ANSI Homeland Defense and Security Standardization Collaborative (HDSSC)

Meeting Report for
Discussion of InterAgency Board for Emergency Preparedness and Response (IAB) Standards Development Priorities

Tuesday, March 27, 2018
Location: ANSI, 1899 L Street, NW, 11th Floor
Washington, DC 20036

Introductory Remarks

Michelle Deane, ANSI HDSSC Director, welcomed attendees and thanked them for their participation. She noted that the private sector HDSSC co-chair, Chris Dubay from the National Fire Protection Association (NFPA), was unable to attend. In her brief remarks she discussed how the HDSSC can help standards developers and users of standards work together to meet the needs of the IAB community.

Cassy Robinson from the National Institute of Standards and Technology (NIST), and the public sector HDSSC co-chair, gave an overview of the InterAgency Board for Emergency Preparedness and Response (IAB) and the purpose of the meeting. The IAB standards development process and previous IAB priorities/accomplishments were reviewed (slides 1 – 5).

The participants in the room and on WebEx, were requested to introduce themselves. A list of attendees can be found in Appendix A.

2017 IAB Standards Development Priorities

There were 13 standards development priorities identified by the IAB in 2017, and each was discussed during the meeting. A summary, comments, and action items are documented below:

1) Guidance for initial first responders at an incident involving chemical agents (slides 6 – 9)

IAB Representative – Tony Mussorfiti (FDNY):

Initial first responders may encounter chemical agents, such as toxic industrial chemicals or materials, chemical warfare agents, or pharmaceuticals, and guidance is needed to address minimum resources, personnel, capabilities to perform assigned duties, safety and incident response considerations for determining the feasibility of rescue and recovery operations, line-of-sight with ambulatory and non-ambulatory victims, non-line-of-sight with ambulatory and non-ambulatory victims, rescue operations versus victim recovery, and decontamination.

The guidance should provide a systematic process for analyzing the incident, using on-scene indicators to identify any potential hazards (e.g., thermal, radiation, etc.), and evaluating potential consequences. It should include an "if this, then that" decision-making strategy and guide the responder to pick the best option based on the facts, science, specific circumstances, and available resources.

ASTM E2601-15, *Standard Practice for Radiological Emergency Response,* is a good template for developing the needed guidance for both incidents involving chemical agents and incidents involving biological agents. The critical information is in the following sections of ASTM E2601:

- Section 4. Summary of Practices
- Section 5. Significance and Use
- Section 6. Prerequisites for Radiological Emergency Response
- Section 7. Radiological Emergency Response

Using E2601 as a template, a guidance document should be developed including a decision tree (go-no go).

Comments from participants:

- Useful information is available in:
  - NFPA 471 (2002), *Recommended Practice for Responding to Hazardous Materials Incidents;*
  - NFPA 472 (2018), *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents;*
  - NFPA 473 (2018), *Standard for Competencies for EMS Personnel Responding to Hazardous Materials/Weapons of Mass Destruction Incidents; and*
  - NFPA 475 (2017), *Recommended Practice for Organizing, Managing, and Sustaining a Hazardous Materials/Weapons of Mass Destruction Response Program.*
- The above documents are helpful, but they do not fully meet the need, and the requested guidance is still needed.
- This is related to item 2 below, and action items are documented for item 2.

2) Guidance for initial first responders at an incident involving biological agents (slides 10 – 11)

IAB Representative – Tony Mussorfiti (FDNY):

Initial first responders may encounter biological agents that are naturally occurring or potential biothreat agents, pathogens, spores, toxins, or viruses, and guidance is needed to address minimum resources, personnel, capabilities to perform assigned duties, safety and incident response considerations for potential public health emergencies, known point-source, potential area dissemination, and decontamination.

The guidance should provide a systematic process for analyzing the incident, using on-scene indicators to identify any potential hazards (e.g., biological or other), and evaluating potential consequences. It should include an "if this, then that" decision-making strategy and guide the responder to pick the best option based on the facts, science, specific circumstances, and available resources.

Comments from participants:

- The NFPA Technical Committee for Hazardous Materials Response Personnel is the right group to develop the needed guidance; this committee developed NFPA 471, 472, 473, and 475.
- There remains a gap in the above standards regarding guidance for chemical and biological agent response.
- It was noted that the National Fire Academy is removing NFPA 475 content from their classes, which further emphasizes the need for this guidance.
- Since the ASTM E2601 standard and NFPA standards are all relevant, it would be beneficial to schedule a call with both ASTM and NFPA to discuss a collaboration.

Action items:

- Mary Mikolajewski (ASTM) will request that ASTM share E2601 with the group; and will schedule a call between ASTM, NFPA, and IAB experts to discuss a coordinated effort to address both chemical and biological agent response.

3) Test method(s) and performance specification for biological field detection instruments (slides 12 – 13)

IAB Representative – Bert Coursey (NIST, not present):

Test methods and/or specifications are needed for instruments intended to detect and identify biological agents, and levels of detection should be included. These devices are used by responders in the field, but there are no standards for assessing whether the devices perform as expected.

Following the anthrax attacks in 2001, manufacturers developed several types of field detection instruments. The first generation of equipment fielded to first responders was based on immunoassays which had a limit of detection of about 10 million spores. Newer methods, such as those based on polymerase chain reaction (PCR) technology, are more sensitive with a limit of detection of about 20,000 spores.

Agreed upon test methods are needed to allow responders and purchasing agents to assess the limit of detection of the instruments as well as the probability of false positives and false negatives. The standard should not address recommended guidance for response to a biological incident, as that is a separate need.

The ASTM E54 has addressed a subset of the AOAC standard method performance requirements with a standard: ASTM E3131-2017, *Specification for Hand Portable Biodetection Instruments for Homeland Security Applications*.

Comments from participants:

- The primary expert for the IAB is David Ladd, and he should be contacted and asked to review ASTM E3131.
- The IAB published a position paper in January 2017 that should be considered. This paper can be found at: https://share.ansi.org/PUBHDSSC/default.aspx.
- It is not known whether any manufacturers claim compliance with ASTM E3131, but this is important to find out. Again, David Ladd may be the best resource.
- AIHA has been asking questions about these instruments, and it may be that their interests are aligned with the IAB. There may also be interest from the EPA.
- A question was asked as to whether detection of variants (i.e., mixture of two viruses such as small pox mixed with flu) has been considered.
- Hardening of devices for durability is also necessary.
- We need to be cautious about pushing beyond current technology; although we'd like a handheld device, perhaps it would be sufficient to have a bulkier device that could be located regionally and shared.
- A good next step may be to host a focused workshop on this topic because it is bigger than the IAB.

Action items:

- A follow-up call to discuss the possibility of hosting a workshop will be scheduled with a team of volunteers, including Phil Mattson, Bruce Evans, Bill Haskell, Jerry Fontana, and David Ladd.

4) Guidance for handling contaminated remains in mass fatality incidents (slides 14 – 15)

IAB Representative – TJ Johnston (National Guard Bureau):

Responders must deal with contaminated remains for a mass fatality incident so that the remains can be further processed and then turned over to a medical examiner/coroner, and then to families for final disposition. Mass fatality incidents can occur and have occurred in many different ways, and the ways a cadaver can become contaminated will dictate the guidelines and standards for release of the remains by public health authorities. Blood-borne pathogens, biological threat agents (such as Bacillus anthracis spores), stable toxic chemical agents, and long-lived radioactive elements each presents unique challenges.

Guidance will, by necessity, be modeled on processes and procedures used by the military in handling remains from mass fatality incidents and from overseas war zones.

NFPA 472 and 473 may partially address this need.

Both US and UK government agencies have some standards related to handling and disposal of human remains; two of which can be found below:

- https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=PREAMBLES&p_id=811
- http://www.chp.gov.hk/files/pdf/grp-guideline-hp-ic-precautions_for_handling_and_disposal_of_dead_bodies_en.pdf

Comments from participants:

- DOD has a method for dealing with soldier remains (10 or less) from overseas, but soldiers and airmen need national standards to follow for a mass causality event in the US.
- The IAB was briefed by a Disaster Mortuary Operational Response Team (DMORT) a few years ago, and Bill Haskell will share the information that was presented.
- Others should be involved, such as the National Disaster Medical System, the Coroner's Association, the FBI, and medical examiners.
- This topic needs further group discussion and should include experts from relevant organizations.

Action items:

- John Koerner (IAB) will reach out to experts that he knows.
- Bill Haskell (NIOSH-NPPTL) will share the DMORT presentation.

5) Guidance for minimizing personnel contamination and performing decontamination related to structural fires (slides 16 – 17)

IAB Representative – Gerard Fontana (Boston Fire Department):

Decontamination following exposure to a fire is necessary, including on-scene gross decontamination, on-scene cleaning of exposed skin, isolation of contaminated gear, cleaning of turnout gear (including having a clean spare set), showering as soon as possible, decontamination of equipment and truck, fire station design to minimize cross-contamination, etc.

Studies have proven that smoke and residue from structural fires contain carcinogens that can be inhaled and absorbed through the skin, resulting in high instances of fire fighter cancer.

Currently, many fire departments are recommending use of wipes to clean exposed skin on-scene, but there is no data to support whether that practice is actually cleaning the skin or doing harm. Best practices would help end users reduce cancer risk by minimizing contamination and performing decontamination as soon as possible.

Related work is being done by NFPA. Following receipt of a New Project Initiation Request, NFPA initiated exploration of new standards development to establish the

minimum requirements for the effective contamination control of personal protective equipment (PPE), accessories, and equipment. To date, NFPA has completed a public call for comments, and responses will be reviewed by the Standards Council for action at the scheduled April 2018 meeting. If approved, work on the new standard's development is expected to begin shortly thereafter.

Comments from participants:

- One thing to consider is how current practices may increase exposure to carcinogens. Firefighters must wear the same gear at every fire event; there is no spare PPE.
- NFPA 1700 Technical Committee is discussing this topic, but this may be a more complex topic than what has been discussed.
- NFPA 1500 has a chapter on contamination, and NFPA 1584 can be expanded to cover post-fire decontamination and rehabilitation.
- The National Fire Protection Research Foundation (Casey Grant) has done research related to this.
- IAB members feel that a stand-alone document for decontamination following a structural fire is needed.
- Decontamination of people should also be considered. Emerging technologies are being developed, including wipes and saunas, but the efficacy and risk have not been assessed.

Action item:

- Ed Conlin (NFPA) will share the minutes after the upcoming NFPA meeting.

6) Test method for security and reliability of wireless links between unmanned aerial systems (UAS) and the controller (slides 18 – 19)

IAB Representative – Matt Duggan (Boca Raton Police Department):

Test methods are needed to assess the security and reliability of the wireless links between small UAS's and the flight operations center (base station/controller), including command and control; sensor control; sensor data; autopilot; and navigation. The cybersecurity concerns are similar as those for other wireless systems, such as cell phones.

UAS's have a maximum range specified by the manufacturers; however, there are currently no test methods to assess range for devices in varying environments, from rural to suburban to urban, and under varying conditions, such as among trees with leaves or without leaves. Additionally, test methods are needed for assessing the data link integrity when exposed to various other devices operating in the same frequency band under the above conditions. It is anticipated that metro areas will have more interfering devices than urban areas.

The three main issues are: (1) interference, (2) operational security (e.g., preventing media from remotely tapping into the signal), and (3) hijacking of the UAS.

Comments from participants:

- ASTM E54 is working on UAS test methods.
- There is an ANSI UAS Collaborative, and the collaborative's road mapping indicates that IEEE is working on this type of standard.
- NIST Boulder previously did signal measurement testing (e.g., line of sight and loss of signal) and may have useful information.
- The topic of how to disable a UAS is being discussed in the federal community.

Action item:

- Mary Mikolajewski will provide the IEEE contact person so that we can discuss whether their work addresses this need.

7) Guidance for tactical medics deployed during law enforcement operations (slides 20 – 21)

IAB Representative – Tom Nolan (Upper Merion Township Police Department):

More civilian medics are being deployed with law enforcement, and a standard is needed for medics that are deployed during law enforcement operations, including tactical team operations, police response to a mass assault, and active shooter responses.

The standard should address considerations, recommendations, and best practices. This guidance should not specify requirements. These medics need specific guidance to coordinate their efforts with law enforcement. While the NTOA SWAT standard mentions tactical emergency medical support throughout, it does not give specific guidance for the medics.

The three basic types of guidance requirements include minimum tactical emergency casualty care training (this is different than typical emergency medical services training), knowledge and use of personal protective equipment, and training on tactical movements.

The NTOA SWAT standard mentions tactical emergency medical support throughout but does not give specific guidance for the medics.

ASTM E54 has expressed interest in developing this guidance and has the expertise to support it.

Comments from participants:

- Some police departments require medics to be trained through the police academy; some use reserve officers who are already qualified/trained. The decisions are different depending on whether the agency is urban or rural.
- There is no consistency or guidance to agencies in considerations for making decisions.
- Every state handles this differently, and authority, medical, and training issues need to be addressed state-by-state.
- Experts from the IACP physicians committee should be engaged.
- The National Association of EMTs (NAEMT) has courses for tactical medics. The question is "who decides what training is necessary?"
- There is much debate about arming or not arming medics. There are complex issues to be considered, such as an armed medic shooting someone.
- There was a training webinar on active shooter response on March 26, 2018, and it had a good information on medic training. The webinar was recorded and is available for viewing.
- The IAFF has conducted time and motion studies on fire fighter and basic EMS operations; something similar should be done for tactical medics.
- A new NFPA standard is under development: NFPA 3000, *Standard for Preparedness and Response to Active Shooter and/or Hostile Events*.
- Law enforcement officers feel that specific guidance beyond NFPA 3000 is needed.

Action items:

- The group will hold off on further action until NFPA 3000 can be reviewed (publication of a provisional standard is expected soon). The issue will be revisited after reviewing NFPA 3000 to see if it meets law enforcement needs.
- Bill Haskell will send a link to the active shooter training webinar.

8) Standard and accreditation program for special weapons and tactics (SWAT) teams (slides 22 – 23)

IAB Representative – Patricia Knudson (Arizona Police Department):

SWAT teams operate differently across the nation, and there is a need to (1) increase the confidence in SWAT teams and their capabilities, and (2) enhance consistency and interoperability among SWAT teams. There are some existing standards for SWAT teams; however, they do not meet the need for an accreditation program.

The standard should specify the minimum number of people and specialty positions on a team, equipment list (including equipment for the team and for the specialty positions), and training (initial and periodic) for teams and individuals, including certification of individual team members.

Benefits of accreditation may include:

- Sets a minimum level of performance
- Enhances safety

- Allows interoperability between certified teams
- Improves public perception
- Could lead to creation of an equipment list that could be tied to grant funding

Tactical teams have no governing body, like the FBI for bomb squads. Basic certification at a national level is the goal. The NTOA SWAT standard is available; although there are concerns that it may not be stringent enough for an accreditation program. NTOA and CALEA are planning to partner on certification of SWAT teams, and ASTM E54 has expressed interest in developing this standard and has the expertise to support it.

Comments from participants:

- The executive director at NTOA has changed to Thor Ells, and the status of the NTOA-CALEA plan is not known.
- ASTM E54 could collaborate with NTOA to develop a standard that accreditation could be based upon.
- A potential resource was noted: U.S. Tactical Research Management center (www.ustrmc.org); however, the credibility of this organization is not known.

Action item:

- Tom Nolan will contact Thor Ells to ask about the status of the NTOA-CALEA activity and inform that NTOA that ASTM E54 can partner with them to develop the standard.

9) Test method for less lethal electroshock weapons (ESWs) (slides 24 – 25)

IAB Representative – Gary Backous (Story County Sheriff):

ESWs are used by more than 16,000 law enforcement agencies as a less lethal force option. Although they are commonly used, the devices are not tested to consensus standards and have been found in field use to be very inconsistent in their electrical output.

There is a two-fold problem with the devices: (1) electrical output is more than expected, and (2) the electrical output is less than expected (i.e., cold weapons). The biggest problem is “cold” weapons that do not have high enough output to cause pain much less incapacitation. Situations in which these devices are deployed and have low output typically result in the use of lethal force.

Progress to date is below:

- 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, initiated a task group in February 2018 and is preparing a survey for the user community. The survey will be

sent to members of the Emergency Services Coordinating Committee to allow broader reach.

Comments from participants:

- There are two existing standards for ESWs:
    - International Electrotechnical Commission (IEC) 62792:2015, *Measurement method for the output of electroshock weapons*
    - Crane Power Line Safety Organization (ANSI/CPLSO-17:2017, *Electrical characteristics of ECDs and CEWs)*
- NIST has been in contact with the DOD Joint Non-lethal Weapons Directorate at the Marine Corps base in Quantico, VA.
- It was recommended that a specific person involved in the DOD program be contacted and that US Air Force Research Laboratory studies be reviewed. Michael Brave can provide contact information.
- NAEMT volunteered to participate given that EMS personnel typically remove the barbs from ESWs.

Action items:

- Bruce Evans (NAEMT) will identify a NAEMT volunteer for the task group.
- Michael Brave (LAWW) will provide contact information for the DOD expert that he mentioned.

10) Performance standard for less lethal impact (i.e., kinetic energy) devices using a launching system to fire projectiles (slides 26 – 27)

IAB Representative – Nick Roberts (Unified Police Department of Greater Salt Lake):

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. The safety of the targeted individual/opponent is not to be addressed here because a NATO group is working on that issue.

These devices are intended to cause pain compliance. In field use, they have been found to either under-perform (no pain) or over-perform (injury) and to not fly true or go the expected distance.

Two end user meetings have been held by the IAB, and ASTM E54, *Committee on Homeland Security Applications*, has requested to take on this activity.

Comments from participants:

- Energy density must also be considered – for example, striking a person with the tip of the projectile has more impact than striking with the side of the projectile.

- The mechanical aspects need to be addressed in a test method and/or specification. Guidance is not needed.
- Based on user needs, third-party certification may also result.

Action items:
- No action items were documented because ASTM E54 will take on this effort.

11) Performance standard for distraction devices (slides 28 – 29)

IAB Representative – Tom Nolan (Upper Merion Township Police Department):
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.

The devices have been found to perform differently than the manufacturers claim they will. There are issues with injury to officers deploying the devices and injury/death to suspects and others. There have also been issues with the devices starting fires.

Two end user meetings have been held by the IAB, and ASTM E54, *Committee on Homeland Security Applications*, has requested to take on this activity.

Comments from participants:
- There does not appear to be much research or testing data on these devices.
- There are specifications for limits on a safe level of exposure to a flash of light or sound; these could be applied here, and a test method could be developed to measure light, sound, and smoke.
- Liability is an issue, and there have been instances when the devices started a fire or were used in the wrong location. Michael Brave volunteered to help develop a guidance document.
- It was suggested that the US MC be engaged.
- The participants agreed that it would be beneficial to (1) develop a guidance document for users on when/why/how to deploy these devices along with cautions for use, and (2) develop a specification for performance.

Action items:
- Michael Brave will send example guidance documents for consideration.
- ASTM E54.08 will initiate development of a standard guide followed by a specification.

12) Performance standard for body worn video cameras used by public safety practitioners (slides 30 – 31)

IAB Representative – Nick Roberts (Unified Police Department of Greater Salt Lake):

The field deployment of body worn video camera systems by public safety practitioners (e.g., patrol, corrections, SWAT and other tactical responders) offers significant advantages in keeping officers safe, enabling situational awareness, and providing evidence for trial.

A major issue with the use of body worn video cameras is a lack of performance standards, test methods, and operational standards. The current concerns with body worn video cameras include lack of ruggedness for the environment in which they are used, insufficient mounting/positioning options, failure to power on and record, and no interoperability between systems and associated software.

While standards may be needed to ensure that evidence gathered from body worn cameras meets courtroom standards, officers believe durability is the primary issue. The primary problems are (1) breaking of wires at attachment points, and (2) rain killing the camera.

Comments from participants:

- Setting performance requirements on the camera units is of primary importance, more so than addressing storage, redaction, or video quality.
- The group was cautioned about setting performance requirements for video because camera capability are beyond human vision capability, and some manufacturers choose to limit the camera to not exceed human vision.
- The decision was made to focus only on hardware and durability, not software or quality.

Action items:

- No action items were documented.

13) Performance standard for tactical operation video cameras (slides 32 – 33)

IAB Representative – Patricia Knudson (Arizona Police Department):

A performance standard is needed to assess capabilities of video cameras used by law enforcement in tactical operations for surveillance and situational understanding. These systems are available in several configurations: covert placement, hand-deployed, and pole-mounted. During field use, operators are experiencing breakage of equipment, specifically wiring, connectors, and attachment points. Interference between the camera and the monitor(s) is also a problem.

The standard must address all system features such as image quality, audio quality, ruggedness of both the camera and monitoring device, length of operation on battery, and remote-control capabilities.

Related work is summarized below:

- End user surveys have been done to determine what is needed.

- UL initiated development of UL 3802, *Standard for Performance of Tactical Video Equipment*, in 2015.
- NFPA 1859, *Standard on Selection, Care, and Maintenance of Tactical Operations Video Equipment*, has initiated standards development activities. Although NFPA 1859 remains in the developmental stages, it is anticipated that an initial draft will be presented to the Standards Council in 2018 to begin public review.

Comments from participants:

- UL had included this in the standard for body worn video cameras, but this group feels that the two items should be addressed in separate standards.
- NFPA will continue development of the guidance regardless of whether there is a performance standard or not.

Action item:

- ANSI will contact UL to see if the standard is progressing or if they want to move it to another SDO.

Path Forward

Attendees recommended that more materials be provided in advance of the meeting.

Michelle Deane noted that files from this meeting will be stored on the ANSI website and may be accessed using this link: https://share.ansi.org/PUBHDSSC/default.aspx.

Cassy Robinson and Michelle Deane thanked the participants for their thoughts and contributions to the discussions.

Appendix A

Attendance List:

Present?	Name	Organization	Email
x	Bill Haskell	NIOSH-NPPTL	whaskell@cdc.gov
x	Bruce Evans	National Association of Emergency Medical Technicians (NAEMT)	Hawkeyeems@aol.com
x	Casandra Robinson	NIST	casandra.robinson@nist.gov
x	Edward Conlin	NFPA	econlin@nfpa.org
x	Greg Cade	NFPA	gcade@nfpa.org
x	Jacob Meek	Department of Homeland Security, FRG	jacob.meek@associates.hq.dhs.gov
x	Mary Mikolajewski	ASTM International	mmikolajewski@astm.org
x	Matt Duggan	IAB, Boca Raton Police Dept.	mduggan@myboca.us
x	Melissa Trumbull	National Association of Emergency Medical Technicians (NAEMT)	melissa.trumbull@naemt.org
x	Michelle Deane	American National Standards Institute	mdeane@ansi.org
x	Pat Gleason	Safety Equipment Institute	pgleason@seinet.org
x	Phil Mattson	DHS S&T Office of Standards	philip.mattson@hq.dhs.gov
x	Rob Kinsler	HP White	rob.kinsler@hpwhite.com
x	Thomas Breyer	IAFF	tbreyer@iaff.org
x (WebEx)	David Bernzweig	IAB, Columbus (OH) Division of Fire	dbernzweig@columbus.gov
x (WebEx)	Gary Backou	Story County Sheriff's Office	gbackous@storycountyiowa.gov
x (WebEx)	Gerard Fontana	Boston Fire Dept., IAB Chair	gerard.fontana@bostonfire.org
x (WebEx)	Hugh Pratt	CPLSO	pratt.hugh@cplso.org
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x (WebEx)	Michael Brave	LAAW	brave@laaw.com
x (WebEx)	Michael Elliott	NIOSH-NPPTL	hde5@cdc.gov
x (WebEx)	Tim Dorsey	IAB	Tdorsey@bcfdmo.com
x (WebEx)	TJ Johnston	IAB, National Guard Bureau	terry.m.johnston.ctr@mail.mil

Present?	Name	Organization	Email
x (WebEx)	Tom Nolan	IAB, Upper Merion Township Police Dept.	tnolan@umtownship.org
	Andrew Rowley	IAB, Wake Forest Baptist Health	Andrew@soarescue.com
	Bert Coursey	NIST	bert.coursey@nist.gov
	Damion Hughes	Department of Homeland Security	damion.higbie@hq.dhs.gov
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	Sarah O'Rourke	UK Home Office	Sarah.ORourke1@homeoffice.gsi.gov.uk
	Tim Fisher	American Society of Safety Engineers	TFisher@ASSE.Org