ANSI-HDSSC "InterAgency Board (IAB) First Responder Standards Development Priorities" Roundtable Meeting Minutes

Date: December 1, 2016

Location: 1700 Pennsylvania Avenue NW, #200, Washington DC

Participants:

Name	Organization
1. Eric Beaudoin	US Army PEO-Soldier
2. Dan Cook	US Army Aberdeen Test Center
3. Steve Corrado (Remote)	IAB, UL
4. Bert Coursey	US DOC NIST
5. Todd Craig	US DOJ Federal Bureau of Prisons
6. Maryanne D'Alessandro	NIOSH NPPTL
7. Michelle Deane	ANSI
8. Craig Dickerson	IAB, Montgomery County (MD) Police Department
9. Matt Duggin (Remote)	IAB, Boca Raton (FL) Police Department
10. John Epstein	American Red Cross
11. Curt Floyd	NFPA
12. Mark Greene	US DOJ NIJ
13. Jeffrey Horlick	US DOC NIST
14. Martin Hutchings	IAB, Sacramento County (CA) Sheriff
15. Patricia Knudson (Remote)	IAB, Phoenix (AZ) Police Department
16. Colleen Lee (Remote)	US HHS, FDA
17. Bob Lewis	NTOA
18. Jennifer Marshall	US DOC NIST
19. Phil Mattson	US DHS
20. Mary Mikolajewski	ASTM International
21. Lori Moore-Merrill	IAFF
22. Brian Montgomery	US DOJ NIJ
23. Tom Nolan	IAB, Upper Merion Township (PA) Police Department
24. Dave Pearson	NTOA
25. Nicholas Roberts	IAB, Unified Police Department of Greater Salt Lake (UT)
26. Cassy Robinson	IAB, US DOC NIST
27. Andrew Rowley	IAB, Wake Forest Baptist Health
28. Jeff Stull (Remote)	IAB, International Personal Protection
29. Dave Trebessaci	NFPA
30. Ken Willette	NFPA

Discussion Summary:

Opening Remarks

- Michelle Deane and Cassy Robinson welcomed participants to the meeting, and self-introductions were done around the room.
- Martin Hutchings provided an introduction to the InterAgency Board (IAB) and thanked participants for their interest and input into the IAB standards development priorities.

IAB Priorities Discussion

- Cassy Robinson presented an overview of the IAB standards development process, gave a status of previously identified priorities, and facilitated a discussion of FY2016 priorities with the assistance of IAB subject matter experts (SMEs).

Performance standard for non-pneumatic limb tourniquets

Description:

- There is currently no specification or test method for non-pneumatic tourniquets used by responders, and a standard is needed to give confidence or a comparable baseline for claimed performance by manufacturers. There are known incidents of tourniquets failing when used and reports of counterfeit tourniquets being sold.
- Andrew Rowley represented the IAB in describing the issues and concerns related to tourniquets.

Progress:

- Lead identified: Andrew Rowley
- Team of experts has agreed to collaborate
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity in collaboration with ASTM F30, Committee on Emergency Medical Services
- Kick-off meeting to be held in early January

Needs:

- Additional interested stakeholders
- Research and testing data

Discussion:

- There are national and international issues related to nonpneumatic tourniquets from both a standards and a training perspective.
- Many different tourniquets are being sold; at least 3 new ones are under development and expected to be on market next quarter.
- The Red Cross Scientific Advisory Council is looking at evidence around safety and effectiveness of tourniquets.
- Many police agencies are starting to look at tourniquets as a standard piece of equipment carried by officers for self-treatment; also, officers are buying them personally, and there is a lot of misinformation.
- The Committee on Tactical Combat Casualty Care does quarterly reviews of trauma-based casualties/fatalities. They have approved certain tourniquets for use, but not all are truly occlusive.
- Any standard(s) developed must be actionable and make a difference; there is no benefit to just

producing a document that is not applied. The standard must include validated test methods that can be employed through the existing testing infrastructure, and it must be useful for those making procurement decisions.

- From a firefighter perspective, some historic data exist, much of it from the Boston bombing, on the use of commercially available and improvised tourniquets. The White House has done much work on bystander response and use of tourniquets.
- The Stop the Bleed effort has guidance for hemorrage control but no standard. It is know that there are hemorrhage control (HC) kits in use across the country now that may not work. HC dressings and agents also should be considered for standardization.
- The military is the largest purchaser and should be involved in the task group.
- From a law enforcement perspective, officers are continuing to get more and more tools that require more and more training. If 2 hours of training is required for a tourniquet, an officer will likely not use it. The task group is cautioned to be aware of unintended burdens when developing the standard.
- The National EMS Advisory Council and the National Association of State EMS Officials should be involved in this work.

Actions:

- Andrew Rowley - Collect test methods and data from military
- Task group - Address both performance/testing and training
- Maryanne D'Alessandro – Provide contact information for an emergency medicine doctor willing to help out
- Jennifer Marshall – request volunteers from the relevant EMS organizations

Performance standard for less lethal chemical agent devices

- **Description:**
  A performance standard, including test methods, is needed to address the performance of chemical agent devices and their delivery systems. Several types of chemical agent devices are currently in use, including OC (Oleoresin capsicum) spray (i.e., pepper spray), CS (Orthochlorobenzalmalonitrile) spray (i.e., tear gas), powders, and smoke.
- Nick Roberts represented the IAB in describing the issues and concerns related to chemical agent devices.
- **Progress**:
  - Team of experts has agreed to collaborate
  - Draft product specification developed based on *CAST Standard for Police Chemical Irritant Sprays: CS and PAVA* (United Kingdom Home Office)
  - Working with major manufacturer on test methods relevant to US officers
  - ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity
  - Kick-off meeting to be held in early January
- **Needs:**
  - Additional interested stakeholders
  - Research and testing data

Discussion:

- Treatment or counteracting after the use is important (person sprayed and environment) for fire and EMS.
- For firefighters who may be called to respond when chemical agents are deployed, what should they do to respond safety with law enforcement.
- The delivery system for the agents should be considered: burning or nonburning? Does the spray do what the manufacturers claim?
- Caution is advised when developing a performance standard that may lead users to misunderstanding – a performance standard does not necessarily result in a safe product but only means that the product meets specific requirements when tested in a specific way. Levels or numbers in the standard may not mean anything to users (i.e., rating may not link to safety or injury). It will be important to clearly inform purchasers of what the standard means and what it does not mean.
- ASTM has developed a suite of test methods for robots to evaluate key parameters; these standards do not specify performance levels or requirements but only provide standardized tests. Having established test methods is important for characterizing what's in the product and informing users.
- Performance could be addressed in two aspects: what comes from the container and what happens to the person sprayed.
- Users need to be made aware that the product may not work/stop a particular individual who is resistant to the spray.
- The mission of the user needs to be considered (e.g., patrol, SWAT, corrections).

Action:

- Cassy Robinson – add Todd/BOP and Dave/NTOA to task group
- Phil Mattson – reach out to CBP academy at Harper's Ferry
- Task group – provide IAFF will draft documents for review

Standard test method for less lethal conducted energy weapons

Description:

- Conducted energy weapons (CEWs) are used by more than 16,000 law enforcement agencies as a less lethal force option. Although they are commonly used, CEWs are not tested to any standards and have been found in field use to be very inconsistent in their electrical output. The biggest problem is "cold" weapons that do not have high enough output to cause pain much less incapacitation. Situations in which CEWs are deployed and have low output typically result in the use of lethal force.
- Craig Dickerson represented the IAB in describing the issues and concerns related to CEWs, and Jeffrey Horlick described the existing test methods and data available.

Progress:

- Two end user meetings have been held
- Knowledgeable experts and stakeholders have been identified
- Relevant research, test methods, and standards have been identified
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity

Needs:

- Additional interested stakeholders

Discussion:

- There are many issues with these devices when used in the field. A device may be tested before and after use, but you still cannot say that the device performed the same way when it was used on a subject.
- It is important to officers to address whether the performance changes over time? There is much concern about saying the output is safe.
- The IEC standard for CEWs is not really a test method but a description that labs can implement in testing.
- When training, is there a training threshold? Yes, the manufacturer has a set threshold of no more than three 5-second applications on an individuals. That threshold is accepted by most courts and departments.
- These devices are similar to muscle stimulation devices used in medical offices, and those are certified, but CEWs are not. Officers need to be able to check the device systematically.
- The Canadian government and Carlson University have tested thousands of devices and developed test methods. You must be able to assess whether each device performs according to the manufacturer specification.
- There must be way to test a device before and after shift, like a radar is tested. There is a commercial device available to do that type of testing. Most agencies just do a spark test: if the spark is weak, the officer changes the battery; no measurements are done during a spark test.

- **Actions**:
  - Mary Mikolajewski - When the task group is formed, ASTM will publish an announcement to the community inviting participation.
  - Cassy Robinson – Discuss with IAB leadership team having ASTM announce the effort.

Performance standard for distraction devices

Description:

- A performance standard is needed for noise flash diversionary devices (distraction devices, flash-bangs, or stun grenades). Many issues have been identified by end users and could be addressed by having a performance standard.
- Tom Nolan represented the IAB in describing the issues and concerns related to distraction devices.

Progress:

- Two end user meetings have been held
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity

Needs:

- Additional interested stakeholders
- Research and testing data
- *To be identified (much work is needed to lay a proper foundation)*

Discussion:

- The Federal Bureau of Prisons (BOP) is the largest user of distraciton devices, and there are many operational issues.
- Participants in the meeting did not know of any federally funded research into these devices,
- There are many types of distraction devices in use: multi-use, hand-deployed,and launchable.
- For some specifications (light, sound), there are different ratings. May law enforcement agencies do their own testing to determine the actual levels produced by devices because manufacturer claims are not reliable.
- The national fire marshals may have data of use of these devices, if use resulted in structural fire.
- Of all the less lethal devices, this device injures law enforcement as much as it injures civilians.
- Definitions, terminology, and classifications are important, and having a document that standardizes these things could be a much needed first step so that we are speaking the same language.
- There are medical data to support sound and light levels in a standard. A standard addressing light and sound levels would most likely to meet law enforcement needs.
- Law enforcement cannot purchase these devices without having a certified instructor in the agency.
- There are a few documented cases in which distraction devices caused fires resulting in fatalities, with some fatalities caused by smoke inhalation.

Action:

- Tom Nolan – will serve as the lead the effort

Product Standard for less lethal impact (i.e., kinetic energy) devices using a launching system to fire projectiles

Description:

- Performance requirements and test methods need to be developed to address the performance of less lethal impact devices, such as polyurethane projectiles, plastic projectiles (e.g., Pepperball, FN), wooden batons, foam batons, and bean bags, fired from a launching system. Many issues have been identified by officers.
- Note: Safety of the targeted individual/opponent not to be addressed here
- Nick Roberts represented the IAB in describing issues and concerns related to impact devices.

Progress:

- Two end user meetings have been held
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity

Needs:

- Additional interested stakeholders
- Research and testing data

- *To be identified (much work is needed to lay a proper foundation)*

Discussion:

- There is a 2009 Office of Inspector General report that addresses terminology and some other key information. It should be reviewed for relevant content.
- The NTOA provides less lethal instructor training and has availability from most manufacturers on what is available today. There is a wide range of available munitions, and the range of kinetic energy and other specifications can be obtained from manufacturers.
- A Seattle company (CRT) has done independent research on less lethal devices and their performance.
- A similar caution was noted here as was noted for chemical sprays: levels or numbers may mislead users into thinking that is a "safety" rating.
- Law enforcement does not want to be forced to rely on manufacturer claims and need a way to verify those claims.
- Development of a test method should be done first to improve consistency of testing.

Volunteers for Task Group: Dave Pearson, Nick Roberts

Standard practices, test methods, and procedures for monitoring effectiveness of protective clothing doffing for avoidance of contamination transfer

Description:

- A standard is needed to provide general requirements for monitoring how contamination transfer occurs during doffing in order to prevent contamination transfer when responders doff protective clothing.
- Jeff Stull presented slides and represented the IAB in describing the issues and concerns with contaminated doffing of protective clothing.

Progress:

- Work initiated within ASTM F23: ASTM WK55144, *New Practice for Evaluating the Transfer of Exterior Contaminants from Protective Clothing During Doffing*

Needs:

- Additional participants are needed for the task group.

Discussion:

- The contaminants plus carcinogens are important for firefighters. The IAFF wants to be involved in this work.
- Outreach to national labs for their procedures or training requirements for doffing PPE is

recommended. Their procedures for doffing radiological PPE would be useful.
- In developing practices for testing, did you consider having the subject wearing any PPE under the suit, such as SCBA or equipment harness? That has not been done yet, and only masks and respirators have been addressed so far.
- Most of the work to date has been primarily for ebola, but some work has been done for CBRN exposures. Both chemical and biological contamination have been modeled with this test.
- This practice could be used as design tool for manufacturers, an integration check for doffing procedures, a training tool, an evaluation for purchase specifications, etc.
- This effort has been started at ASTM but needs support from other organizations, such as national labs, Battelle, military, healthcare, fire, EMS.

Actions:
- Maryanne D'Alessandro, Jennifer Marshall, Cassy Robinson, Eric Beaudoin – Reach out to organizations
- Phil Mattson – mention at next TECMP meeting
- Mary Mikolajewski – coordinate an ASTM press release
- Jeff Stull – add to the task group Pat Morrison from IAFF and Curt Floyd from NFPA

Performance standard for public safety bomb suits – blast overpressure requirement

Description:

- The scope of this requirement is to develop performance requirements and test methods to be added to the current version of NIJ Standard-0117, *Public Safety Bomb Suit Standard*, to address blast overpressure protection. The effects of blast overpressure on the human body need to be taken into account to address external and internal impact/injury to the head, neck, thorax, abdomen, and ears.

- Martin Hutchings represented the IAB in describing issues and concerns related to blast overpressure protection.

Progress:

- Battelle has completed a literature review and gap analysis to identify and assess research and testing related to effects of blast overpressure on bomb suit performance and on the bomb technician donning the bomb suit. The report is entitled, "Literature Review of Blast Overpressure Effects on Bomb Suit Performance," and may be obtained by contacting the IAB Program Office at *info@interagencyboard.us*

- Input and interest received from major manufacturer

Needs:

- Research and testing to support development of a test method

- Sufficient interest and willingness from end users, technical experts, manufacturers, and other stakeholders to pursue development of a test method

Discussion:

- What about the blast should be addressed? It is necessary to see what levels of blast overpressure are creating injury. Is it peak overpressure, impulse, duration, or a combination? The military has seen very high peak pressures for short duration that do not cause injury.
- Other things in addition to blast overpressure could be looked at. DOD is looking at head and neck injury criteria from DOT.
- The NIJ suit integrity test is not sufficient because a bomb suit could hold together with the person being killed.
- The medical community needs to weigh in on what mechanisms are causing injury.

Volunteers to assist: Dan Cook and Eric Beaudoin

Standard test method for explosive containment vessels

Description:

- Civilian and military bomb technicians use explosive containment vessels to transport explosives and improvised explosive devices. A standard, including performance requirements and test methods, is needed to evaluate: (1) the capability of total containment vessels (TCVs) to contain an explosive blast and/or chemical/biological agents inside the vessel and (2) the venting/scrubbing properties of the TCVs and related machinery.
- Martin Hutchings represented the IAB in describing issues and concerns related to TCVs.

Progress:

- Lead identified: Martin Hutchings
- Knowledgeable experts and stakeholders are being identified
- Major manufacturer has agreed to participate and provide research and testing data
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity
- Kick-off meeting to be held in January

Needs:

- Additional interested stakeholders
- Research and testing data

Discussion:

- If a standard is developed, the potential increase in the cost of the vessel should be considered.
- ASTM E54 has a suite of blast resistant trash receptacle standards; perhaps the same group of experts could address ECVs and trash receptacles.

Actions:

- Martin Hutchings and Cassy Robinson – follow-up with manufacturers and US Army to discuss test method development

Standard guidance for illicit substance detection

Description:

- Law enforcement officers (LEOs) are in need of guidance for dealing with suspected illicit substances encountered in the field. The issue has gained importance as officers are faced with handling "liquid meth" (i.e., methamphetamine in solution), which has become a more common procedure for attempts to smuggle illicit drugs across US borders.
- A notable gap exists between finding a substance, testing it, and identifying it as methamphetamine in solution. Once the substance is identified, the handling and PPE requirements become easy to address. Before the substance is identified, officers face the very difficult situation of having a "solution suspected of containing illicit substances".

Progress:

- Very little progress to date in further defining this need or a path forward

Needs:

- Champion for the effort
- An assessment of current national guidelines, methods, and best practices for LEO approach to evaluation of unknown compounds (solids, powders, liquids, vapors) for illicit substances
- Should ask whether current LEO policies meet or reflect the current best practices for safety, efficiency, effectiveness, evidentiary chain of custody, intent to conceal, and processes to document prevention of contamination along chain of custody
- Background research and data collection to further define need

Discussion:

- Illicit drug labs are a huge concern for firefighters, and the IAFF wants to be involved (Elizabeth Harmon may be interested in championing). This issue impacts law enforcement, EMS, fire, and detection dogs.
- Law enforcement officers are getting extreme exposures when testing substances in the field. This issue goes beyond liquid meth to patrol officers handling white powder. Also, precursors for HMEs are a concern.
- ASTM has some standards for hand-held chemical detectors for vapors and explosives that may be useful.
- DHS is working on a solicitation for an illicit materials detector. Some guidance is available from TSWG and the Center for Domestic Preparedness.

- From Jennifer Marshall:
  - Fentanyl: Preventing Occupational Exposures to Emergency Responders – Overview (Home Page)
    http://www.cdc.gov/niosh/topics/fentanyl/default.html
  - Links on the Home Page:
    - Protecting Workers at Risk – Personal Protective Equipment
      http://www.cdc.gov/niosh/topics/fentanyl/risk.html
    - Illegal Use of Fentanyl
      http://www.cdc.gov/niosh/topics/fentanyl/illegaluse.html
  - Resources – CDC & Other Key Resources
    http://www.cdc.gov/niosh/topics/fentanyl/resources.html

Actions:

- Bert Coursey – assist in reaching out to CBP and NIST chemists
- Jennifer Marshall - mine available data; speak with Greg Gillen (NIST) because they are doing trace drug work (tied to forensics)

Path Forward

- Additionally, the ANSI-HDSSC website (www.ansi.org/hdssc/) will be updated with the priorities and their current statuses, and will include links to relevant documents and committees.
- Cassy Robinson thanked the participants for their thoughts and contributions to the discussions. It was noted that participants would be welcome to submit further contributions and ideas at any time. <casandra.robinson@nist.gov>

THE INTERAGENCY BOARD

Improving all-hazards response for all disciplines

www.interagencyboard.org

What is the IAB and its Purpose?

- Sanctioned in 1998 by the US Attorney General as a resource for federal, state and local levels of government.
- Collaborative panel of emergency preparedness and response practitioners, federal employees, and subject matter experts representing a wide array of technical expertise.
- Facilitates the exchange of knowledge and ideas to improve national preparedness and promote interoperability and compatibility among local, state, and federal response communities.
- Serves as a unified voice for the responder community.
- Supported and funded by federal agencies (DOJ, DHS, DoD, and NIOSH)

IAB Mission

To strengthen the nation's ability to prepare for and respond safely and effectively to emergencies, disasters, and CBRNE incidents.

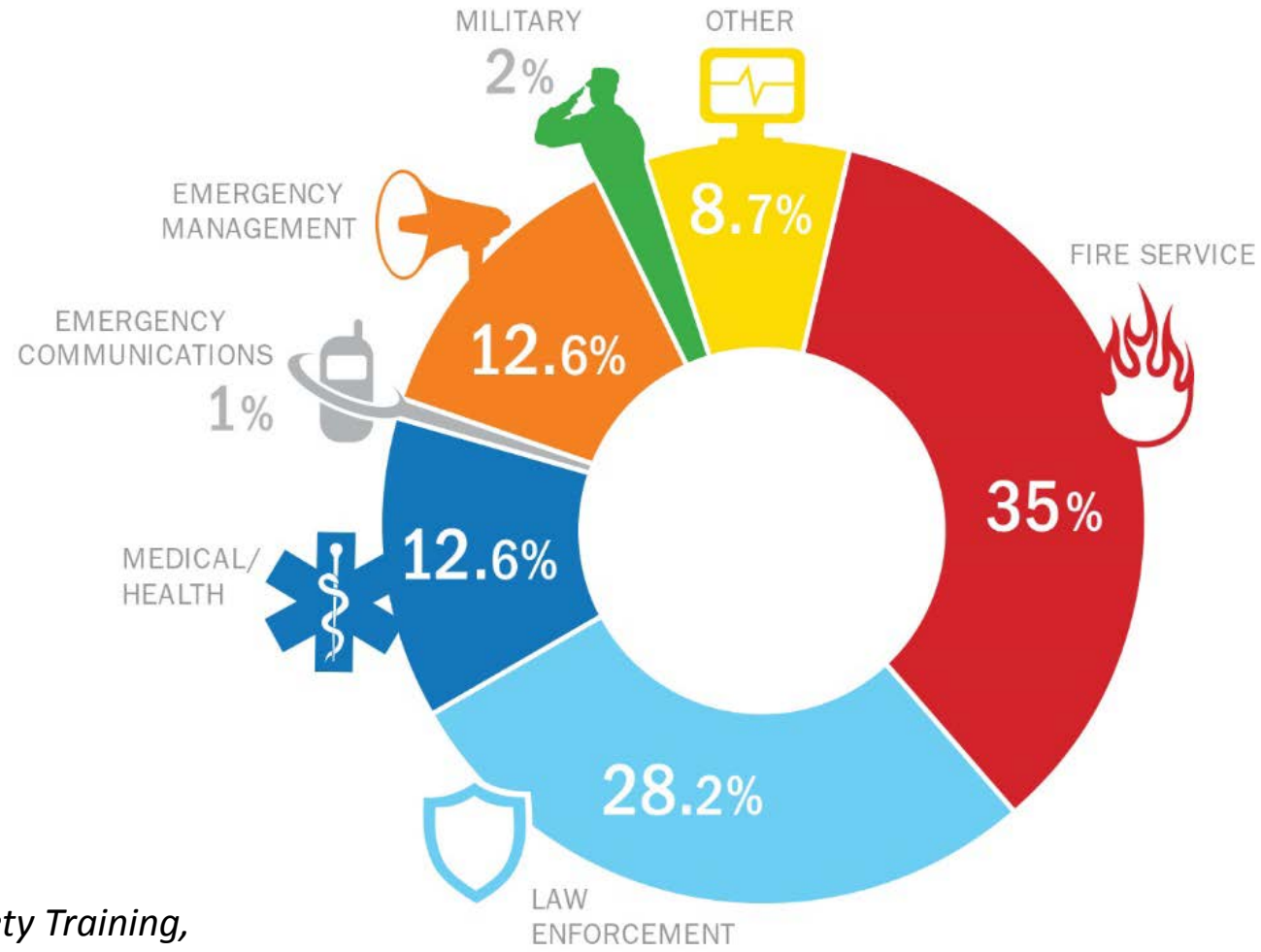
The IAB will accomplish this by:

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

THE INTER AGENCY BOARD

Demographics: Responder Disciplines

- > 125 Members
- > 50 Subject Matter Experts
- 35 States



Other includes: Health & Safety Training, Incident Management and Veterinary

Source: 2015 IAB Demographics Survey

IAB Engagement in Standards Development

- Annual effort to identify standards needed by the responder community.
- Collaboration with relevant stakeholders to initiate development of standards.
- Active participation in resultant standards development activities.

The IAB appreciates your interest and partnership in developing standards for the responder community.

Contact Information

For more information about the IAB, please visit our website at:

www.interagencyboard.org

Or email the IAB Program Office at:

info@interagencyboard.us

“Out of Many, One”

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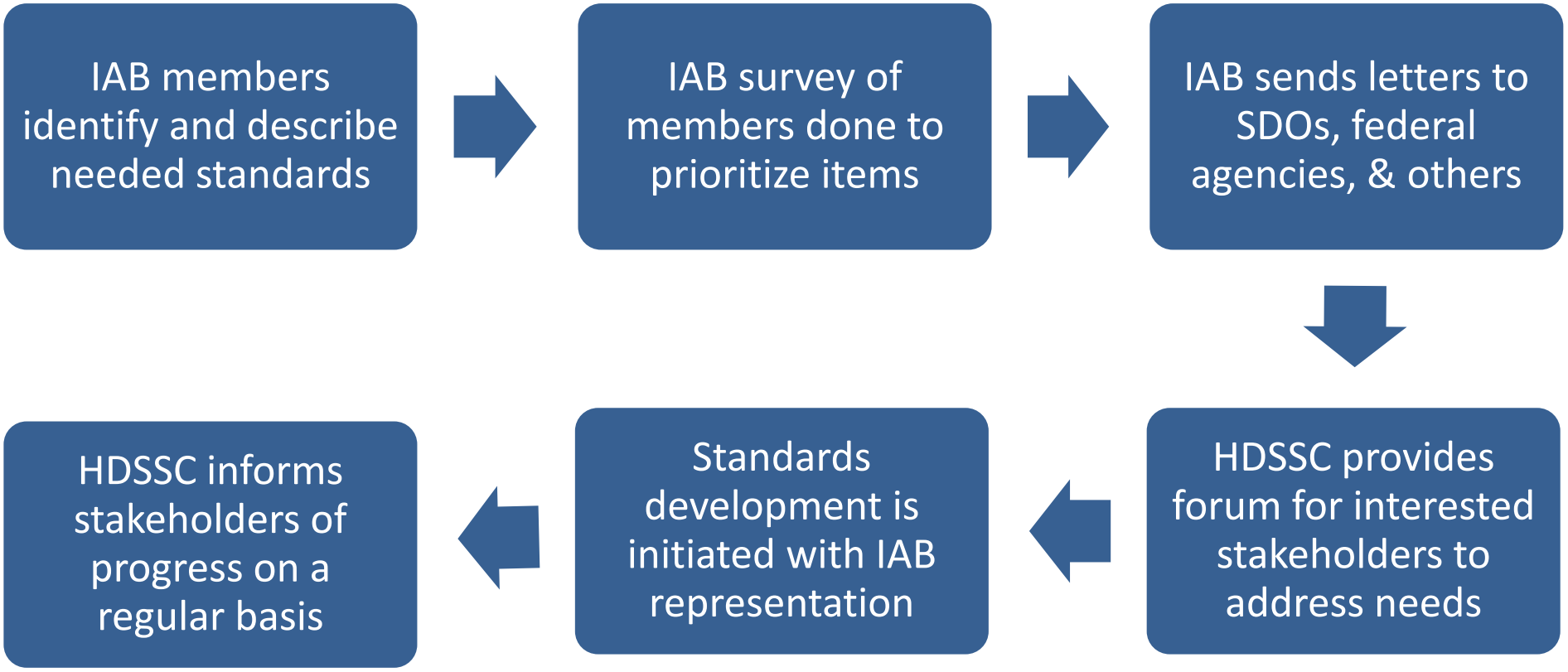
Standards Development Priorities

- Introduction to IAB Standards Development Process
- Status of Previous IAB Standards Development Priorities
- 2016 IAB Standards Development Priorities List:
  - Description
  - Progress and Needs
  - Discussion and Recommendations
  - Next Steps
- Suggestions for Improving the Process

IAB Standards Development Process



Status of Previous IAB Priorities

Item	Status
Protective helmets	ASTM - developing test methods and specifications (will fully meet the need); Publication expected in 2017
Protective shields	ASTM - developing a ballistic test method (partially meets the need); Publication expected in 2017
Tactical operation video cameras	UL - developing the performance standard NFPA - developing a selection, care, and application guide
Body-worn cameras	UL - working to initiate development of the performance standard
Robot operator self-evaluation & training program	ASTM, in partnership with NIST - developing these standards ASTM and NFPA partnering to co-brand a certification program for robot operators
Protective gloves	ASTM - developing specification and conformity assessment practice; publication expected in 2017 NFPA - developing a selection, care, and application guide
Body armor designed for females	ASTM - developing standard practice (partially meets the need); publication is expected in 2017; additional research to be done
Localization & tracking systems	ISO/IEC 18305 under development; publication expected in 2017

Nonpneumatic Limb Tourniquets

Description:

- There is currently no specification or test method for non-pneumatic tourniquets used by responders, and a standard is needed to give confidence or a comparable baseline for claimed performance by manufacturers. There are known incidents of tourniquets failing when used and reports of counterfeit tourniquets being sold.

IAB Expert:

- Andrew Rowley

Source: www.chiefsupply.com

Source: www.refactortactical.com

Nonpneumatic Limb Tourniquets

Progress:

- Lead identified: Andrew Rowley
- Team of experts has agreed to collaborate
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity in collaboration with ASTM F30, Committee on Emergency Medical Services
- Kick-off meeting to be held in early January

Needs:

- Additional interested stakeholders
- Research and testing data

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- A performance standard, including test methods, is needed to address the performance of chemical agent devices and their delivery systems. Several types of chemical agent devices are currently in use, including OC (Oleoresin capsicum) spray (i.e., pepper spray), CS (Orthochlorobenzalmalonitrile) spray (i.e., tear gas), powders, and smoke.

IAB Experts:

- Nick Roberts, Tom Nolan, Craig Dickerson

Source: www.newyorker.com

Less lethal chemical agent devices

Progress:

- Team of experts has agreed to collaborate
- Draft product specification developed based on *CAST Standard for Police Chemical Irritant Sprays: CS and PAVA* (United Kingdom Home Office)
  - Working with major manufacturer on test methods relevant to US officers
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity
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Less lethal conducted energy weapons

Description:

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IAB Experts:

- Nick Roberts, Tom Nolan, Craig Dickerson

Source: www.jerseyjusticemonitor.com

Less lethal conducted energy weapons

Progress:

- Two end user meetings have been held
- Knowledgeable experts and stakeholders have been identified
- Relevant research, test methods, and standards have been identified
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity

Needs:

- Additional interested stakeholders
- *To be identified*

Less lethal distraction devices

Description:

- A performance standard is needed for noise flash diversionary devices (distraction devices, flash-bangs, or stun grenades). Many issues have been identified by end users and could be addressed by having a performance standard.

IAB Experts:

- Nick Roberts, Tom Nolan, Craig Dickerson

Source: www.sandia.gov

Less lethal distraction devices

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- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity

Needs:

- Additional interested stakeholders
- Research and testing data
- *To be identified (much work is needed to lay a proper foundation)*

Less lethal impact (i.e., kinetic energy) devices

Description:

- Performance requirements and test methods need to be developed to address the performance of less lethal impact devices, such as polyurethane projectiles, plastic projectiles (e.g., Pepperball, FN), wooden batons, foam batons, and bean bags, fired from a launching system. Many issues have been identified by officers.
- Note: Safety of the targeted individual/opponent not to be addressed here

Source: www.campussafetymagazine.com

Source: ncja.ncdoj.gov

IAB Experts:

- Nick Roberts, Tom Nolan, Craig Dickerson

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Needs:

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Monitoring effectiveness of protective clothing doffing for avoidance of contamination transfer

Description:

- A standard is needed to provide general requirements for monitoring how contamination transfer occurs during doffing in order to prevent contamination transfer when responders doff protective clothing.
  - 2015 report: < 1/6 of healthcare workers followed the correct recommendations for removal of personal protective clothing after patient care $\Rightarrow$ *likely contaminating themselves and increasing the risk of transmission to others*
  - Should address use of specific fluorescent tracers, their application, selection of test subjects, safety provisions, doffing, and viewing and documenting tracers on individuals following exposure.

IAB Expert:

- Jeff Stull

Source: www.des.umd.edu

Monitoring effectiveness of protective clothing doffing for avoidance of contamination transfer

Progress:

- Work initiated within ASTM F23: ASTM WK55144, *New Practice for Evaluating the Transfer of Exterior Contaminants from Protective Clothing During Doffing*

Needs:

- *To be described by Jeff Stull*

Bomb suits, addressing blast overpressure protection

Description:

- The scope of this requirement is to develop performance requirements and test methods to be added to the current version of NIJ Standard-0117, *Public Safety Bomb Suit Standard*, to address blast overpressure protection. The effects of blast overpressure on the human body need to be taken into account to address external and internal impact/injury to the head, neck, thorax, abdomen, and ears.
- Development of performance requirements and test methods will require research and testing.

IAB Expert:

- Martin Hutchings

Source: NBSCAB

Bomb suits, addressing blast overpressure protection

Progress:

- Battelle has completed a literature review and gap analysis to identify and assess research and testing related to effects of blast overpressure on bomb suit performance and on the bomb technician donning the bomb suit. The report is entitled, "Literature Review of Blast Overpressure Effects on Bomb Suit Performance," and may be obtained by contacting the IAB Program Office at *info@interagencyboard.us*
- Input and interest received from major manufacturer

Needs:

- Research and testing to support development of a test method
- Sufficient interest and willingness from end users, technical experts, manufacturers, and other stakeholders to pursue development of a test method

Explosive containment vessels

Description:

- Civilian and military bomb technicians use explosive containment vessels to transport explosives and improvised explosive devices. A standard, including performance requirements and test methods, is needed to evaluate: (1) the capability of total containment vessels (TCVs) to contain an explosive blast and/or chemical/biological agents inside the vessel and (2) the venting/scrubbing properties of the TCVs and related machinery.

IAB Expert:

- Martin Hutchings

www.richmondcountysheriffsoffice.com

Explosive containment vessels

Progress:

- Lead identified: Martin Hutchings
- Knowledgeable experts and stakeholders are being identified
- Major manufacturer has agreed to participate and provide research and testing data
- ASTM E54, Committee on Homeland Security Applications, has requested to take on this activity
- Kick-off meeting to be held in January

Needs:

- Additional interested stakeholders
- Research and testing data

Guidance for illicit substance detection

Description:

- Law enforcement officers (LEOs) are in need of guidance for dealing with suspected illicit substances encountered in the field. The issue has gained importance as officers are faced with handling “liquid meth” (i.e., methamphetamine in solution), which has become a more common procedure for attempts to smuggle illicit drugs across US borders.
- A notable gap exists between finding a substance, testing it, and identifying it as methamphetamine in solution. Once the substance is identified, the handling and PPE requirements become easy to address. Before the substance is identified, officers face the very difficult situation of having a “solution suspected of containing illicit substances”.

Guidance for illicit substance detection

Progress:

- Very little progress to date in further defining this need or a path forward

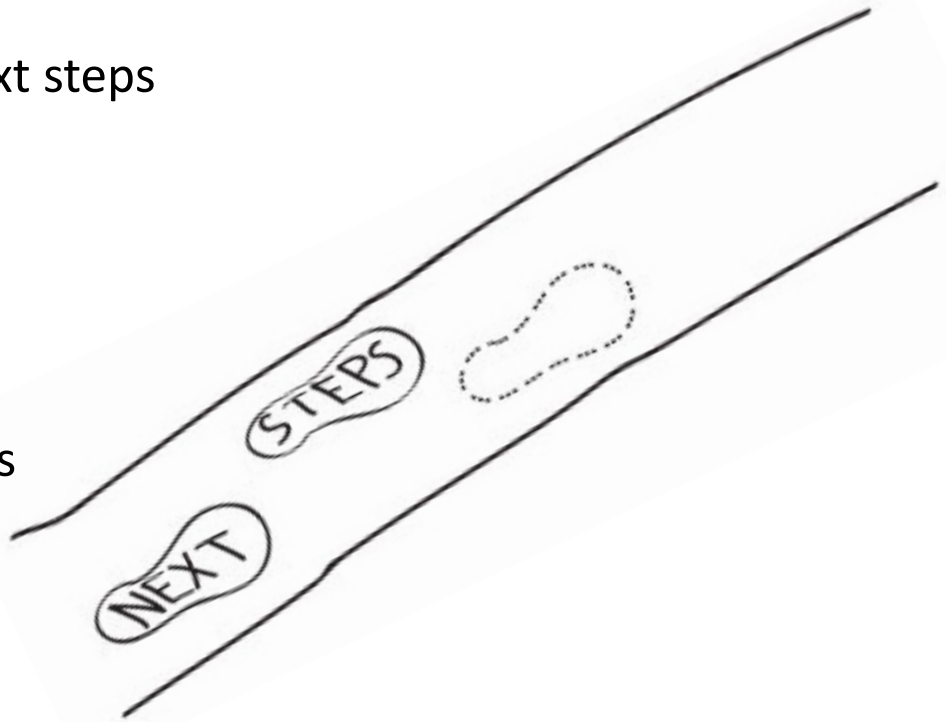
Needs:

- Champion for the effort
- An assessment of current national guidelines, methods, and best practices for LEO approach to evaluation of unknown compounds (solids, powders, liquids, vapors) for illicit substances
  - Should ask whether current LEO policies meet or reflect the current best practices for safety, efficiency, effectiveness, evidentiary chain of custody, intent to conceal, and processes to document prevention of contamination along chain of custody
- Background research and data collection to further define need

Path Forward

- Review of action items and next steps

- Suggestions for:
  - Improving the process
  - Following through on items
  - Communicating progress



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“Out of Many, One”

Proposed Standard Practice for PPE Contaminated Doffing

Interagency Board

Standards Coordination

Subgroup Meeting

1 December 2016

Jeffrey O. Stull

International Personnel Protection, Inc.

Need / Purposes

- Risk exists for transfer of contaminant from protective clothing to wearer or outside contamination reduction zone
- Recent Ebola outbreak in 2014 to 2015 includes several cases where health care worker infection was the result of contamination transfer was result of doffing
- Procedures needed are to assess protective clothing design and doffing procedures, particularly for multi-item ensembles
- Procedures can also be useful for training purposes for instructing end users for proper doffing and contamination avoidance
- High priority standard for Interagency Board

Prior Work

1. Bell, Todd, et al. "Ebola virus disease: The use of fluorescents as markers of contamination for personal protective equipment." IDCases 2.1 (2015): 27-30.
2. Zamora, Jorge, et al, “Contamination: A Comparison of 2 Personal Protective Systems.” CMAJ 175.3 (August 1, 2006): 249-254.
3. [Casanova, Lisa et al, “Virus Transfer from Personal Protective Equipment to Healthcare Employee's Skin and Clothing.” Emerging Infectious Diseases 14.8 (2008): 1291-1293.
4. Aragon, Aurora et al, “Reliability of a Visual Scoring System with Fluorescent Tracers to Assess Dermal Pesticide Exposure.” Ann. Occup. Hyg. 48.7 (2004): 601–606.
5. Cherrie, John W. et al, “Use of Qualitative and Quantitative Fluorescence Techniques to Assess Dermal Exposure.” Ann. Occup. Hyg. 44.7, (2000):519–522.

Test Principle and Methodology

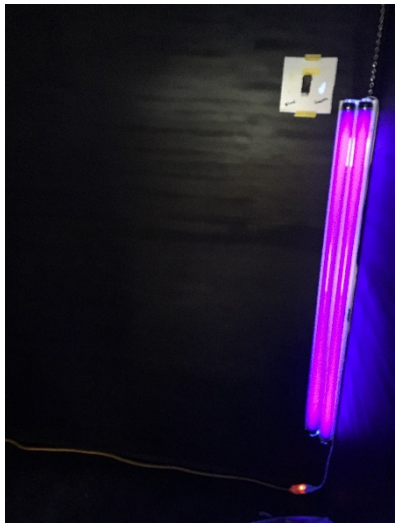
- Test subject wears black witness garment; examined under UV light to establish baseline
- PPE ensemble put on according to manufacturer instructions
- Test subject subjected to spray of surrogate contaminant using fluorescent agent
- Test subject doffs PPE ensemble according to manufacturer instructions
- Test subject examined under UV light to determine contaminant transfer to body

Primary Method Attributes

- Selection of surrogate contaminant
  - Chemical liquid
  - Biological fluid
- Method of contaminant application
  - Aerosol versus spray
- Doffing approach
  - Assisted versus unassisted
- Methods for documenting results
  - Examination and photography
  - Quantification techniques

Venturi Eductor

Instructed Doffing

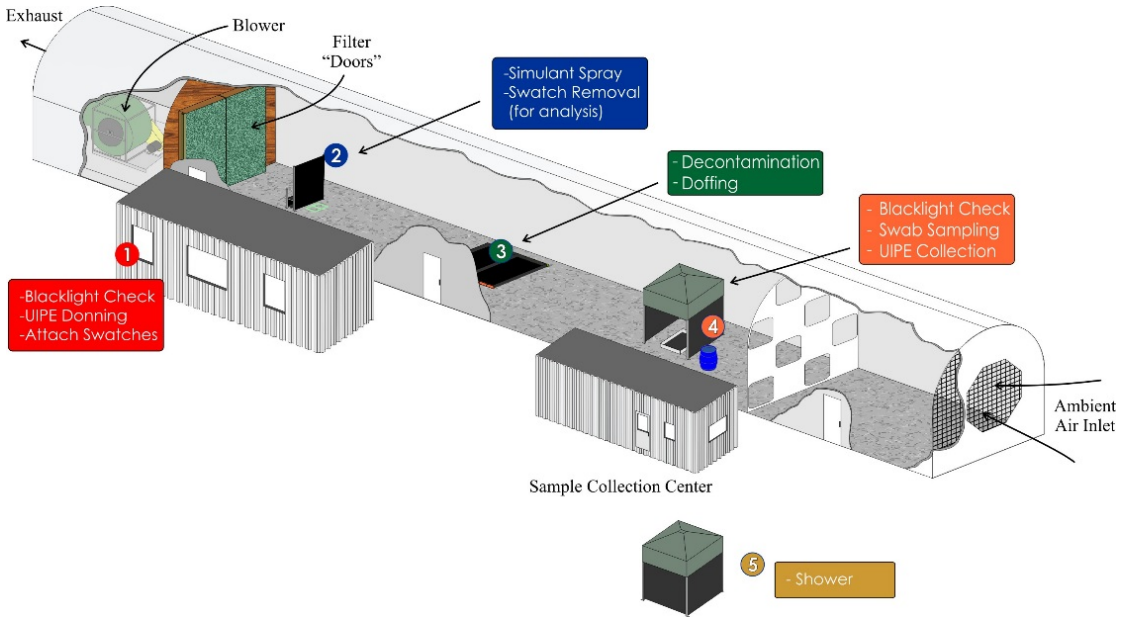


UV Light Chamber

Military Work

- Battelle undertook work to examine contaminated doffing of CB Ensembles and identified needed changes in doffing procedures
- A Test Operating Procedure was put together to provide guidelines for this testing

TECMIPT Test Operations Procedures (TTOP) Test for Cross Contamination During Doffing of Personal Protective Equipment



Current Work

- Several possible surrogate contaminants identified
- Procedures under development for:
  - Applying contaminant
  - Doffing techniques
  - Visualization of residual contamination
  - Potential quantification of contamination levels
  - Methods for reporting results

Preliminary Findings for Practice

- Selection of witness garment important for ensuring visualization of contaminant
- Additional patches placed on exterior during contamination process help to ensure consistent application of contaminant
- Aerosolized contaminant creates significant exposure of wearer
- Extreme care must be given to doffing procedures
- Videotaping of doffing helps to identify doffing missteps
- Design for efficient doffing may negate certain features created for improved protection

Identified Practice Limitations

- Surrogates may not be subject to ordinary decontamination methods (e.g., bleach disinfection of biological fluids)
- Assisted doffing required additional controls for tracing contaminant transfer
- Difficult to detect low levels of contaminant penetration without quantification techniques
- Photography proves difficult for capturing images of contamination
- Determination of usable test results requires careful interpretation of findings

Proposed Approach and Accomplishments

- Task group formed under ASTM Committee F23
- Proposed standard practice registered as work item (WK55144), "*New Standard Evaluating the Transfer of Exterior Contaminants from Protective Clothing During Doffing*"
- Key elements of standards development
  - Permit different surrogate contaminants to represent range of applications
  - Allow options in practice to apply contaminant / undertake doffing procedures
  - Establish safety procedures
  - Create procedures for visualization of contaminant
  - Have adjunct procedures for quantification, if warranted
  - Standardize reporting and documentation

Final Notes and Requirements

- Bulk of work has been done in support of military or government programs by Battelle for both Joint Program Manager for Protection and U.S. Agency for International Development
  - Outside participation needed
- Positioning of standard practice within specifications desirable to aid in design process
- Practice also has utility as training tool but has to accommodate local jurisdiction needs

For More Information

- Contact Information

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