman detector which is already commercially available with a SERS substrate would allow the detection of CWAs and TICs, with the emergency responder located meters away from the dangerous substance instead of centimeters away.

Thus, of the three technologies discussed here, SERS may hold the greatest promise for improving handheld standoff detection.

	<b>Hydroxy oximes</b>	<b>SERS</b>	<b>Nanotube Sensors</b>
<b>Sensitive/Specific</b>	yes	yes	yes
<b>All-in-one Function</b>	no	feasible	very feasible
<b>Remote</b>	probably not	feasible	probably not

### **IAB S&T Disclaimer**

The information found within this report is for informational purposes only, and comes from those within the S&T SubGroup. This information was compiled through researching existing data found through the internet or personal knowledge as of September of 2009. We are providing this information to help inform those on the IAB of existing technology or technology that will likely be available within the next 5 years. We do not endorse nor have we held any type of review process for any products or technologies contained within this report.

### **References**

1. Fatah, AA, et. al. (January 2007). Guide for the Selection of Chemical Detection Equipment for Emergency First Responders. Department of Homeland Security, Guide 100-06, 5-1—5-6.
2. For one comprehensive list of current technology, see the Responder Knowledge Database, at [https://www.rkb.us/comparison\\_table.cfm?stid=630](https://www.rkb.us/comparison_table.cfm?stid=630)
3. Information from various sources, including the Responder Knowledge Database and the following article: Davis, Griffin L. (December 10, 2008). CBRNE – Chemical Detection Equipment. *emedicine from WebMD*. URL: <http://emedicine.medscape.com/article/833933-overview>
4. Dale, T.J. & Rebek, J. Jr. (2009). Hydroxy Oximes as Organophosphorus Nerve Agent Sensors. *Angewandte Chemie International Editions*, 48, 7850 –7852. Also: <http://www.rsc.org/chemistryworld/News/2009/September/24090901.asp> and <http://www.azonano.com/news.asp?newsID=13707#>
5. Rowe, A. (September 21, 2009). Top Raman. *Chemical & Engineering News*. 87(38), 36–38. Online at <http://pubs.acs.org/isubscribe/journals/cen/87/i38/html/8738sci1.html>
6. Trafton, Anne. (June 11, 2008). Super-sensitive and small: New MIT detector uses nanotubes to sense deadly gases. *MIT Tech Talk*, 52 (29), 2.  
Lee, Chang Y.; Sharma, Richa; Radadia, Adarsh D.; Masel, Richard I.; Strano, Michael S. (2008). On-Chip Micro Gas Chromatograph Enabled by a Noncovalently Functionalized Single-Walled Carbon Nanotube Sensor Array. *Angewandte Chemie International Edition*. 47, 5018 –5021.  
Lee, Chang Y. & Strano, Michael S. (2008). Amine Basicity (pK<sub>b</sub>) Controls the Analyte Binding Energy on Single Walled Carbon Nanotube Electronic Sensor Arrays. *Journal of the American Chemical Society*, 130 (5), 1766-1773.

## Summary of Current Research and Development by SEL Category

Project	Description	Managing Agency/ Participants	Availability/Status	Technology Readiness Level
<b>SEL Category 01 - Personnel Protective Equipment</b>				
Enhanced Performance Tactical Chemical, Biological, and Radiological Boot	An enhanced performance CBR boot providing protection against chemical warfare agents, toxic industrial chemicals and materials, and flash fire. The boot is designed to meet the component requirements of National Fire Protection Association (NFPA) 1994, Standard on Protective Ensembles for First Responders to CBR Terrorism Incidents, and NFPA 1971, Standard on Protective Ensembles for Structural and Proximity Fire Fighting.	www.tswg.gov	Ongoing development/testing.  North Carolina State University Textile Protection and Comfort Center/Globe Firefighter Suits, Falcon Performance Footwear/W. L. Gore & Associates	7
Multipurpose Threat Glove	A multipurpose glove that protects against cuts, punctures, and pathogen threats. The gloves are slip-resistant but are thin and pliable enough to retain manual dexterity.	www.tswg.gov/ TSWG/NIJ	Operational testing. Warwick Mills, Inc.	7
Low Profile Escape Mask	Short-duration protective mask to escape from a contaminated area and meet requirements of the National Institute for Occupational Safety and Health Standard for Chemical, Biological, Radiological, and Nuclear – Self-Contained Escape Respirator (September 2003). Packaged mask is expected to approximate the size of a daily planner to make it easily portable.	www.tswg.gov	Ongoing development/testing.	
CB/Smoke Escape Hood	Provides 15 minute escape capabilities from smoke and chem/bio incidents.	www.tswg.gov	Ongoing development/testing. Essex Inc.	5
End-of-Service-Life Indicator for Respirator Cartridges	System to indicate remaining service life of chemical filter cartridges.	NIOSH/NPPTL/DoD	Ongoing development.	5
Land Warrior Project	Integrated protection, detection, and communications ensemble for soldiers.	www.natick.army.mil	Ongoing development.	6
Long Duration Tactical SCBA	A lightweight, low-cost, low-profile, long-duration closed-circuit SCBA (rebreather) for law enforcement tactical operations.	www.tswg.gov	Ongoing development. Prototype available. www.technicalproductsinc.us	6
Next-Generation Bomb Suit	Improved bomb suit with integrated chemical protection.	www.tswg.gov	Ongoing development.	6
Full Spectrum Ballistic Eyewear	Full-spectrum ballistic eyewear with an electrochromatic film to rapidly increase or decrease light transmission in response to the ambient light.	www.tswg.gov	Ongoing development.	6
<b>SEL Category 02 - Explosive Device Mitigation and Remediation</b>				
Next-Generation Handheld Explosives Detector	Improved handheld explosive detector for residue, imaging, and personnel screening.	www.tswg.gov	Ongoing development.	5
Homemade Explosives Containment Guide	Standardized containment guidance for the clean-up of chemicals and materials that may be found in laboratories producing illicit explosive materials.	www.tswg.gov Air Force Research Lab (AFRL)	Ongoing development.	6
Dual-Energy X-Ray to Detect Vehicle-Borne Improvised Explosive Devices	Dual-energy X-ray system for the detection of bulk explosives that may be concealed in cars and trucks. Discriminates between organic and metallic objects.	www.tswg.gov	Ongoing testing. Prototype available. Spectrum San Diego/SAIC	7

## Summary of Current Research and Development by SEL Category - *Continued*

Project	Description	Managing Agency/ Participants	Availability/Status	Technology Readiness Level
<b>SEL Category 02 - Explosive Device Mitigation and Remediation - <i>Continued</i></b>				
Backscatter Walk-through Portal	Ruggedized, modular, walkthrough backscatter system intended for military and civilian use in harsh environments, including severe weather and extreme temperatures.	www.tswg.gov	Ongoing testing/development. Rapiscan Systems, Inc.	6
Automatic Target Recognition for Backscatter Portals	Software package for current backscatter X-ray portals to provide privacy filters and automatic target recognition.	www.tswg.gov	Ongoing testing/development. L3 Communications Service Division.	6
X-ray Explosive Detection System Image Quality Enhancement	Statistical studies to improve the performance of explosive detection system by determining the quantitative relationships between explosives detection, false alarm rates, image resolution, and dual-energy detection capability.	www.tswg.gov/ TSWG/DHS S&T	Ongoing testing/development. Reveal Imaging, GE Global Research Center, with GE Homeland Protection.	6
<b>SEL Category 03 - CBRNE Operations &amp; Search &amp; Rescue Equipment</b>				
Stand off Patient Triage	Device to identify viable patients in mass casualty incident.	www.tswg.gov/ TSWG/DHS S&T	Ongoing testing/development. Boeing.	5
Vehicle Retrofit Kit for Mass Casualty Evacuation	An easy-to-install kit that rapidly transforms a transit or school bus into an evacuation vehicle following a large-scale CBRNE incident or natural disaster.	www.tswg.gov / FDNY	Operational testing. Functional prototype available. Raytheon.	7
3-D Personnel Locator	Device to locate personnel in three dimensions.	www.tswg.gov DHS S&T	Ongoing development. TRX Systems, Inc.	6
<b>SEL Category 04 - Information Technology (Software)</b>				
Tool Characterization Guide	Characterize the performance of disruptors against varying sizes of threat devices. This data will be incorporated into a Tool Characterization Guide which will assist bomb technicians in determining which disruptor needs to be used based on an IED or VBIED threat.	www.tswg.com	Ongoing testing/development. Battelle Memorial Institute and Sandia National Laboratories.	6
<b>SEL Category 05 - Cyber Security Enhancement Equipment</b>				
Detection of Novel Attacks Against Network Servers	Intrusion detection of network servers against viruses and cyber attacks	www.tswg.com	Ongoing development.	6
Passive Network Mapping Tool	Rapidly assess cyber network performance	www.tswg.com	Ongoing development.	6
<b>SEL Category 06 - Interoperable Communications Equipment</b>				
Small, Portable Voice Radio Repeater System	Hockey puck-sized radio repeater system to maintain voice communications in collapsed buildings and tunnels.	www.tswg.com	Prototype available. Operational testing. DTC, Inc.	7

## Summary of Current Research and Development by SEL Category - *Continued*

Project	Description	Managing Agency/ Participants	Availability/Status	Technology Readiness Level
<b>SEL Category 06 - Interoperable Communications Equipment - <i>Continued</i></b>				
Unified Incident Command and Decision Support (UICDS)	Develops a framework based on NIMS/ Incident Command System (ICS) and NRP and develops compliant tools to manage and share incident information that will enhance Incident Command Systems and Multi-Agency Coordination common situational awareness and decision support during all types of incidents. UICDS framework will be based on an open-architecture to allow multiple responding organizations (using their own equipment) to jointly manage personnel, direct equipment, and seamlessly communicate, gather, store, redistribute, and secure any mission-critical information needed by incident commanders and emergency responders during an emergency situation.	DHS S&T	Ongoing testing/development. FY10-FY11.	7
<b>SEL Category 07 - Detection</b>				
Biological Aerosol Mass Spec (BAMS)	Real-time detection, identification, and warning of hazardous biological agents in complex interferent backgrounds.	www.tswg.gov LLNL	Ongoing development.	6
Distributed Chemical Sensing and Transmission	A fiber optics-based distributed sensing system that rapidly detects, identifies, and alarms the presence of TICs and CWAs at below IDLH levels.	www.tswg.gov	Operational testing. Functional prototype available. IOS <a href="http://www.intopsys.com/dicast.html">http://www.intopsys.com/dicast.html</a>	7
Handheld Biodetection for First Responders	A study to determine the feasibility of modifying existing Cellular Analysis and Notification of Antigen Risks and Yields (CANARY) equipment for the analysis of suspect powder, based on first responder requirements.	DHS S&T/PFPA/ ECBC	Ongoing testing/development. FY10-FY11. MIT Lincoln Labs.	6
<b>SEL Category 08 - Decontamination</b>				
Enzymatic Decontamination	Decontamination solution using enzymes to break down chemical and biological contaminants on equipment and in the environment.	www.sbcom.army.mil	Ongoing development.	5
<b>SEL Category 09 - Medical</b>				
<b>SEL Category 10 - Power</b>				
Fuel Cell for Continuity of Operations	Develop and demonstrate fuel cell technology to improve the logistical sustainment of critical response operations.	www.tswg.gov	Continued operational testing FY11.	6
<b>Miscellaneous</b>				
Nano-Material and Nanotechnology Research and Development	Application of nanotechnology materials for chemical-biological detection and protection.	www.raytheon.com	Ongoing development.	5
Camera Blinder	Enable law enforcement to neutralize surveillance cameras from a distance and ensure that their tactics, techniques, and procedures are not compromised.	www.tswg.gov	Ongoing development.	6

## Summary of Available Research and Development by SEL Category

Project	Description	Managing Agency/ Participants	Availability/Status
<b>SEL Category 01 - Personnel Protective Equipment</b>			
Development of Computer-Aided Face Fit Evaluation Methods	Establish updated database of facial characteristics that can be used by respirator manufacturers to develop better products and by NIOSH for certification.	NIOSH/NPPTL	Completed. Data available.
Improved Chemical Protective Ensemble (ICE)	ICE provides protection against chemical- biological agents with significantly enhanced operational ergonomics and performance. The ensemble provides protection at the NFPA 1994 level and is ideal for physically demanding missions in a chemical or CBRN hazardous environment.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG/CBIRF	Available. Lion Apparel: <a href="http://www.lionapparel.com">http://www.lionapparel.com</a> .
Risk-Based Protective Clothing Material Permeation Criteria	Develop realistic permeation end-point criteria and test methods for Toxic Industrial Chemicals (TICs) based on dermal toxicity data.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Completed. Final recommendations provided to national standards.
Next Generation Fire Fighter Ensemble	Fire Fighter bunker gear with integrated Chemical-Biological protection. Meets NFPA standards for fire and CB protection.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG/DHS	Completed performance and operational testing. Commercialized versions available from Morning Pride/Total Fire and Globe respectively to meet users needs. <a href="http://www.totalfiregroup.com">http://www.totalfiregroup.com</a> <a href="http://www.globefiresuits.com">http://www.globefiresuits.com</a>
<b>SEL Category 02 - Explosive Device Mitigation and Remediation</b>			
Radio Frequency Shielded Blackout Tent	Rapidly deployable, multi-configuration RF-shielded enclosures evaluated by TSWG. Isolate suspect RCIEDs from external influences. Use patented BEMA RF shielding technology.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Available through TEMI Support Services, LLC.
Power Hawk Integration for Robotic Platforms	Integrates the Power Hawk Rescue System as a remotely operated access tool onto the ANDROS F6A robotic platform. Both the Power Hawk Rescue System and the integration kit are available through Remotec.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Available. Remotec. Requests for additional information should be sent to <a href="mailto:iddsubgroup@tswg.gov">iddsubgroup@tswg.gov</a> .
Pallet Charge Disruptor for Large Vehicle	Provides bomb technicians a means to disrupt the contents of vehicles containing large quantities of explosives in a controlled manner while producing minimal collateral effects. The system is supplied with a binary explosive to reduce the burden of explosives storage logistics and is configured to minimize response time and "Time on Target".	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Available. Mining Resource Engineering, Ltd.
Tactical Timed Firing Device	Provides civilian bomb disposal technicians a small, reliable, multi-use timed firing device to initiate energetic charges and tools. The device is capable of firing multi-sized shock tube, electrical blasting caps, or electrically primed cartridges.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Available. Requests for additional information should be sent to <a href="mailto:iddsubgroup@tswg.gov">iddsubgroup@tswg.gov</a> .
IED Wire Attack Tools	For state and local bomb squads during render safe operations, the KUKRI monitors the electrical system and remotely severs the detonator leads if the IED attempts to function. The SABER provides the capability to determine the state of the switch or the threat from the detonator and provides the technician with the proper render-safe action to take.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Available as a kit through A-T Solutions at: <a href="http://www.atsolutions.com">http://www.atsolutions.com</a> .

## Summary of Available Research and Development by SEL Category - *Continued*

Project	Description	Managing Agency/ Participants	Availability/Status
<b>SEL Category 02 - Explosive Device Mitigation and Remediation - <i>Continued</i></b>			
Scalable Disruptor	Scalable vehicle bomb disruptor based on commercial-off-the-shelf plastic containers of various sizes and commercial explosive materials readily available to State and local bomb squads. The tamped detonation wave-shaping device results in a reduction of explosive mass and therefore reduced collateral damage. Fabrication information and operational guidance is available on CD-ROM for distribution to accredited bomb squads. Requests for copies of the CD-ROM should be sent to	www.tswg.gov/TSWG	Applied Research Associates, Inc. Requests for copies of the CD-ROM should be sent to idds subgroup@tswg.gov.
Protective Boots for Deployed Military Working Dogs	Evaluated canine boots for use in a screening operations. Boots extend the working time of the canines and provide protection for the canines in environments where they could step on shattered glass and other debris.	www.tswg.gov /TSWG	Paw, Inc. at <a href="http://www.therapaw.net">http://www.therapaw.net</a> , and Ruff Wear, Inc., at <a href="http://www.ruffwear.com">http://www.ruffwear.com</a> .
Evaluation and Optimization of Explosives Trace Detection Portals	Transportation Security Administration (TSA) and TSWG study to evaluate and optimize the performance of two explosives trace detection systems, the Smiths Detection Ionscan® Sentinel II and the GE EntryScan3.	TSA and www.tswg.gov/TSWG	GE EntryScan3 portal is available at <a href="http://www.geindustrial.com/ge-interlogix/iontrack/prod_entriscan.html">http://www.geindustrial.com/ge-interlogix/iontrack/prod_entriscan.html</a> . Smiths Detection Ionscan® Sentinel II is available at <a href="http://www.smithsdetection.com/eng/1522.php">http://www.smithsdetection.com/eng/1522.php</a> .
<b>SEL Category 03 - CBRNE Operations &amp; Search &amp; Rescue Equipment</b>			
<b>SEL Category 04 - Information Technology</b>			
<b>SEL Category 04 - Information Technology (Software)</b>			
Chemical Data and Hazard Assessment	The Chemical Companion system allows incident commanders to evaluate and select the best PPE ensemble given the chemical agent, concentration, and ambient conditions faced. Facilitates rapid, accurate decisions regarding isolation, protective action distances, and hot-zone stay times. Software tool incorporates initial symptoms of exposure, odor thresholds, PPE breakthrough times, and exposure guidelines	www.tswg.gov/TSWG	Available. Free to government employees and first responders at: <a href="http://www.chemicalcompanion.org">http://www.chemicalcompanion.org</a> .
Personal Heat Stress Calculator	Provides a planning tool for first responders to assess and manage heat risk associated with wearing PPE. Personal digital assistant (PDA) allows users to input workload, PPE configuration, and environmental conditions to obtain optimal work/rest cycles for the first responder.	www.tswg.gov/TSWG	Available. GEOMET Technologies, Inc. at: <a href="http://heatcommander.net">http://heatcommander.net</a> .
CB Building Protection Protocols	Software that assists engineers in the design/retrofit of collective protection systems for buildings/critical facilities.	www.tswg.gov U.S. Army Corps of Engineers	Available. UTRC <a href="http://www.utrc.utc.com">www.utrc.utc.com</a> .
First Responder Radiation Assessment Tools (FRAT) Radiation Biological Dosimetry Tools for First Responders	A software program that contains a number of tools useful to First Responders for the management and assessment of casualties of radiation exposure.	www.tswg.gov/ TSWG/Armed Forces Radiobiology Research Institute (AFRRI)	Available to State and Local Government organizations. AFRRI web site at: <a href="http://www.afri.usuhs.mil">www.afri.usuhs.mil</a> .

## Summary of Available Research and Development by SEL Category - *Continued*

Project	Description	Managing Agency/ Participants	Availability/Status
<b>SEL Category 05 - Cyber Security Enhancement Equipment</b>			
Computer Log Collector	A software tool to collect information from a computer hacking incident. A small thumb drive contains the software program and attaches to any USB port on a computer or server. The tool can extract data pertinent to the hacking and store it on the thumb drive, allowing easy downloading to other storage media. The software categorizes, analyzes, and formats the data to make it easy to use by investigators.	www.tswg.gov/TSWG	Available. ID Scientific. jwilkinson@idsscientific.com.
<b>SEL Category 06 - Interoperable Communications Equipment</b>			
<b>SEL Category 07 - Detection</b>			
Hazardous Gas Detection System	Open path, line of sight, IR sensor used for continuous and real time monitoring of facilities, perimeters, at path length upto 100m for hazardous chemical gases/vapors. Uses optical IR spectral analysis and comparative library to rapidly detect and identify chemical agents.	www.tswg.gov/TSWG/DHS	Available. Avir Sensors <a href="http://www.avirsensors.com">http://www.avirsensors.com</a> .
Fast Repetition Rate Fluorimeter	The Fast Repetition Rate Fluorimeter II (FRRF II), monitors chemical contamination in water supplies in near real-time by measuring the bio-fluorescence of naturally-occurring algae."	www.tswg.gov/TSWG	Available. <a href="http://www.chelsea.co.uk/FASTtrackaSystem.htm">http://www.chelsea.co.uk/FASTtrackaSystem.htm</a> .
Non-PCR Detection of Bio Agents	A gold nanoparticle- and antibody-based fieldportable assay for rapid detection and identification of biological agents, which is much simpler to use and operate than conventional PCR methods.	www.tswg.gov/TSWG	Available. www.nanosphere-inc.com.
Self-Indicating Radiation Dosimeter	A beta/gamma self-reading radiation dosimeter badge measuring cumulative dose for rapid assessment of radiation exposure so responders can quickly assign triage levels.	www.tswg.gov	Available. JP Labs <a href="http://www.jp-labs.com/html/about_jp_labs.html">http://www.jp-labs.com/html/about_jp_labs.html</a> .
Hardened Benchtop and Handheld Trace Detectors	Assessed and modified design of GE Homeland Security and Smith Detection trace detection systems for operations in rugged and military austere environments.	www.tswg.gov/TSWG	Available.
Handheld Explosive Detector Evaluation	Assessed commercial handheld detectors for trace explosives as a way to screen for vehicle-borne improvised explosive devices.	www.tswg.gov	Requests from government agencies for technical report should be sent to eds subgroup@tswg.gov.
<b>SEL Category 08 - Decontamination</b>			
Electrostatic Decontamination System	A spray-on decontamination solution for rapid (UV light-activated) neutralization of chemical and biological agents.	www.tswg.gov	Available. www.cleanearthtech.com.
Expedient Mitigation of a Radiological Release	Easily applied and removable adsorbent coating systems to mitigate the spread of radiological contamination.	www.tswg.gov Argonne National Labs DHS (S&T)	Available. Istron. <a href="http://www.isotron.net/">http://www.isotron.net/</a>
Mass Personnel Decontamination Protocols	A handbook containing consensus-based best practices and procedures for CBR mass decontamination.	www.tswg.gov	Available. <a href="https://www.cbrniac.apgea.army.mil/Products/Catalog/Pages/default.aspx">https://www.cbrniac.apgea.army.mil/Products/Catalog/Pages/default.aspx</a>

## Summary of Available Research and Development by SEL Category - *Continued*

Project	Description	Managing Agency/ Participants	Availability/Status
<b>SEL Category 08 - Decontamination - <i>Continued</i></b>			
Statistical Tool for Sampling Contaminated Buildings	Provides a statistically valid surface sampling plan for building decontamination following a CB event. Guides the sample collection and decontamination process. This is a software tool to efficiently and effectively focus the efforts of decontamination personnel.	<a href="http://www.tswg.gov/TSWG/PacificNorthwestNationalLaboratory(PNNL)">www.tswg.gov/TSWG/Pacific Northwest National Laboratory (PNNL)</a>	Available. Free download at <a href="http://dco.pnl.gov/index.htm">http://dco.pnl.gov/index.htm</a> .
Fibertect® Dry Decon Mitt	Fibertect Mitt is a three-layer, inert, flexible, drapable, nonwoven composite substrate for absorbing and adsorbing CWAs and TICs. The Mitt design allows for easy clean-up of bulk chemicals on people, weapons and sensitive equipment and can be worn over gloves.	<a href="http://www.tswg.gov/TSWG/DHS">www.tswg.gov/TSWG/DHS</a>	Available. First Line Technology, LLC <a href="http://www.firstlinetech.com">www.firstlinetech.com</a> .
Sensor Web	Sensor Web pods that can be efficiently and cost-effectively deployed in a building to monitor the physical conditions and chemical concentrations in real time over the Internet. The communication packages on the pods automatically organize themselves into a wireless network, providing a thinking infrastructure for the sensors they carry.	<a href="http://www.tswg.gov/TSWG">www.tswg.gov/TSWG</a>	Available. SensorWare Systems <a href="http://www.SensorWareSystems.com">http://www.SensorWareSystems.com</a> .
Wired/Wireless Multi Sensor Environmental Monitor	Distributed sensor system for real-time monitoring of chemical concentrations to ensure the effective gas-phase decontamination of large buildings. Portable sensor system has six interchangeable sensors and supports both wired and wireless internet connections for remote monitoring.	<a href="http://www.tswg.gov/TSWG">www.tswg.gov/TSWG</a>	Available. Esensors at <a href="http://eesensors.com">http://eesensors.com</a> .
Plant and Animal Tissue Gasifier	A transportable gasification system for large scale disposal of contaminated plant material and animal carcasses.	<a href="http://www.tswg.gov/EPA/USDA">www.tswg.gov/EPA/USDA</a>	Operational testing completed. Prototype available. BGP, Inc. <a href="http://bgp-inc.com/index.html">http://bgp-inc.com/index.html</a> .
<b>SEL Category 09 - Medical</b>			
Ocular Scanner for Chem/Bio Agents	Portable, handheld, and automated triage tool for noninvasive assessment of acute or chronic exposure to TICs, CWAs, and toxins.	<a href="http://www.tswg.gov/DHS/S&amp;T">www.tswg.gov/DHS S&amp;T</a>	Operational testing concluded. Prototype available. MD Biotech, Inc.
<b>SEL Category 10 - Power</b>			
<b>CBRNE Training Technologies</b>			
Agricultural Bioterrorism Response Training	Accredited, modular, agricultural bioterrorism response training curriculum for classroom, CD-ROM, or Web-based distance learning applications.	<a href="http://www.tswg.gov">www.tswg.gov</a> <a href="http://www.aphis.usda.gov">www.aphis.usda.gov</a>	Available.
Portable Chemical/Radiological Simulant Training Kit	Portable simulant training kit for use in decontamination exercises. Simulants are safe and non-toxic to the skin. Simulants mimic vapor pressure and solubility characteristics of G, H, and V agents. Black-light illumination makes a fluorescent taggant in the simulants visible to the trainer to effectively evaluate the trainee's performance in decon operations. The kit also includes a particulate simulant for radiological contamination.	<a href="http://www.tswg.gov/TSWG">www.tswg.gov/TSWG</a>	Available. Clean Earth Technologies, <a href="http://www.trainsaf.com">www.trainsaf.com</a> .

**Summary of Available Research and Development by SEL Category - *Continued***

<b>Project</b>	<b>Description</b>	<b>Managing Agency/ Participants</b>	<b>Availability/Status</b>
<b>CBRNE Training Technologies - <i>Continued</i></b>			
Enhanced CBR Simulant Kit	Non-hazardous visual and odor simulants kit designed to assist a wide range of security and emergency response personnel in recognizing low-purity chemical, biological, and radiological (CBR) materials that fall within plausible terrorist production capabilities. Includes user manual that provides additional information on the properties and possible variations of the materials simulated in the kit.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Available. Sales are restricted to Federal, State, and local government users and their contractors. Any other sales must be approved by TSWG/CTTSO via an e-mail request to <a href="mailto:techtrans@tswg.gov">techtrans@tswg.gov</a> .
Explosive Simulant Kit	Hands-on tool containing representative simulants of common commercial and improvised explosive materials as well as common initiators. These simulants consist of both visual simulants (look) and tactile simulants (look and feel).	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Available. Sales are restricted to Federal, State, and local government users and their contractors. Any other sales must be approved by TSWG/CTTSO via an e-mail request to <a href="mailto:techtrans@tswg.gov">techtrans@tswg.gov</a> .
"IED, HME, and Narcotics Component and Operations Awareness Web-based Course"	Web-based course to train law enforcement personnel to differentiate between and respond appropriately to improvised explosives, homemade explosives, and narcotics-related incidents.	<a href="http://www.tswg.gov">www.tswg.gov</a> /TSWG	Available. AT-Solutions. Contact <a href="mailto:ttdsubgroup@tswg.gov">ttdsubgroup@tswg.gov</a> .
<b>Miscellaneous</b>			

# Science & Technology SubGroup

## CO-CHAIR

KENNETH BRENNAN

*Fairfax County (VA) Police Department*

Kenneth Brennan is a hazardous materials specialist with the Federal Bureau of Investigation's Hazardous Materials Operations Unit. He joined the unit in December 2009 and is currently assigned to the Training Group. In 1982 Ken began his 27 year law enforcement career as a patrol officer with the Fairfax County Virginia Police Department. In 1988 he was assigned to the Aviation Division as a flight officer/paramedic. In 2000 Ken developed the Tactical Medic Program, which supports SWAT, EOD, Dive Operations, Civil Disturbance Unit, and extended police operations. In 2004 he developed the Weapons of Mass Destruction Program which he coordinated until December 2009. He co-developed the Safety Officer Program and coordinated that program from 2005–2008. He was a member of the Washington Metropolitan Council of Governments Weapons of Mass Destruction and HazMat Subcommittees. He currently sits as a member of the Technical Advisory Committee for the Development of Innovative New Pressure Vessel for Emergency Responders Self-Contained Breathing Apparatus.

## FEDERAL CO-CHAIR

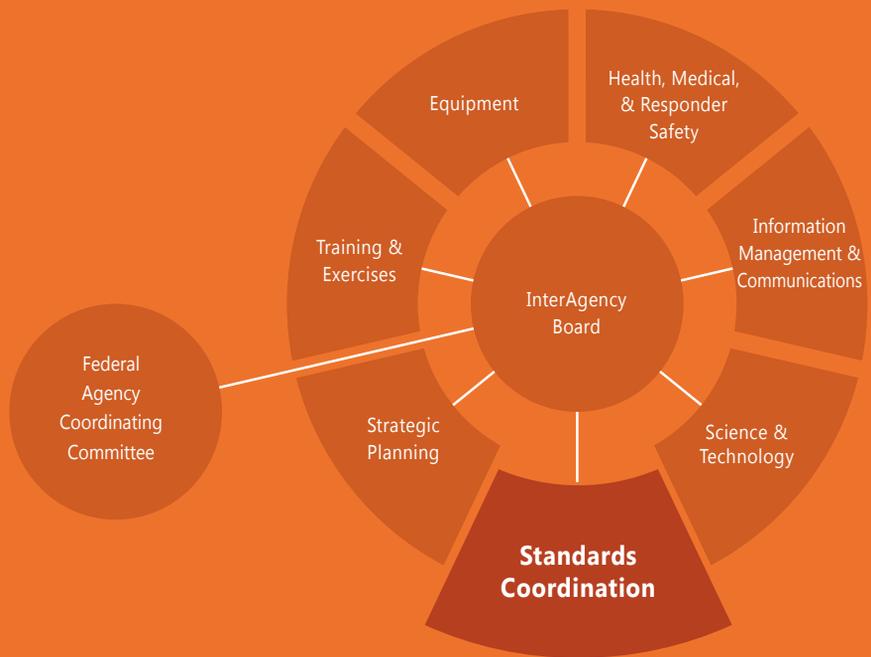
GABRIEL RAMOS

*Deputy Director, Technology Division*

*Combating Terrorism Technical Support Office (CTTSO)*

Gabriel Ramos is the Deputy Director, Technology Division at the CTTSO, providing management and technical oversight for the execution of the Technical Support Working Group rapid R&D program. He has 25 years of experience developing and evaluating Combating Terrorism capabilities for DOD and the federal interagency community. Gabriel has a Bachelor of Science in chemical engineering from the Polytechnic University, Brooklyn, N.Y., and is also a graduate of the U.S. Army School of Engineering Logistics Product/Production Engineering Program. He is a member of IAB for Equipment Standardization and Interoperability and has served as the IAB Federal Co-Chair of the S&T SubGroup since February 2003.



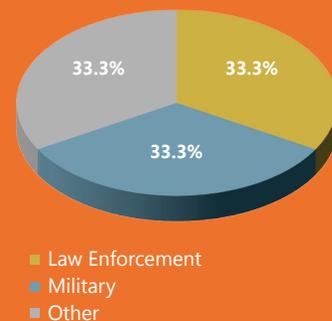


# Standards Coordination SubGroup

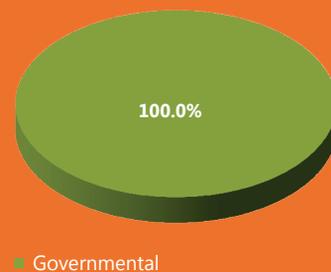
## MISSION

The mission of the Standards Coordination SubGroup (SCSG) is to identify and coordinate standards development needs and activities within the IAB, with external organizations, and with the first responder community. The objective is to promote local, state, and federal preparedness through the development and implementation of standards for operational and response capabilities associated with all-hazards incidents, especially those involving CBRNE issues. By focusing the nation's resources and expertise in a common effort to establish performance standards by which critical equipment can be tested, evaluated, and certified, the SCSG helps to provide first responders with objective guidance for making informed decisions regarding the purchase and proper use of that equipment. As a result, both first responders and the citizens they serve can have greater confidence in the technologies upon which their lives depend.

## PRIMARY RESPONDER ROLE\*



## SUBJECT MATTER EXPERT ROLE\*



\*Based on FY 2010 demographics data.

# Standards Coordination SubGroup

## Membership

The SCSG includes representatives from federal, state, and local agencies and private standards-development organizations.

## Roles and Functions

The SCSG supports and coordinates the IAB's efforts to identify and meet standards requirements within the responder community. In the IAB SubGroups' effort to identify existing standards that must be modified and areas in which new standards must be developed, the SCSG assists with the following:

- Identifying and documenting applicable standards from IAB and external sources
- Prioritizing standards requirements and related interoperability and compatibility issues
- Identifying existing standards and performance requirements, and testing methods that could streamline the development of new standards or be modified to meet the needs of responders
- Identifying potential conflicting requirements and facilitating reconciliation of these issues
- Participating in standards development and revision processes
- Informing emergency responders about appropriate application of standards
- Drafting and disseminating studies, white

papers, and other reports on standards, interoperability issues, and compatibility issues

- Recommending and promoting the adoption and use of standards and conformity assessment requirements.
- Identifying and informing responders about relevant standards activities, comment periods, and programs that address interoperability and compatibility issues.

The SCSG also tracks and reviews the progress of standards activities of interest to the IAB and serves as a feedback loop to the IAB by:

- Alerting the IAB when conflicting standards requirements are proposed and facilitating reconciliation
- Notifying the IAB when proposed requirements contradict federal or state regulations
- Alerting the IAB to similar or complementary development efforts under way within regulatory, consensus, and/or voluntary standards organizations
- Providing advice for improving performance requirements
- Informing the IAB about open comment periods for standards that have application to the responder community.

### CO-CHAIR

#### TIMOTHY FISK

*Lieutenant, Orlando (FL) Police Department*

### FEDERAL CO-CHAIR

#### PHILIP J. MATTSON

*Office of Standards  
Test & Evaluation and Standards Division  
Science & Technology Directorate  
Department of Homeland Security*



## Partnerships

The success of IAB's standards efforts relies on its partnerships with regulatory agencies, federal agencies funding standards development, and standards-development organizations. For example, with regard to equipment, the SCSG serves as IAB's liaison to these partners in matters relating to performance requirements; test methods; certification requirements; and selection, use, care, and application guides. The SCSG has also initiated working relationships with many federal, nonprofit, and private standards agencies, including but not limited to:

- American National Standards Institute (ANSI)
- International Association of Fire Fighters (IAFF)
- International Association of Fire Chiefs (IAFC)
- International Association of Chiefs of Police (IACP)
- ASTM International
- Department of Homeland Security (DHS)
- Department of Defense (DoD)
- Environmental Protection Agency (EPA)
- National Fire Protection Association (NFPA)
- National Institute of Justice (NIJ)
- National Institute for Occupational Safety and Health (NIOSH) National Personal Protective Technology Laboratory (NPPTL)
- National Institute of Standards and Technology (NIST) Office of Law Enforcement Standards (OLES)
- Occupational Safety and Health Administration (OSHA)
- Institute of Electrical and Electronics Engineers (IEEE).



## Membership

ALIM FATAH

*National Institute of Standards and Technology*

JOHN FORD

*Joint Program Executive Office Chemical Biological Defense*

KATHLEEN HIGGINS

*Department of Homeland Security, Science and Technology Directorate, Command, Control and Interoperability Division*

JOSEPH KUNKLE

*Transpiration Security Administration*

GREGORY MROZINSKI

*Edgewood Chemical Biological Center*

DERECK ORR

*National Institute of Standards and Technology*

DEBRA STOE

*National Institute of Justice*

MARK STOLOROW

*National Institute of Standards and Technology, Office of Law Enforcement Standards*

## Subject Matter Experts

TIMOTHY BROOKE

*ASTM International*

JAMES STEWART

*NIST/OLES*

JONATHAN SZALAJDA

*National Institute for Occupational Safety and Health, National Personal Protective Technologies Laboratory*

# Standards Coordination SubGroup

## IAB Standards Development Priorities and Adopted or Referenced Standards

The SCSG establishes and maintains an updated list that identifies standards that have been adopted or referenced. In addition, the SCSG supports and coordinates IAB's efforts to identify and prioritize standards requirements derived from the responder community. To do so, the Committee conducts a rigorous survey of IAB. Any gaps identified from among all IAB SubGroups are evaluated using a standardized survey questionnaire. The survey responses are analyzed statistically and a rank order is established for each gap evaluated. The end product of the survey is a list of priorities vetted by IAB membership: the IAB Standards Development Priorities. The IAB prioritized list of standards development requirements is available on the IAB website, [www.iab.gov](http://www.iab.gov).

The Standards List located at the end of the SEL includes standards officially adopted by IAB and additional standards that SEL users will find valuable for reference.

## Accomplishments

During the past year, IAB has successfully influenced the development of priorities for standards, as well as the revision of several CBRN and all-hazards related standards, specifically the following:

- Continued to serve as IAB's liaison on the joint AOAC/ANSI/ASTM working groups responsible for the revision of several relevant explosive and sampling standards.
- Continued to serve as IAB's liaison to the NFPA protective clothing and equipment Technical Correlating Committee and the NFPA Hazardous Materials Protective Clothing and Equipment Committee.
- Continued to promote the DHS program requirement that funds be used specifically for the purchase of CBRNE equipment that meets adopted or DHS-established performance standards.

- Participated in two NIJ standards development activities: the NIJ CBRN Protective Ensemble Standard for Law Enforcement and the NIJ Bomb Suit Standard for Public Safety.
- Formally adopted the Surface Water Operations Protective Clothing and Equipment Standard (NFPA 1952).

## Current Initiatives

The following are among the equipment performance standards activities to which the SCSG is currently contributing:

- Revision of ASTM Standard Practices for Bulk Sample Collection and Swab Sample Collection of Visible Powders.
- Revision of ASTM Chemical Weapons Detection and equipment certification standard.
- Continued NIOSH, ECBC, and NIST development of standards and test procedures for all classes of CBRN respirators, including CBRN combination SCBAs, CBRN supplied-air respirators, and closed-circuit SCBAs.
- Continued support of standards development activities in ASTM for urban search and rescue robots and blast-resistant trash receptacles.
- Support of work being done by NIST on the Vehicle-Borne Improvised Explosive Device (VBIED) Robotic Standard.

## Summary

Standards for public safety operations and response to all hazards and threats are of the utmost importance. The InterAgency Board is the vanguard of America's effort to rapidly develop critical standards. The SCSG, by coordinating the activities of the IAB SubGroups and harmonizing the efforts of contributing organizations, continues to enhance the safety of responders and the security of the United States.

## Standards Coordination SubGroup

CO-CHAIR

TIMOTHY FISK

*Lieutenant, Orlando (FL) Police Department*

Lieutenant Timothy Fisk is a 28-year veteran of the Orlando Police Department. The Orlando Police Department is a nationally accredited organization with 750 sworn members and jurisdiction over 110 square miles in central Florida. Tim holds many certifications as well as a Bachelor's degree in Criminal Justice.

During his years with the Orlando Police, Tim has been assigned to each of the Patrol Divisions, the Special Operations Section, and the Criminal Investigation Division. He is certified on the Police Motorcycle, the Police Mountain Bike, the Mounted Patrol, and the Marine Patrol. Tim has supervised or commanded units including Traffic Homicide, International Drive Bike Unit (tourist corridor), the Intelligence Unit, the Tactical Operations Section, and the Homeland Security Section.

Tim's work with Homeland Security included local, state, and federal efforts. He managed or coordinated millions of dollars in Federal Grant funds for the City of Orlando as well as the Central Florida Urban Area. Tim served on many local and state committees and boards that dealt with first responder issues and funding. Lt. Fisk also participated in response efforts to Biloxi (MS) for Hurricane Katrina and to Orange County California for the 2007 wild fires.

CO-CHAIR

FEDERAL CO-CHAIR

PHILIP J. MATTSON

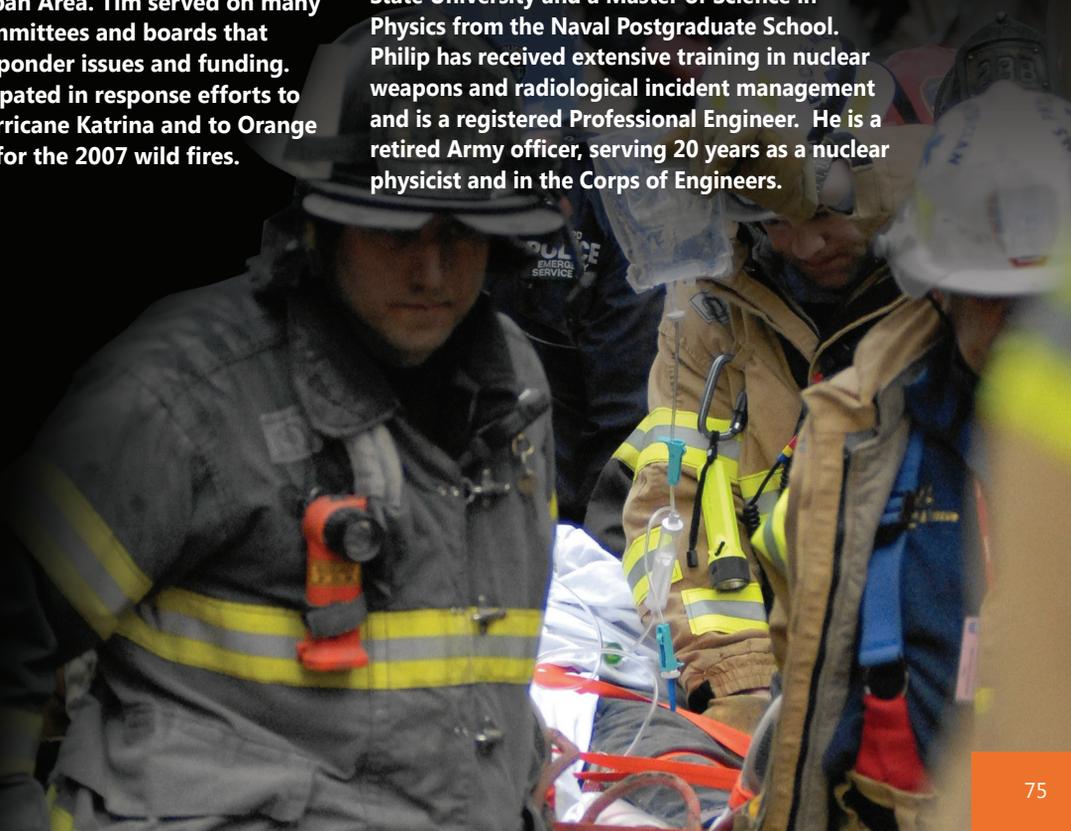
*Office of Standards*

*Test & Evaluation and Standards Division*

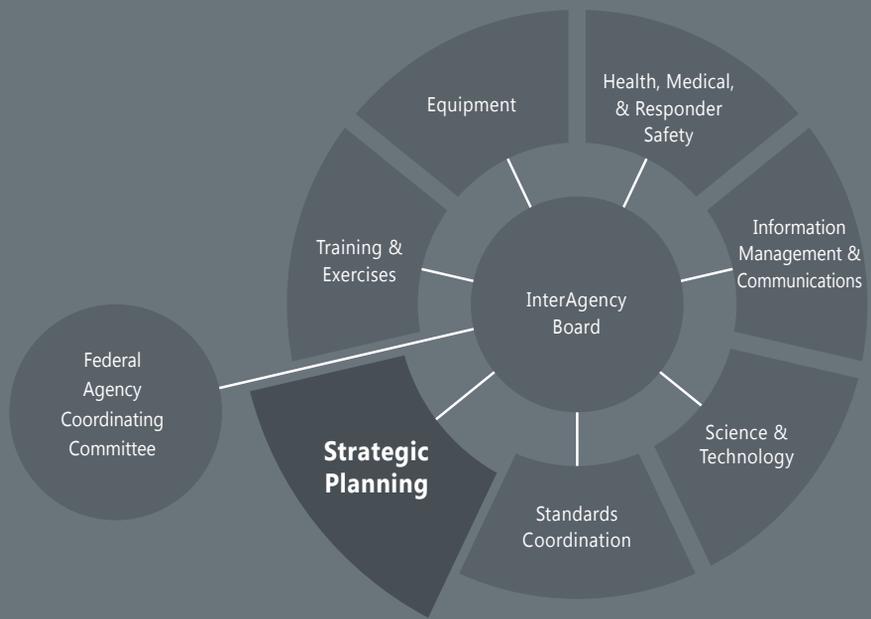
*Science & Technology Directorate*

*Department of Homeland Security*

Philip Mattson serves as the Deputy Director, Office of Standards in the Test & Evaluation and Standards Division at the Department of Homeland Security Science and Technology Directorate. As part of his duties, he coordinates and manages the broad portfolio of standards development projects executed through the Office of Standards. Prior to coming to DHS, Philip served as the Program Manager for Critical Incident Technologies at the Office of Law Enforcement Standards at the National Institute of Standards and Technology, where he managed programs to develop a suite of first responder related standards. Philip is the Federal Co-chair of the SCSG of the IAB for Equipment Standardization and Interoperability and is the Vice Chairman of the ASTM E54 Homeland Security Applications Committee. He holds a Bachelor of Science in Nuclear Engineering Technology from Oregon State University and a Master of Science in Physics from the Naval Postgraduate School. Philip has received extensive training in nuclear weapons and radiological incident management and is a registered Professional Engineer. He is a retired Army officer, serving 20 years as a nuclear physicist and in the Corps of Engineers.







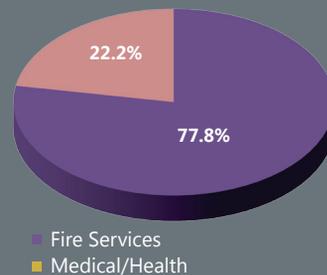
# Strategic Planning SubGroup

The Strategic Planning SubGroup was created during the 2009 restructuring of the IAB, in order to expand the IAB's core mission beyond equipment standardization and interoperability. The SubGroup participants represent a broad and deep source of knowledge and experience, which will be leveraged to provide stakeholder feedback on national-level strategic plans, policy and doctrine.

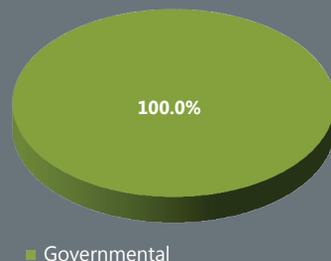
## MISSION

The mission of the Strategic Planning SubGroup is to identify, monitor, evaluate, and coordinate IAB feedback on strategic national plans, programs, and policy/ doctrinal initiatives that affect the emergency responder community.

## PRIMARY RESPONDER ROLE\*



## SUBJECT MATTER EXPERT ROLE\*



\*Based on FY 2010 demographics data.

# Strategic Planning SubGroup

## Roles and Functions

- Inform policymakers about emergency responders' operational concerns.
- Identify and interpret emerging policy, doctrine, or practice issues and coordinate IAB response.
- Monitor diverse strategic national initiatives for integration and coordination, and identify gaps and conflicts focusing on the interagency/multidisciplinary response to major incidents.
- Develop and maintain a prioritized list of organizations and initiatives of interest/influence to the IAB and develop an engagement plan.
- Coordinate overarching strategic initiatives that impact multiple SubGroups of the IAB.
- Coordinate ad-hoc special project teams as directed by the Leadership Team.
- Facilitate external communications and outreach as directed by the Leadership Team.

### CO-CHAIR

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#### MARK ANDERSON

*Bellevue (WA) Fire Department*



### FEDERAL CO-CHAIR

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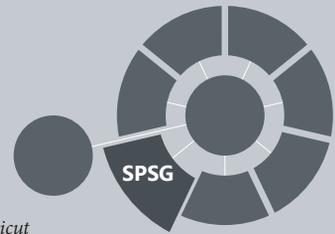
#### MIKE WALTER

*Department of Homeland Security, Office of Health Affairs*



## FY 2009/2010 and Ongoing Projects

- Provide feedback to the White House National Security Staff on review and revisions to Homeland Security Presidential Directives.
- Coordinate IAB participation in the TCL Implementation Project.
- Coordinate IAB feedback to the Quadrennial Homeland Security Review and its follow-on initiatives.
- Provide IAB representation to the FEMA Strategic Futures Initiative.
- Evaluate and coordinate feedback on the BioWatch program national guidance.
- Evaluate and coordinate feedback on Cost-to-Capabilities initiative.
- Identify existing and future plans, policies and doctrinal initiatives that would benefit from IAB input.
- Build relationships with associated emergency services policymakers and organizations.



### Membership

AMY DONAHUE

*University of Connecticut*

JEFF DULIN

*Charlotte (NC) Fire Department*

CHERYL GAUTHIER

*Bioterrorism Response Laboratory, Massachusetts Department of Public Health*

ROBERT INGRAM

*Fire Department, City of New York (NY)*

ROBERT JOHNS

*Department of Homeland Security, Domestic Nuclear Detection Office*

MAJOR J. CLAY MCGUYER

*National Guard Bureau/US Army Chemical School*

DAN O'CONNELL

*Chicago (IL) Fire Department*

JAMES SCHWARTZ

*Arlington County (VA) Fire Department*

ELAINE STEWART-CRAIG

*Department of Defense, Research, Development and Engineering Command, Edgewood Chemical and Biological Center*

### Subject Matter Experts

JAMES BLOOM

*Collier County (FL) Sheriff's Office*

PAM BROUGHTON

*Cincinnati (OH) Urban Area*

JOHN GIBB

*State of New York Emergency Management Office*

MIKE HARRYMAN

*State of Oregon, Department of Public Health – Emergency Preparedness*

JOHN KOERNER

*Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response*

RAY MOLLERS

*Department of Homeland Security, Office of Infrastructure Protection, Emergency Services Sector*

MICHAEL SANFORD

*Seattle (WA) Police Department*

THOMAS SHARKEY

*Washington Metro Transit Police Department / National Bomb Squad Commanders Advisory Board*

JEFF STERN

*Northern Virginia Emergency Response System*

ROBERT TUOHY

*Homeland Security Studies and Analysis Institute*

ERIK WOZNIAK

*Federal Emergency Management Agency, Office of Policy and Program Analysis*

# Strategic Planning SubGroup

## CO-CHAIR

MARK ANDERSON

*Bellevue (WA) Fire Department*

Mark Anderson is a Firefighter/Paramedic with the Bellevue (WA) Fire Department, and has 20 years of experience as a first responder in the Seattle metro area. He has been working at the local, regional, and state levels on homeland security planning and preparedness issues since 1998. His primary areas of focus are: fire service special operations (including mass casualty incident response, structural collapse rescue, hazardous materials response, and medical support to public safety special operations), intelligence fusion/information sharing, and risk assessment and strategic planning.

Mark's homeland security service and experience includes: medical specialist/medical manager on a FEMA Urban Search & Rescue Task Force (including a deployment to the Hurricane Katrina response); development of regional response protocols for suspicious substances in the wake of the anthrax attacks of 2001; development of regional structural collapse rescue programs and training; management of local and regional homeland security grant programs; training of regional first responders in CBRNE response tactics, techniques, and procedures; and development of regional plans for fire service integration in the Washington State Fusion Center.

Mark holds a Bachelor of Arts in Geo-Political History from the University of Washington, and served as a special operations officer in the United States Army for 15 years. He became a member of the IAB in 2009.

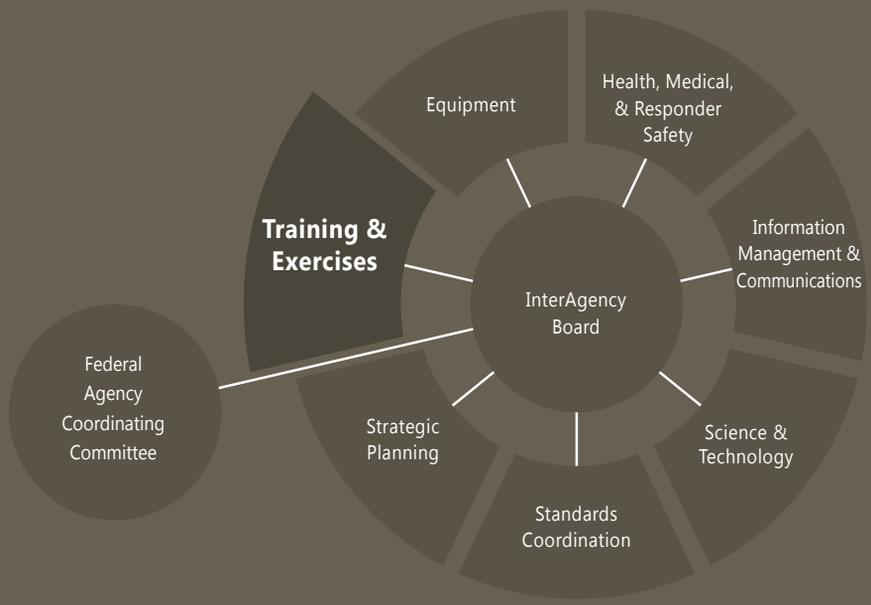
## FEDERAL CO-CHAIR

MIKE WALTER

*Department of Homeland Security,  
Office of Health Affairs*

Dr. Michael V. Walter joined the U.S. Department of Homeland Security's Office of Health Affairs as the BioWatch Program Manager in September 2009. Prior to joining the BioWatch Program, Mike was Staff Senior Scientist and headed the Technology Special Project Team for the U.S. Department of Defense Joint Program Executive Office for Chemical and Biological Defense. He has also held positions with Central Intelligence Agency, the Naval Surface Warfare Center, and Texaco, Inc. Mike possesses more than 20 years' experience in microbiology/biological warfare research. He has an extensive background in sampling and detection for aerosolized microorganisms, as well as in the management and development of design, test, evaluation, and quality assurance for related systems and programs. He also has significant experience in laboratory assay development and testing. Mike is the recipient of eight publication and innovation awards, author of numerous scientific articles, abstracts, and patents. He received his PhD in Microbiology from the University of North Dakota.



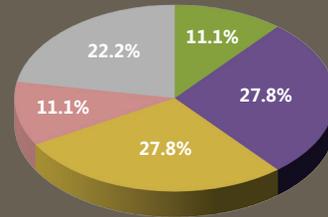


# Training & Exercises SubGroup

## MISSION

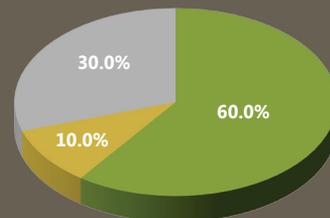
The mission of the Training and Exercises SubGroup is to improve responder mission performance by conducting a cross-disciplinary review of, and providing end-user input on, training and exercise doctrine, standards, and guidance developed for the responder community.

## PRIMARY RESPONDER ROLE\*



- Emergency Management
- Fire Services
- Law Enforcement
- Medical/Health
- Other

## SUBJECT MATTER EXPERT ROLE\*



- Governmental
- Professional Association
- Other

\*Based on FY 2010 demographics data.

# Training & Exercises SubGroup

## Membership

The Training and Exercises SubGroup consists of representatives from local, state, and federal responder agencies and institutions engaged in responder training and exercise development and delivery. A goal of the SubGroup is to engage all of the response disciplines as defined by DHS/FEMA's National Preparedness Directorate. The Training and Exercise SubGroup also draws upon a wide range of SMEs, both within and outside of the IAB.

## Roles and Functions

- Identify performance improvement needs related to Emergency Support Functions.
- Provide subject matter expertise to support the development of training and exercise programs.
- Provide end-user guidance and operational lessons learned to support training and exercise program development and improvements.
- Facilitate the implementation of training and exercise programs and standards that support individual competencies and organizational capabilities.
- Advocate for standardized national guidance for responder and equipment training and exercises.

## Initiatives and Progress

The IAB membership and federal partners recognize that—in addition to the core mission of recommending appropriate responder equipment and performance standards for their equipment—a crucial need exists to provide guidance on the training required to effectively and safely use the equipment. The basis for this guidance is to enhance preparedness capabilities and to improve responder performance and safety.

The following initiatives were completed in 2009–2010:

- Planned and implemented the realignment of the Training and Exercises SubGroup as part of the overall IAB strategic plan.
- Categorized and updated training requirements for equipment included in the SEL to assist in equipment procurement by providing guidelines on operator proficiency.
- Identified the training required (federal, state, local, and tribal) to successfully tie performance of tasks to overall capability.
- Reviewed and provided input on improvements to capability-based training programs.
- Reviewed and provided input on training programs that strengthen the links between strategies, capabilities, and tasks.
- Refined the enhancement of the SEL to include training requirements for each SEL item. The following definitions were adopted:
  - Core training is defined as the fundamental baseline knowledge, skills,

### CO-CHAIR

**JAMES TURNER, III**

*Delaware Emergency Management Agency*

### FEDERAL CO-CHAIR

**TERESA EMBREY**

*Technical Support Working Group*

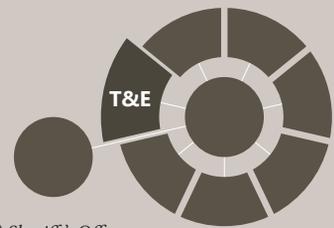


and abilities required for mission-specific assignments (for example, an Emergency Medical Technician—Intermediate, or Law Enforcement Patrol Officer).

- Initial training is defined as the training required for a responder competent in a specialization to achieve competency-based knowledge, skills, and abilities beyond day-to-day duties. For example, competency-based training reflects the use of:
  - New detection equipment by a certified HAZMAT technician
  - Specialized PPE employed by SWAT, EOD, or Crime Scene Technician.
- Sustainment training is defined as training required to maintain competency-based knowledge, skills, and abilities.
- For each SEL item, identified core training required to operate the equipment and also categorized each item as having minimal, moderate, or extensive training requirements for initial and sustainment training.
- Continued to explore modeling and simulation training technologies to identify viable, utilitarian applications with the intent to advocate for more effective selection and implementation approaches for the response community.
- Provided input to the Standards Coordination SubGroup on the development, adoption, and implementation of appropriate and relevant training standards.

## Ongoing Commitments

- Continue to be a national, interdisciplinary sounding board for training and exercise needs, doctrine, and programs. This task is essential in focusing funds and resources on relevant, operationally sound training and exercise programs.
- Continue to support development of the Law Enforcement Personal Protective Equipment Standards and Training process, as requested by the National Institute of Justice.



## Membership

ED ALLEN  
*Seminole County (FL) Sheriff's Office*

ARMANDO BEVELACQUA  
*Orlando (FL) Fire Department*

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*U.S. Fire Administration /National Fire Academy*

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CAROL MINTZ  
*Department of Homeland Security, Federal Emergency Management Agency, National Preparedness Directorate*

JAMES REMINGTON  
*National Institutes of Health, National Institute of Environmental Health Sciences*

# Training & Exercises

## SubGroup

- Continue to work with the respective IAB SubGroups to identify in each equipment category the minimal, moderate, or extensive training requirements based on core, initial and sustainment training required to operate the equipment.

### Priorities of 2011–2012

- Provide input on the development, adoption, and implementation of appropriate and relevant training and exercise standards and requirements for the response community.
- Enhance responder safety through the development of marketing and information programs pertaining to development and implementation of respiratory protection programs and personal protective equipment.
- Explore opportunities to improve the delivery of equipment-specific training through recommended instructional design measures.
- Identify critical performance-based training and exercise needs through engagement with the response community.
- Support all Emergency Support Functions (ESFs) in the development of training standards, with an emphasis on matching training requirements to responder equipment.
- Review and provide input to improve the operational applicability of training and exercise doctrine and programs that impact the ESFs.
- Promote instructional systems design-based models such as analysis, design, development, implementation, and evaluation for training and exercises.

### Future Initiatives

The process of providing advice on relevant and successful responder-focused training and exercise programs is an ongoing process driven by threat, capability, technology, and personnel. The Training and Exercises SubGroup will identify and prioritize training and exercise requirements based on these factors.

The T&E SubGroup will work closely with all IAB SubGroups to identify standards where they exist and identify their application to individual competency-based and organizational capability-based training. Where standards do not exist, the SubGroup will advocate, through the IAB, for their establishment.

### Summary

The IAB T&E SubGroup strongly recommends that any equipment purchased include identification of core, initial, and sustainment requirements for competency-based training on the application, operation, and maintenance of the equipment.

The IAB T&E SubGroup also recommends that organizations purchasing or developing training require adherence to the principles of instructional systems design and best practices for adult learning such as those demonstrated in the Responder Training Development Center (<https://www.firstrespondertraining.gov/rtdc/state/>).

The IAB T&E SubGroup endorses the exercise cycle as cited in the Homeland Security Exercise Evaluation Program. Exercises serve to validate plans and training, and as such are a critical component in the cycle of preparedness.

# Training & Exercises SubGroup

## CO-CHAIR

JAMES TURNER

*Director, Delaware Emergency Management Agency*

Jamie Turner is the Delaware Emergency Management Agency Director. He manages a cadre of 48 employees in Planning, Response, Recovery, Logistics, and Administrative Sections. He also serves on the state's Enhanced 911 Board as a public appointee, the State Emergency Response Commission and is the Planning and Training Committee chair.

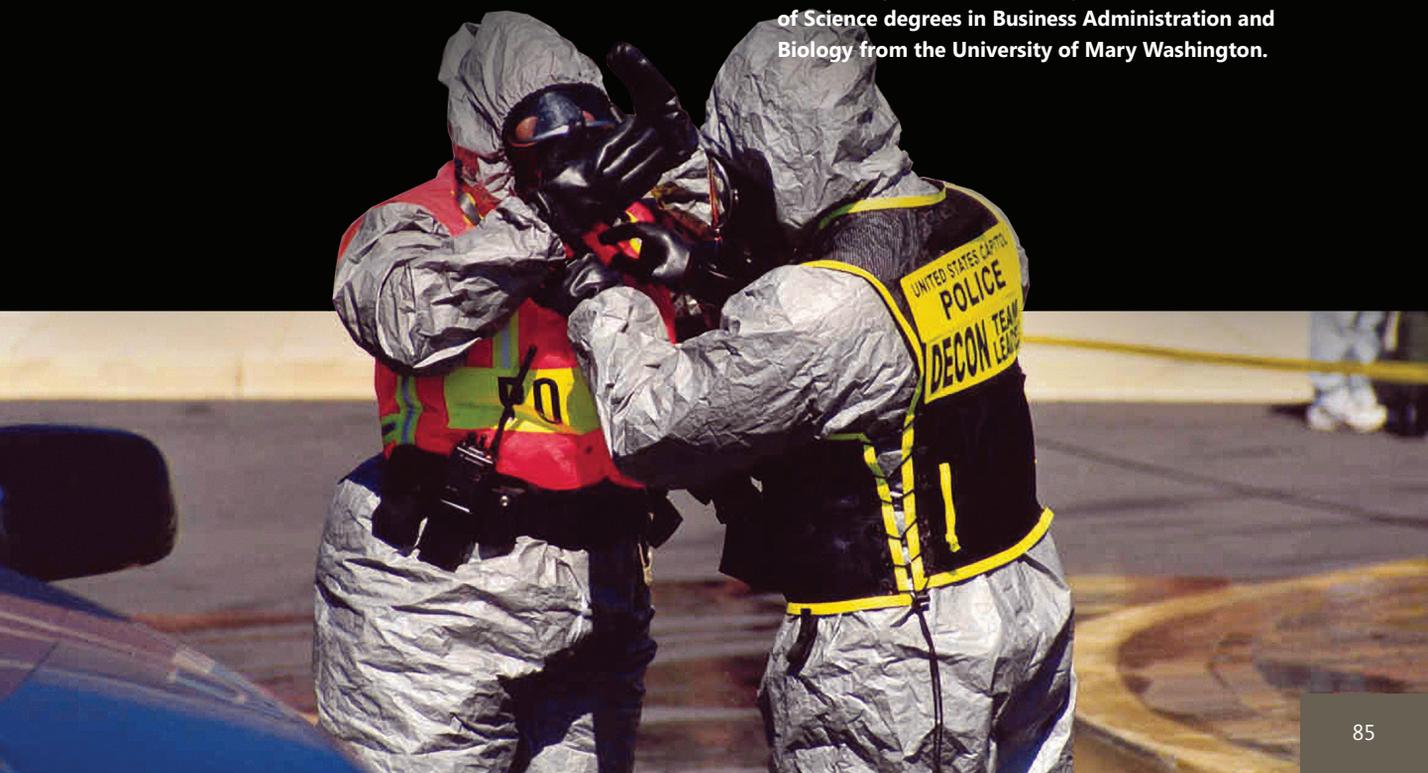
## FEDERAL CO-CHAIR

TERESA EMBREY

*Training Technology Development Subgroup  
Technology Support Working Group  
Combating Terrorism Technology Support Office*

During the FY2010 Annual Report timeframe, Teresa Embrey is a program manager for the Technical Support Working Group (TSWG), providing management and technical oversight for the execution of training programs focused on supporting interagency combating terrorism training and education requirements. She is an advocate for high-quality training that supports the needs of the end user and integrates emerging threat information, effective instructional design best practices, and innovative educational technologies.

Prior to her role as a program manager, Teresa supported the Chemical, Biological, Radiological, and Nuclear Countermeasures Subgroup at TSWG, where she managed a portfolio of biological and chemical research and development projects. She began her career with the Department of the Navy as a Budget Analyst performing payment accounting. Teresa has a Master of Education degree in Instructional Design and Development from George Mason University and has Bachelor of Science degrees in Business Administration and Biology from the University of Mary Washington.



## Acronym List

<b>3-D</b>	Three-Dimensional
<b>AEL</b>	Authorized Equipment List
<b>ANSI</b>	American National Standards Institute
<b>AOAC</b>	Association of Analytical Communities
<b>APR</b>	Air-Purifying Respirators
<b>ASPR</b>	Assistant Secretary for Preparedness and Response
<b>ASTM</b>	ASTM International, formerly the American Society for Testing and Materials
<b>ATSD</b>	Assistant to the Secretary of Defense
<b>CB</b>	Chemical and Biological
<b>CBD</b>	Chemical and Biological Defense
<b>CBDP</b>	Chemical and Biological Defense Program
<b>CBRN</b>	Chemical, Biological, Radiological, and Nuclear
<b>CBRNE</b>	Chemical, Biological, Radiological, Nuclear, and Explosive
<b>CCI</b>	Command, Control, and Interoperability Division
<b>CDC</b>	Centers for Disease Control and Prevention
<b>CFR</b>	Code of Federal Regulations
<b>COML</b>	Communications Unit Leader
<b>CWA</b>	Chemical Warfare Agent
<b>DATSD-CBD</b>	Special Assistant to the Secretary of Defense (Chemical and Biological Defense)
<b>DEH</b>	Data Exchange Hub
<b>DHS</b>	Department of Homeland Security
<b>DoD</b>	Department of Defense
<b>DSCA</b>	Defense Support to Civil Authorities
<b>ECBC</b>	Edgewood Chemical Biological Center
<b>EDXL</b>	Emergency Data Exchange Language
<b>EMI</b>	Emergency Management Institute
<b>EMS</b>	Emergency Medical Services
<b>EPA</b>	Environmental Protection Agency
<b>ESF</b>	Emergency Support Function
<b>ESG</b>	Equipment SubGroup
<b>FACC</b>	Federal Agency Coordinating Committee
<b>FDA</b>	Food and Drug Administration
<b>FDNY</b>	Fire Department of the City of New York
<b>FEMA</b>	Federal Emergency Management Agency
<b>FY</b>	Fiscal Year
<b>GIS</b>	Geographic Information Systems
<b>GPD</b>	Grant Programs Directorate
<b>H1N1</b>	Swine Influenza A
<b>HAZMAT</b>	Hazardous Materials
<b>HHS</b>	Department of Health and Human Services
<b>HMRS</b>	Health, Medical, and Responder Safety

<b>HSGP</b>	Homeland Security Grant Program
<b>I&amp;W</b>	Indications and Warnings
<b>IAB</b>	InterAgency Board
<b>IACP</b>	International Association of Chiefs of Police
<b>IAFC</b>	International Association of Fire Chiefs
<b>IAFF</b>	International Association of Fire Fighters
<b>IEEE</b>	Institute of Electrical and Electronics Engineers
<b>IM&amp;C</b>	Information Management & Communications
<b>IPO</b>	Intelligence Preparation for Operations
<b>IPB</b>	Intelligence Preparation of the Battlefield
<b>ISO</b>	International Organization for Standardization
<b>JPEO</b>	Joint Program Executive Office
<b>JPEO-CBD</b>	Joint Program Executive Office for Chemical and Biological Defense
<b>LSU</b>	Louisiana State University
<b>MEL</b>	Master Equipment List
<b>NAI</b>	Named Area of Interest
<b>NCB</b>	Nuclear and Chemical and Biological
<b>NCR</b>	National Capital Region
<b>NFPA</b>	National Fire Protection Association
<b>NIEM</b>	National Information Exchange Model
<b>NIJ</b>	National Institute of Justice
<b>NIOSH</b>	National Institute for Occupational Safety and Health
<b>NIST</b>	National Institute of Standards and Technology
<b>NPD</b>	National Preparedness Directorate
<b>NPPTL</b>	National Personal Protective Technology Laboratory
<b>NPSTC</b>	National Public Safety Telecommunications Council
<b>OHA</b>	Office of Health Affairs
<b>OIC</b>	Office for Interoperability and Compatibility
<b>OLES</b>	Office of Law Enforcement Standards
<b>OPFOR</b>	Opposing Force
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PAPR</b>	Powered Air-Purifying Respirators
<b>PCR</b>	Polymerase Chain Reaction
<b>PhD</b>	Doctor of Philosophy
<b>PKEMRA</b>	2006 Post-Katrina Emergency Management Reform Act
<b>PPE</b>	Personal Protective Equipment
<b>PPT</b>	Personal Protective Technology
<b>PTE</b>	Potential Threat Element
<b>R&amp;D</b>	Research and Development
<b>RCPGP</b>	Regional Catastrophic Planning Grant Program
<b>RDT&amp;E</b>	Research, Development, Testing, and Evaluation
<b>RF</b>	Radio Frequency

<b>RFI</b>	Request for Information
<b>RKB</b>	Responder Knowledge Base
<b>RMS</b>	Record Management System
<b>RPD</b>	Respiratory Protective Device
<b>S&amp;T</b>	Science and Technology
<b>SCBA</b>	Self-Contained Breathing Apparatus
<b>SCC</b>	Standards Coordination Committee
<b>SCSG</b>	Standards Coordination SubGroup
<b>SDMI</b>	Stephenson Disaster Management Institute
<b>SEL</b>	Standardized Equipment List
<b>SERC</b>	State Emergency Response Commission
<b>SME</b>	Subject Matter Expert
<b>SPSG</b>	Strategic Planning SubGroup
<b>SWAT</b>	Special Weapons and Tactics
<b>TCIP</b>	Technologies for Critical Incident Preparedness
<b>TIC</b>	Toxic Industrial Chemical
<b>TICP</b>	Tactical Interoperable Communications Plan
<b>TRL</b>	Technology Readiness Level
<b>TSD</b>	Test & Evaluation and Standards Division
<b>TSWG</b>	Technical Support Working Group
<b>UASI</b>	Urban Area Security Initiative
<b>VBIED</b>	Vehicle-Borne Improvised Explosive Device
<b>vUSA</b>	Virtual USA
<b>WMD</b>	Weapons of Mass Destruction



**The InterAgency Board**

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