

Preliminary Requirements Assessment

Personal Protective Equipment (PPE) For Law Enforcement In Chemical, Biological, Radiological, And Nuclear (CBRN) Environments

Prepared for:

**Department of Justice
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Submitted by:

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Executive Summary

In May of 2006, the National Institute of Justice (NIJ), Office of Science and Technology and CTC Inc., Public Safety Technology Center (PSTC) collaborated to continue research on the personal protective equipment needs of law enforcement officers. The goals of the project were:

1. To build upon the previous work of NIJ and the PSTC, and to further define the personal protective equipment (PPE) needs and requirements for law enforcement officers responding to and functioning in chemical, biological, radiological and nuclear (CBRN) incidents, and;
2. To obtain all of the functions and or tasks that must be performed by law enforcement officers while wearing CBRN protective ensembles.

Our approach to the project was three-pronged, consisting of an internet-based literature search, an independent survey, and a practitioner focus group.

We conducted a literature search, seeking to identify articles and reports focused on PPE for law enforcement. Twelve (12) articles were identified as meaningful to understanding PPE requirements for the law enforcement community. Of the twelve (12) articles identified for this analysis, less than half specifically addressed law enforcement's special PPE requirements. Many of the research reports highlighted that the need for body, face/eye, hand and head protection is consistent across the law enforcement, fire and other first responder disciplines. However, the focus group findings reveal unique PPE needs within the law enforcement discipline.

An independent email survey was distributed to fifteen (15) PPE subject matter experts, in advance of the focus group meeting. The PPE surveys were distributed via an encrypted Internet protocol. Thirteen (13) individuals responded. The survey contained forty (40) questions in seven (7) different categories:

- Demographics
- Current Equipment
- Compatibility
- Interoperability
- Standard Operating Procedures (SOP)
- Ergonomics
- Durability

A copy of the survey instrument is provided in Attachment 1.

Our focus group panel selection was based on technical expertise and professional experience. The panelists consisted primarily of law enforcement officers; however, corrections, the military and the private sector were also represented. We invited fifteen (15) subject matter experts to participate. The goals of the focus group were to:

- Obtain all of the functions and or tasks that must be performed by law enforcement officers while wearing CBRN protective ensembles and
- Further define the personal protective equipment (PPE) needs and requirements for law enforcement officers responding to and functioning in chemical, biological, radiological and nuclear (CBRN) incidents.

Prior to convening the focus group, a memorandum (Attachment 2) was sent to each participant describing the goals of the group and the proposed discussion topics.

The summary conclusion emerged that law enforcement has unique requirements that are driven by specific missions within the PPE environment. This conclusion differs from the existing literature research, where law enforcement's distinct needs were significantly less reported upon than those of other first responder disciplines.

There must be universal PPE standards where appropriate, but at the same time, PPE standards must address specific differences in task requirements between law enforcement and other first responder disciplines. Information was gathered on requirements in the following categories:

- Training
- Respiratory Protection
- Protective Garments
- Gloves
- Interoperability

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Background and Introduction

In December 2004, Congress provided FY-05 funding to the United States Department of Justice Community Office of Oriented Policing Services (COPS) Technology Program for the creation of the Massachusetts Law Enforcement Technology & Training Support Center (MALETTSC), (www.malettsc.org) which is managed by CTC's Public Safety Technology Center. MALETTSC provides Massachusetts Law Enforcement with a hands-on introduction to new technologies, assistance with procurement of technology and equipment, collaboration with federal agencies to create local test beds for new technology pilots, and assimilates new crime prevention and problem solving processes from the Department of Defense (DOD) and the Department of Homeland Security (DHS) into the community policing mission through training. This research project was funded through the U.S. Department of Justice, Office of Community Oriented Policing Services (COPS) grant # 2006CKWX0050.

In May of 2006, the National Institute of Justice (NIJ), Office of Science and Technology (OST) and the CTC Inc., (www.ctc.org) Public Safety Technology Center (PSTC) collaborated to continue research on the personal protective equipment needs of law enforcement officers. The goals of the project were:

1. To build upon the previous work of NIJ and PSTC, and to further define the personal protective equipment (PPE) needs and requirements for law enforcement officers responding to and functioning in chemical, biological, radiological and nuclear (CBRN) incidents, and;
2. To obtain all of the functions and or tasks that must be performed by law enforcement officers while wearing CBRN protective ensembles.

This information is inclusive of, but not limited to, environmental conditions, ergonomic requirements, exposure times, and desired wear cycles.

To facilitate the gathering of data and meet the project goals, the PSTC arranged a one-day focus group on June 13th, 2006 at the corporate offices of CTC located in Westborough, MA. The focus group participants were invited to participate based on their technical expertise and professional experience in the area of CBRN personal protective equipment. The focus group was comprised primarily of law enforcement officers; however, corrections, the military and the private sector with law enforcement or security responsibilities were also represented. A complete list of participants and facilitators is contained in Attachment 3.

Additional background information relative to each contributing stakeholder is provided below.

CTC, Inc. – Public Safety Technology Center

CTC, Inc. - Public Safety Technology Center, is a non-profit [501(c) (3)] company, geographically dispersed with offices in nine (9) states ranging from Massachusetts to California, to Vermont, is headquartered in Westborough, Massachusetts. The PSTC's mission is to be a center of excellence and a trusted broker of homeland security services to the public safety community, government, and the private sector. The employees of the PSTC possess the knowledge and expertise necessary to professionally deliver quality services to the first responder community as well as to conduct the research that supports them.

National Institute of Justice

The National Institute of Justice (NIJ) is the research, development, and evaluation agency of the U.S. Department of Justice (DOJ). NIJ is dedicated to researching crime control and justice issues and providing objective, independent, evidence-based knowledge and tools to meet the challenges of crime and justice, particularly at the State and local levels. NIJ's principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 USC § 3721-3723) and Title II of the Homeland Security Act of 2002.

NIJ also funds development of technologies to improve the safety and effectiveness of law enforcement and corrections professionals. In addition, NIJ develops standards and best practices to guide the work of criminal justice professionals in the use of technology.

Office of Community Oriented Policing Services (COPS)

The COPS Office was created as a result of the Violent Crime Control and Law Enforcement Act of 1994. As a component of DOJ, the mission of the COPS Office is to advance community policing in jurisdictions of all sizes across the country. Community policing represents a shift from more traditional law enforcement in that it focuses on prevention of crime and the fear of crime on a very local basis. Community policing puts law enforcement professionals on the streets and assigns them a beat, so they can build mutually beneficial relationships with the people they serve. By earning the trust of the members of their communities and making those individuals stakeholders in their own safety, community policing makes law enforcement safer and more efficient, and makes America safer.

Methodology

Our approach to the project was three-pronged, consisting of an internet-based literature search, a subject matter expert survey, and a practitioner focus group.

Research

CTC-PSTC conducted a literature search, seeking to identify articles and reports focused on PPE for law enforcement. While much literature exists relative to PPE for the first responder community as a whole, law enforcement is distinct in many aspects of their mission, from the daily operations of a patrol officer, to collecting evidence and investigating crime scenes, to the tactical focus of special teams (SWAT). This area of law enforcement-specific PPE is a relatively new focus. There is significant need for additional research to better understand the unique PPE requirements of the law enforcement officer.

Twelve (12) articles were identified as meaningful to understanding PPE requirements for the law enforcement community. These articles are as follows: (and act as a legend to the Areas/Hazards matrix below)

Personal Protective Equipment Reports and Articles

No.	Bibliographic Citation
1	Willis, Henry H. Castle, Nicholas G. Sloss, Catherine M. Bartis James T, <i>Protecting Emergency Responders, Volume 4. Personal Protective Equipment Guidelines for Structural Collapse</i> , Santa Monica, Calif.: RAND Corporation, MG-425, 2006. http://www.rand.org/pubs/monographs/2006/RAND_MG425.pdf
2	Christen, Hank T. and Malone, Michael V. <i>Development of Human Factors Engineering Requirements for Fire Fighting Equipment</i> , Mary Esther, Florida: Unconventional Concepts, Inc. prepared for U.S. Army Research Development and Engineering Command Natick Soldier Center, Natick Technical Report, TR-05/020. September 2005. http://www.stormingmedia.us/58/5808/A580834.html
3	Kennedy, Thomas J., <i>IACP Personal Protective Equipment: WMD Missions and Functions</i> , Westborough, Massachusetts: The Center for Technology Commercialization, Inc. Public Safety Technology Center. April 28, 2004.
4	<i>Guidelines for Use of Personal Protective Equipment by Law Enforcement Personnel During a Terrorist Chemical Agent Incident</i> , Natick, Massachusetts: The U.S. Army Soldier and Biological Chemical Command, December 2003. http://stinet.dtic.mil/dticrev/PDFs/ada435808.pdf
5	Davis, Lois M.; Riley, K. Jack; Ridgeway, Greg; Pace, Jennifer; Cotton, Sarah K.; Steinberg, Paul. S.; Damphousse, Kelly; Smith, Brent L. <i>When Terrorism Hits Home: How Prepared Are State and Local Law Enforcement?</i> Santa Monica, Calif.: RAND Corporation, MG-104, May

	2006. http://www.rand.org/pubs/monographs/MG104/
6	<i>Best Practice: Incident Site Safety Planning: Personal Protective Equipment, Lessons Learned Information Sharing</i> , online at www.llis.gov , as of August 15, 2006.
7	Fatah, Alim A.; Barrett, John A.; Arcilesi, Richard D. Jr.; Lattin, Charlotte H.; Janney, Charles, G.; Blackman, Edward A. <i>Guide for the Selection of Personal Protective Equipment for Emergency First Responders</i> , Washington DC, U.S. Department of Justice, NIJ Guide 102-00 Volume 1, November 2002. www.ncjrs.gov/pdffiles1/nij/191518.pdf
8	La Tourrette, Tom, D. J. Peterson, James T. Bartis, Brian A. Jackson, and Ari Houser, <i>Protecting Emergency Responders, Volume 2. Community Views of Safety and Health Risks and Personal Protection Needs</i> , Santa Monica, Calif.: RAND Corporation, MR-1646 NIOSH, 2003. www.rand.org/pubs/monograph_reports/MR1646/
9	<i>Improving NYPD Emergency Preparedness and Response</i> , McKinsey and Company, August 19, 2002. As of August 15, 2006 this report is online at, http://www.nyc.gov/html/nypd/pdf/nypdemergency.pdf
10	Anonymous, <i>A Comparative Evaluation of Protective Gloves for Law Enforcement and Corrections Applications</i> , Corrections Forum; Volume 11, issue 6. November/December 2002.
11	<i>Hand Protection</i> , American Society of Safety Engineers, ASSE, Professional Safety Journal, Volume 49, number 1, January 2004.
12	Kennedy, Thomas J.; <i>First Responder Needs Assessment Final Report</i> , Westborough, Massachusetts: The Center for Technology Commercialization, Inc. Public Safety Technology Center. February 23, 2004.

Of the twelve (12) reports identified for this analysis, less than half specifically addressed law enforcement’s special PPE needs. Many of the research reports highlighted the fact that issues raised relative to PPE are consistent across the law enforcement, fire services and other first responder disciplines. For example, body protection, face/eye protection, head protection, and hand protection were most often mentioned in the majority of the research reports.

Literature on Personal Protective Equipment (PPE) for Law Enforcement

Article Number	1	2	3	4	5	6	7	8	9	10	11	12	Frequency
Area requiring protection													
Body Protection	x	x	x		x	x	x	x	x		x	x	10
Face/eye Protection	x			x	x	x	x	x	x			x	8
Head Protection	x	x		x	x	x		x	x			x	8
Hand Protection	x			x	x	x	x	x	x	x	x	x	10
Hazards													
Violence and Assault		x				x			x			x	4
Stab or Puncture	x	x				x		x	x			x	6
Ballistics		x				x			x			x	4
Explosives			x			x			x			x	4
Biological Threats/Incidents	x	x	x		x	x	x	x	x			x	9
Chemical/Radiological/Biological Threats	x	x	x	x	x	x	x	x	x			x	10
Respiratory Threats (i.e. airborne toxicity)	x	x	x	x	x	x	x	x	x		x	x	11
Responders													
All Responders	x					x	x		x		x	x	6
Law Enforcement			x	x	x			x		x			5
Corrections										x			1

Subject Matter Expert Survey

An electronic survey was distributed using email to the fifteen (15) focus group invitees, in advance of the focus group meeting. Fifteen (15) surveys were distributed and 13 individuals responded. The email contained a link to a secure online survey tool. The survey contained forty (40) questions in seven (7) sections:

1. Demographics
2. Currently Utilized Equipment
3. Compatibility
4. Interoperability
5. Standard Operating Procedures (SOP)
6. Ergonomics
7. Durability

A copy of the entire survey instrument may be found in Attachment 1.

CTC-PSTC has used online surveys on a number of occasions with great success due to the flexibility it offers and its ability to draw the needed data. Results are viewed as they are collected in real-time, and may be either summarized in graphs and charts, or exported (either summary or raw data) to Microsoft Excel or SPSS® software for more

complex analysis. This method was chosen for its simplicity and efficiency, as well as cost-effectiveness.

Focus Group Composition

Our focus group was composed of experts in their respective fields having extensive technical expertise and a broad range of professional experience in the area of CBRN personal protective equipment. National and international organizations including the International Association of Chiefs of Police (IACP), National Sheriffs Association (NSA), National Tactical Officers Association (NTOA) and the Fraternal Order of Police (FOP) were asked to provide recommendations for focus group participants. The panelists represented a cross section of the emergency responder community consisting of state and local law enforcement, corrections, the military and a private sector representative. We invited and received confirmation from fifteen (15) participants, and had twelve (12) attendees. The focus group participants were:

Lieutenant Ed Allen	Emergence Management Coordinator Seminole County (FL) Sheriff's Office
Charles D. Barranco	Homeland Security Coordinator (CID) Aiken County (SC) Sheriff's Office
LCDR Paul J. Brochu, USN	Technical Cell Director USMC - Chemical Biological Incident Response Force Indian Head, MD
Jay DeBold	Regional STAR/TRT Commander Ohio Department of Rehabilitation and Correction
Sergeant Michael Domnarski	Stop Team Commander (Special Operations) Massachusetts State Police
Stephen Foley, Director	Special Operations - Hazardous Material Response Team U.S. Capitol Police, Washington, D.C.
George Grass	Wackenhut Services Inc. Savannah River Site, Aiken S.C.
Lieutenant Thomas Nolan	Upper Merion Township Police Department King of Prussia, PA
Sergeant Paul Petrino	Commander, Crime Scene Entry Team Massachusetts State Police

Sergeant Nicholas J. Roberts Salt Lake County Sheriff's Office
Salt Lake City Utah

Detective Chris Savard Operations Officer - Homeland Security Section
Orlando (FL) Police Department

Major Robert Stack Commander, Planning & Analysis Section
Lexington-Fayette (KY) Division of Police

PPE Requirements Assessment draft report review and comments were provided by Captain John "Ken" Hasenei, WMD Coordinator for the Maryland State Police and Major David W. McBath, Office of Counter Terrorism, New York State Police.

Facilitators for the focus group were Stephen Doherty, a retired Police Chief from Wakefield, MA and Chris Gesswein, a former chemical/biological defense consultant with the firm of Booz-Allen-Hamilton. Both Chief Doherty and Mr. Gesswein are currently employed by CTC Inc. (An abbreviated biography and contact information for the facilitators and the participants is provided in Attachment 3).

Focus Group Preparation

Several weeks prior to meeting, focus group participants independently completed a forty question electronic survey (Attachment 1). Participants were provided a memorandum (Attachment 2) describing the goals of the group and the proposed discussion topics. The participants advised that discussions would concentrate on critical issues, such as:

1. Identification of the dominant critical incident response mission functions i.e. prevention (detection), protection, response (mitigation), recovery and criminal investigation.
2. Identification of appropriate PPE needed by law enforcement officers to complete the tasks within the above identified functions.
3. Determine any gaps that exist relative to what PPE is currently available and what PPE is needed as determined by the focus group.

Findings

Research Findings

Typical PPE worn by law enforcement officers includes shoes, uniforms, a ballistic vest, and possibly a helmet and gloves. Additional PPE is available for special operations, including forced entry and apprehension, bomb disposal, hostage and barricade situations, and crowd control. These ensembles however do not protect against the physical and chemical hazards present at a structural collapse or major extended terrorist incidents since these are not typical responses for law enforcement.¹

The limited information available through our research indicated that the missions and operations of law enforcement will rarely (except in some cases of special operations) require the officers to work in the hot zone² of an incident. Several of the research reports concluded that it is unnecessary for law enforcement agencies to outfit their officers with Level A protection³. Level A protection is bulky, heavy, and it requires the use of a self contained breathing apparatus (SCBA). The extensive costs, maintenance, and restrictiveness of the suits make it unsuitable for most departments, particularly those officers whose mission is primarily that of patrol officer.

The report, “Guidelines for Use of Personal Protective Equipment by Law Enforcement Personnel during a Terrorist Chemical Agent Incident” conducted by the US Army Soldier and Biological Chemical Command in December of 2003, states that **the single most important piece of chemical agent protection for law enforcement officers is respiratory protection**. A responder’s respiratory protection is only as good as the mask that is worn. In addition, their study illustrates the difficulty law enforcement faces in selecting appropriate PPE, as there is no global solution for every situation. A single mask does not offer protection from all agents.⁴

Functions related to crowd control, maintaining perimeter security, or performing on a tactical team all require different levels of PPE. Choices in PPE are mission-specific, and clothing that may be appropriate for one situation may be entirely unnecessary, or too restrictive, in another. The effectiveness of the law enforcement officer is hampered when wearing PPE while performing certain tasks. PPE worn by tactical officers needs to:

¹ RAND, *Protecting Emergency Responders vol. 4 PPE Guidelines for Structural Collapse Events*, 2006.

² Emergency Response Guidebook, U.S. Department of Transportation defines hot zone as an area immediately surrounding a dangerous goods incident that extends far enough to prevent adverse effects from releases dangerous goods to personnel outside the zone. This zone is also referred to as exclusion zone, red zone, or restricted zone in other documents.

³ Level A Personal Protective Equipment; positive pressure self contained breathing apparatus; fully encapsulating chemical protective suit; gloves-inner, chemical resistant; gloves-outer, chemical resistant; boots-chemical resistant, steel toe and shank. NFPA 1994 Standard on Protective Ensemble for Chemical/Biological Terrorism Incidents 2001 Edition and NFPA 1991 Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies 2005 Edition.

⁴ The US Army Soldier and Biological Chemical Command, *Guidelines for Use of Personal Protective Equipment by Law Enforcement Personnel During a Terrorist Chemical Agent Incident*, December 2003.

- Be more durable
- Allow for unencumbered movement
- Allow for increased range of motion
- Be compatible with tactical considerations and equipment while providing an increased level of CBRN protection.

Research reports indicated that the impermeable style clothing evaluated for patrol officers was incompatible with tactical operations because it is noisy, brightly colored and tears easily. Also, because respirators that offer higher levels of protection hamper tactical operations, a negative pressure respirator is suggested if working in the warm zone or cold zone.⁵

Hazard Zones are defined in the 2000 Emergency Response Guidebook by the U.S. Department of Transportation as;

- **Hot Zone:** Area immediately surrounding a dangerous goods incident that extends far enough to prevent adverse effects from releases dangerous goods to personnel outside the zone. This zone is also referred to as exclusion zone, red zone, or restricted zone in other documents.
- **Warm Zone:** Area between hot and cold zones where personnel and equipment decontamination and hot zone support takes place. It includes control points for the access corridor and thus assists in reducing the spread of contamination. Also referred to as the contamination reduction corridor (CRC), contamination reduction zone (CRZ), yellow zone, or limited access zone in other documents.
- **Cold Zone:** Area where the command post and support functions that are necessary to control the incident are located. This is also referred to as the clean zone, green zone, or support zone in other documents.

⁵ The US Army Soldier and Biological Chemical Command, *Guidelines for Use of Personal Protective Equipment by Law Enforcement Personnel During a Terrorist Chemical Agent Incident*, December 2003.

Subject Matter Expert Survey Findings

A survey (Attachment 1) preceded the focus group. The detailed results of that survey are found in Attachment 4.

The assembled focus group of PPE experts, the majority of whom had more than fifteen (15) years of law enforcement experience came from various locations throughout the United States.

Seventy percent of the respondents reported that selection of their current PPE was determined by their own agency requirements or based on the adoption of other agency's requirements. Some of the other agency requirements sources were:

- FBI Hazardous Devices School
- Individual state requirements
- U.S. Army, Natick Soldier Center
- NFPA Certification
- U.S. Army Soldier and Biological Chemical Command (Aberdeen Proving Grounds)

Twelve of the thirteen respondents indicated their agency PPE currently includes protective garments, gloves and air purifying respirators (APRs). See Figure 1 below:

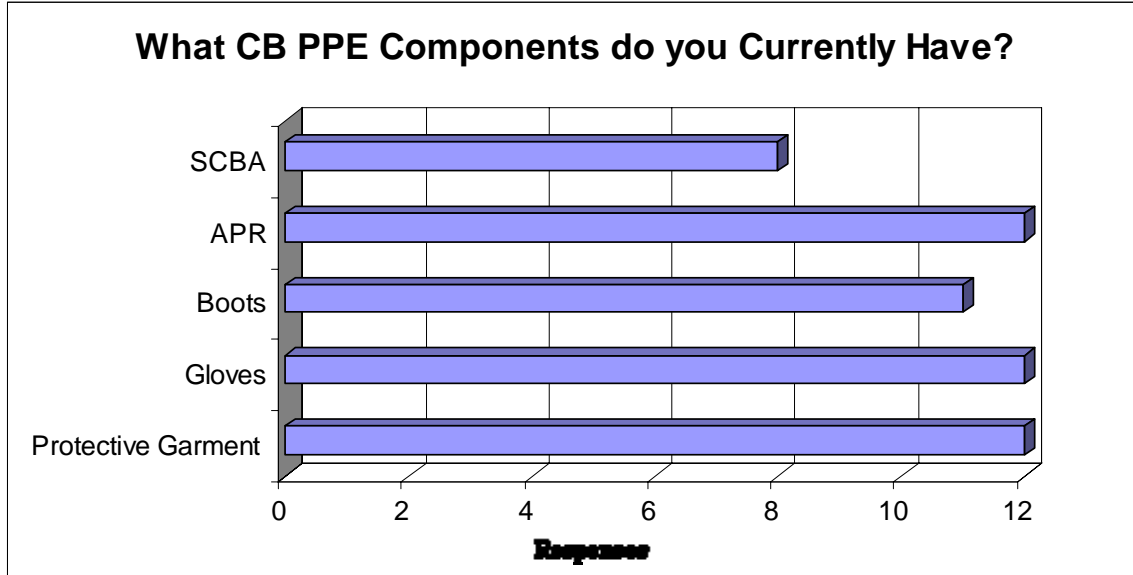
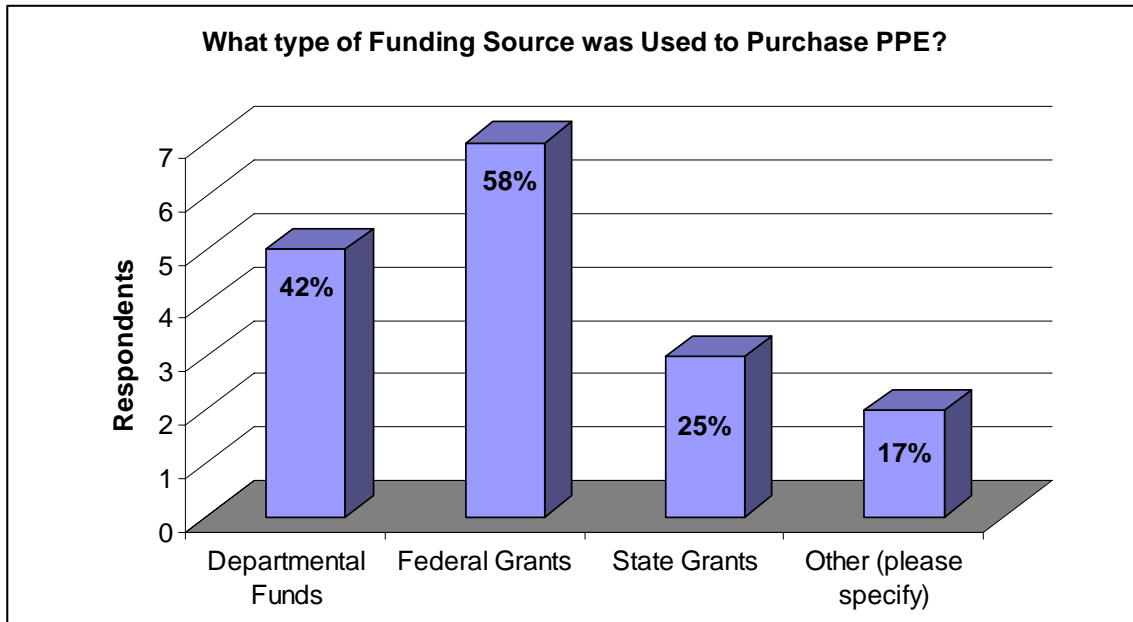


Figure 1: Survey Question 9

A majority of the responses indicated that Federal grants were used to purchase their PPE. See Figure 2 below:



Note: There were 12 survey respondents, and many indicated multiple funding sources; total responses received were 17 (from 12 respondents)

Figure 2: Survey Question 11

The majority of respondents store their PPE either at the station or in the trunk of their cruiser.

When asked, “How often do you use your PPE?” twenty five percent of the respondents replied “less than once a year,” or “never.” See Figure 3 below:

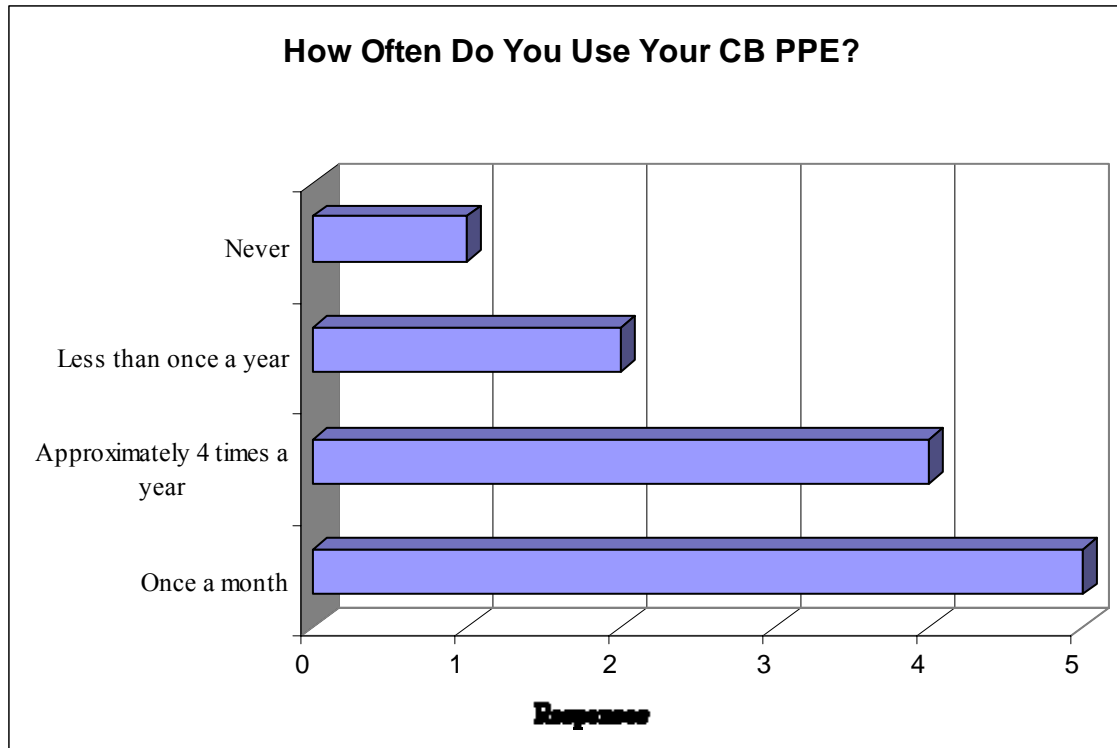


Figure 3, Survey Question 14

PPE training, with one exception, was reported to average 8 days per year.

Nine agencies out of thirteen reported that CB PPE training was mandatory for their agency.

Some of the problems with PPE indicated by the respondents were:

- Requirement to maintain multiple face pieces
- Designed for fire responders and not police responders
- Expiration dates approaching (no replacement strategy in place)
- Ensembles make too much noise, gloves get caught and face pieces of APR or SCBA makes weapon sighting difficult

Standard Operating Procedures (SOP) for CBRN incidents were in place in seventy five percent of the responding agencies.

Focus Group participants rated the importance of activities while wearing CB PPE as follows:

	VERY IMPORTANT	MODERATELY IMPORTANT	NEITHER IMPORTANT NOR UNIMPORTANT	MODERATELY UNIMPORTANT	VERY UNIMPORTANT	N/A
Hand Dexterity	11	1	0	0	0	0
Presenting a weapon	10	0	0	1	0	1
Walking	10	2	0	0	0	0
Vision (up down forward peripheral)	10	2	0	0	0	0
Firing a weapon	9	1	0	1	0	1
Carrying equipment	9	3	0	0	0	0
Reach-range motion	9	3	0	0	0	0
Handcuffing someone	7	2	1	0	1	1
Quick movements within a confined space	6	4	1	1	0	0
Running	6	4	2	0	0	0
Physiological needs (fluid intake bathroom etc)	6	4	2	0	0	0
Dropping to the prone position	5	3	1	3	0	0
Climbing	4	7	1	0	0	0

What is the minimum number of hours that your CB system needs to provide protection?

Nearly half of the respondents selected 1-6 hours (See Figure 4 below). “Other” responses included:

- “Depends on activity, hazard and location”
- “As necessary to complete mission - rotation of personnel to complete same”

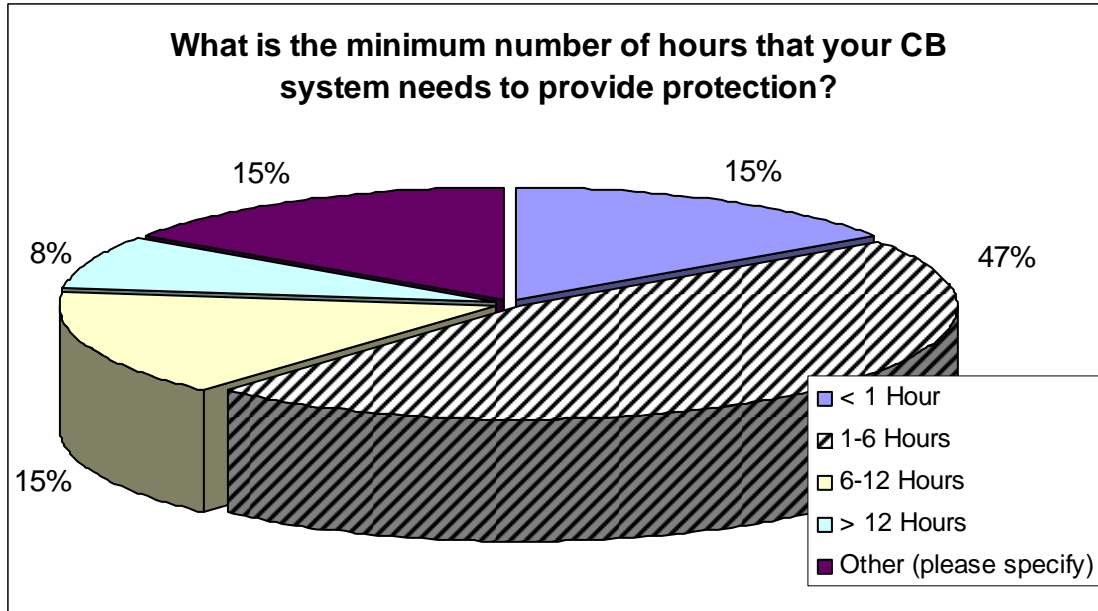


Figure 4, Survey Question 35

When asked if they had any durability problems, the respondents indicated that tearing, abrasion and seam separation were problems (See Figure 5 below). “Other” problems detailed by respondents included:

- “Zipper issues”
- “Tearing and/or wearing can occur - PPE needs to be checked monthly or semi annually. Also, storing it in the trunk of a cruiser can accelerate decomposition of the materials.”
- “Constant inspection process”
- “Dry Rot”

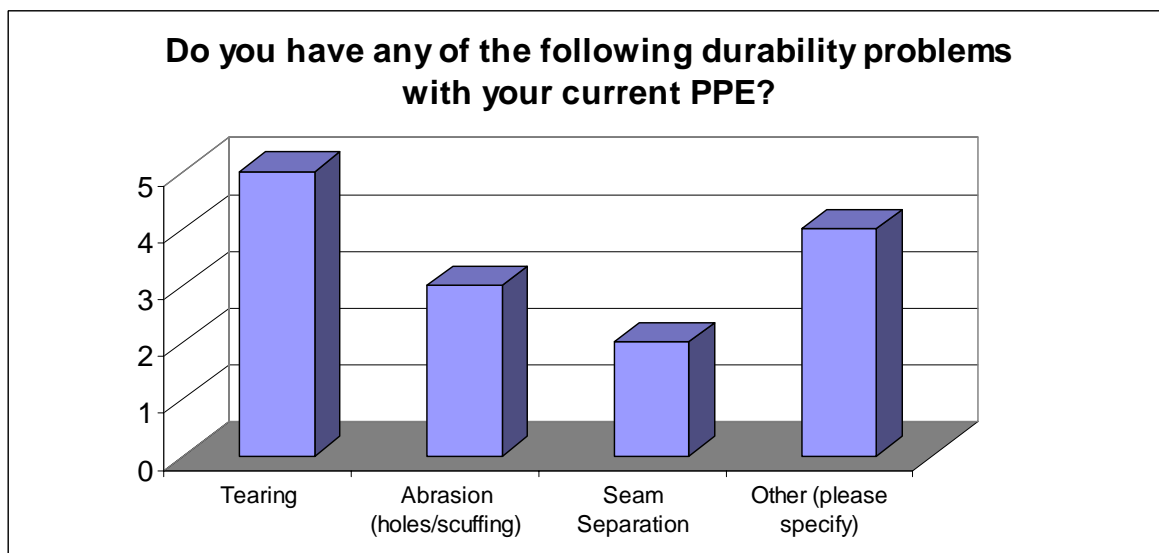


Figure 5, Survey Question 36

Focus Group Findings

Functional Areas

The focus group identified four specific functional areas of where PPE for law enforcement officers warranted additional discussion and possibly further research. The functional and the identified missions within each function area include:

- Patrol Officer / First Responder / First Reporter – First law enforcement on the scene.
 - o Safety of the Officer
 - o Identification of Danger
 - o Apprehension of suspect(s)
 - o Identification and Response to Hazard
 - o Protection of Scene
 - o Evacuation
 - o Extraction
 - o Obtain Assistance
- Scene Control
 - o Perimeter Control
 - o Incident Command
- Crime Scene Investigation
 - o Evidence Collection
 - o Follow-up Investigation
- Special Operations / SWAT
 - o SWAT
 - o Hazmat
 - o Special Events

Law Enforcement PPE Requirements:

Throughout our focus group respondent discussions, interactions and evaluation of contributor comments, certain requirements emerged as very important. Among them were the following:

- Management Support
- Training
- Respiratory Protection
- Protective Garments
- Gloves
- Interoperability

Management Support: Focus group attendees agreed that law enforcement managers must embrace the changing mission of policing that now includes homeland security. It is up to administrators to support changes in their agencies as new PPE is introduced. Law enforcement managers and supervisors need to lead by example and insure that a

qualified program and trainers are in place and standards are followed to protect the safety of officers using PPE.

Training: It was decided by focus group participants that additional training in all of the functional areas was the greatest need for law enforcement officers with regards to PPE. The additional training was particularly emphasized for Patrol Officers / First Responders / First Reporters particularly at the awareness level. The consensus was to develop awareness and specialty training, including knowledge on the limitations of their PPE.

- Awareness Training: should begin at the police academy and be refreshed on a continuous basis.
- Specialized Training: additional training should be required for specialized units such as SWAT, detectives and crime scene technicians.

Respiratory Protection: A respirator is a protective device that covers the nose and mouth or the entire face or head to guard the wearer against hazardous atmospheres. Respiratory protection is needed for all officers and they need to develop the understanding that in PPE environments, their respirator may be more important than their service weapon. Respiratory requirements identified by the focus group were:

- 60 minute cylinder should be minimum in SCBA
- Cylinder should be puncture proof (bullet-resistant)
- Reduced visibility and sound (subdued colors and other than audible alarms)
- Capable of fitting over ballistic vest
- SCBA waist belt needs to integrate with or replace duty belt
- Must not interfere with the vision of the wearer.
- Wearer must be capable of sighting and firing a weapon (shoulder weapon or handgun)
- Must be capable of voice communications
 - o Communicating with a radio
 - o Communicating without a radio
 - o Alerting, making announcements to the public
- Must be capable of interfacing with tactical head gear (or headgear must be designed to integrate with respiratory protection.

Protective Garments: The patrol officer, detective, crime scene investigator, and the SWAT officer all need protective garments capable of protecting them from CBRN events. The designated protective garments (Level or Classification) must consider the following law enforcement requirements. Protective garment requirements identified by the focus group were:

- Ability to operate under stealth conditions (SWAT)
 - o Subdued color to reduce visibility of wearer
 - o Constructed of material that reduces noise

- Wearer must be capable of sighting and firing a weapon (shoulder weapon or handgun)
- Officer must be able to walk, run and climb
- Durable, particularly in the area of the knees and elbows
- Lightweight as possible
- Easily donned and doffed
- Capable of withstanding temperatures ranging from -10 to +150 degrees Fahrenheit (wide dynamic temperature range is consistent with storage temperatures in a patrol vehicle)
- Footwear that allows for running and change of motion with reduced noise
- Six Hour Wear Cycle: The general consensus of the focus group was that an ensemble be capable of protecting a law enforcement officer for six hours. This consensus was based on each individual's experience and expectation of the length of time a particular officer, or his team, would be in the hot zone. Six hours was considered to be the maximum protection time required of a garment; anything more was considered unnecessary.
- Lifecycle of Protective Garment: The minimum amount of time an ensemble should be able to be stored (shelf life) without affecting its protection capability is 5 years.

Gloves: Need a similar level of CBRN protection, but should offer more dexterity for fine motor skills. Glove requirements identified by the focus group were:

- Firing a weapon
- Tactile sensitivity (writing)
- Collection of evidence
 - Record keeping, writing, within a contaminated environment
 - Unscrewing vials
 - Swabbing
 - Labeling

Interoperability: Interoperability of PPE is essential for mutual response across disciplines/jurisdictions. At a minimum, the capability level of PPE needs to be the same. Most of law enforcement officers have been in multi-agency/discipline events; they have to feel comfortable that all equipment is interchangeable with their counterparts.

Conclusions

Law enforcement has unique needs for PPE that have been unmet to date. Although there are commonalities among first responder disciplines in dealing with PPE threats and challenges, there is a uniqueness that exists for the law enforcement community when dealing with specific mission-related tasks, such as patrol operations, crime scene investigations and SWAT operations. The current state of knowledge does not recognize the particularities of law enforcement tasks and functions, and the present PPE standards do not address specific law enforcement needs. “While firefighters are better equipped and prepared to operate in hazardous environments due to their protective clothing and self-contained breathing apparatus (SCBA), there are clearly defined situations that require law enforcement presence on the perimeter of the Warm Zone. Firefighters cannot be expected to handle crowd control, detention of suspects, security of downed officers’ equipment, etc. just because they are equipped with PPE.”⁶

A major knowledge gap currently exists in the training of law enforcement personnel in the use of PPE in a CBRN environment. The operational effectiveness of PPE is compromised if it is not coupled with necessary training. “Protection is achieved only by providing serviceable and well maintained equipment to officers who are trained in its proper use.”⁷ The greatest need for standardized PPE training is at the patrol officer level. The first officer(s) on-scene need to be capable of accurately assessing the PPE threat environment and providing a situation report while at the same time protecting themselves. Law enforcement officers need to be trained on the limitations of their PPE and recognize when to retreat from a CBRN event determined to be beyond their capabilities. The importance of training was mentioned in nearly all of the reports we’ve identified. A 2004 RAND study measuring the terrorism preparedness of local and state law enforcement identified basic awareness and understanding of different levels of PPE and how they related to the missions of law enforcement in a hazardous environment as a top training priority.⁸

Law enforcement must establish its own identity within the first responder PPE environment. There must be universal PPE standards where appropriate, but at the same time, PPE standards must address specific differences in task requirements between law enforcement and other responder disciplines.

ATTACHMENT 1 – SURVEY INSTRUMENT

⁶ Davis, Lois M.; Riley, K. Jack; Ridgeway, Greg; Pace, Jennifer; Cotton, Sarah K.; Steinberg, Paul. S.; Damphousse, Kelly; Smith, Brent L. *When Terrorism Hits Home: How Prepared Are State and Local Law Enforcement?* Santa Monica, Calif.: RAND Corporation, MG-104, May 2006

⁷ The US Army Soldier and Biological Chemical Command, *Guidelines for Use of Personal Protective Equipment by Law Enforcement Personnel During a Terrorist Chemical Agent Incident*, December 2003.

⁸ Davis, Lois M.; Riley, K. Jack; Ridgeway, Greg; Pace, Jennifer; Cotton, Sarah K.; Steinberg, Paul. S.; Damphousse, Kelly; Smith, Brent L. *When Terrorism Hits Home: How Prepared Are State and Local Law Enforcement?* Santa Monica, Calif.: RAND Corporation, MG-104, May 2006.



CTC, Inc.
Public Safety Technology Center

PPE FOR LAW ENFORCEMENT SURVEY

Please take your time and fill out as much of the survey as you possibly can. Some question may address issues that are out of your specialty area. Please only provide information that you are sure is accurate: otherwise please leave the answers blank. We greatly appreciate your help in ensuring that your voices are heard.

If you have any questions, please call Tom Creighton at (508) 870-0042

Your input is very valuable and appreciated. Please take your time in completing this survey. Please answer each question carefully by filling in, circling or answering each question.

Section I: Demographics

1. Gender: Male Female
2. What is your current position? _____
3. Which type of an agency?
 - State
 - Local
 - Federal
4. Where is your agency located? _____
5. What is your age? _____
6. How Many Years of Law Enforcement Experience do you have?
 - < 1 Year
 - 1-5 Years
 - 6-10 Years
 - 11-15 Years
 - > 15 Years

Section II: Currently Utilized Equipment.

7. What types of Chemical/Biological PPE do you currently have (fill in all that apply)?

- Army Battle Dress Overgarment (BDO)
- Class 2 Protective Garment
- Class 3 Protective Garment
- Other, please be specific: _____
- Do not currently have a protective suit
- I do not know

8. How was your current PPE chosen (fill in all that apply)?

- Based on your own agency requirements
- Based on the adoption of other agency's requirements (please specify)
- _____
- Based on vendor information
- Other _____

9. What CB PPE components do you currently have and what is the model identification of that item? (fill in all that apply and write in what model, if known)

- | | Model |
|--|-------|
| <input type="checkbox"/> Protective Garment | _____ |
| <input type="checkbox"/> Gloves | _____ |
| <input type="checkbox"/> Boots | _____ |
| <input type="checkbox"/> Air Purifying Respirator (APR) | _____ |
| <input type="checkbox"/> Self Contained Breathing Apparatus (SCBA) | _____ |
| <input type="checkbox"/> Other _____ | _____ |

10. What type of funding source was used to purchase the PPE?

- Departmental Funds
- Federal Grants
- State Grants
- Other _____

11. What was the approximate cost of each component?

- | | Cost in dollars |
|------------------------|-----------------|
| Protective Garment | _____ |
| Gloves | _____ |
| Boots | _____ |
| APR | _____ |
| SCBA | _____ |
| Other Components _____ | _____ |

12. How is your PPE currently stored?

- At the station
- In the trunk of your cruiser
- At your home

- On a HAZMAT vehicle
- Other _____

13. How often do you use your CB PPE?

- Once a month
- Approximately 4 times a year
- Less than once a year
- Never

14. What do you feel your PPE provides you protection against? (fill in all that apply)

- Chemical Warfare Agents
- Toxic Industrial Chemicals/Materials (TICs/TIMs)
- Aerosol Threats
- Liquid Threats
- Vapor Threats
- Other _____

15. What type of system is used during training (fill in all that apply)?

- Your personal CB PPE system (same system that you would use to respond to an incident)
- A Training System (a separate system of the same components meant only for training)
- Representative System (not utilizing the same exact components, surrogates)
- Other _____

16. How many days a year do you train specifically with CB PPE? _____

17. Is CB training mandatory for your agency? Yes No

18. What do you like about your current PPE?

19. Do you have any problems with your current PPE? Yes No

If yes, please explain _____

20. Do you think your current PPE allows you to complete necessary missions? Yes No

Please explain _____

21. What additional items do you need to complete your mission? _____

22. Please rate how much you like/dislike the following items using the scale below
(Check boxes below).

	Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Slightly	Neither like Nor Dislike	Like Slightly	Like Moderately	Like Very Much	Like Extremely
APR									
Gloves									
Boots									
Protective Garment									
SCBA									

23. How often do you respond to a potential CBRNE incident?

- Once a month
- Approximately 4 times a year
- Less than once a year
- Never

Section III: Compatibility:

24. What components are worn under your CB ensemble?

- Under shirt/shorts
- Duty uniform
- Duty belt and components
- Weapon and holster
- Body Armor
- Other _____

25. What components are worn over your CB ensemble?

- Duty belt and components
- Weapon and holster
- Body Armor
- Other _____

26. Do you have any compatibility problems? Yes No
(Compatibility problem example: issues with mask interfacing with helmet)

If yes, please explain _____

Section IV: Interoperability:

(Interoperability examples: CBRN canisters interchangeable between masks)

27. Do you have any interoperability issues specifically related to CB PPE within your agency?

Yes No

If yes, please explain _____

28. Do you have any interoperability issues specifically related to CB PPE with other agencies?

Yes No

If yes, please explain _____

Section V: Standard Operating Procedures (SOP)

29. What types of operational scenarios does you law enforcement organization face within a CBRNE incident (Fill in all that apply and write in what PPE is required for each operational scenario):

Mission	PPE
Testing and identification of all likely hazardous substances on-site	
Hostage rescue	
Extricate and rescue victims from within the hot zone	
Coordinate and support decontamination activities.	
Identify hazardous materials and extent/scope of the incident	
Develop a contamination site safety plan	
Establish and implement on-scene management for hazmat response	
Identify and establish perimeter and hazardous materials zones (hot, warm, cold)	
Secure contamination source and affected areas	
Decontamination	

30. What (if any) additional operational scenarios are likely? _____

31. Does your organization have a SOP for response to CBRNE incidents? Yes No

32. If yes, is it possible to obtain a copy? Yes No

Section VI: Ergonomics

33. Using the following scale, please rate how important the activities are when wearing CB PPE.

	Not at all Important	Moderately Unimportant	Somewhat Unimportant	Neither Important Nor Unimportant	Somewhat Important	Moderately Important	Very Important
Walking							
Running							
Climbing							
Firing a weapon							
Presenting a weapon							
Carrying equipment							
Reach-range motion							
Dropping to the prone position							
Quick Movements within a confined space							
Handcuffing someone							
Physiological needs (fluid intake, bathroom, etc)							
Hand Dexterity							
Vision (up, down, forward, peripheral)							

34. Do you have any ergonomic problems with the current PPE? Yes No

If yes, please explain _____

Section VII: Durability

35. What is the minimum number of hours that your CB system needs to provide protection?

- < 1 Hour
- 1-6 Hours
- 6-12 Hours
- > 12 Hours, please explain _____

36. Do you have any of the following durability problems with your current PPE?

- Tearing
- Abrasion (holes/scuffing)
- Seam Separation
- Other _____

37. Please explain where your durability issues occur (knee, seat, elbow) and from what source (Crawling on the ground, climbing, apprehending a suspect etc)

38. What are your biggest snag hazards when wearing PPE?

- Branches/Brush
- Knives
- Vehicle
- Your own equipment. If so which components _____
- Other _____

39. What do you see as your biggest durability hazards? _____

40. Where do the majority of your abrasion issues result from?

- Your own equipment, please be specific _____

External abrasants, please be specific:

ATTACHMENT 2 – DISCUSSION TOPICS



CTC, Inc.
Public Safety Technology Center

To: Focus Group Participants and Observers

From: Tom Creighton

Subject PPE Focus Group for Law Enforcement
General Information and Discussion Areas

Date: June 13, 2006

Time: 8:30 a.m. – 4:00 p.m.
Continental Breakfast will be provided beginning at 7:30 a.m. and lunch will be provided at approximately 12:00 noon.

Location: CTC, Inc. Public Safety Technology Center
134 Flanders Road, Suite 375
Westborough, MA 01581

Goals of Focus Group:

1. Obtain all of the functions and or tasks that must be performed by law enforcement officers while wearing CBRN protective ensembles. This information would include but not be limited to environmental conditions, ergonomic requirements, exposure times, wear cycles etc.
2. Build upon the initial work PSTC has conducted and to further define the personal protective equipment (PPE) needs and requirements for law enforcement officers responding to and functioning in chemical, biological, radiological and nuclear (CBRN) incidents.

Areas of Discussion:

1. Identify the dominating critical incident response mission functions i.e. prevention (detection), protection, response (mitigation), recovery and criminal investigation.

The facilitator will ask the group to generate a list of functions/tasks that need to be performed by law enforcement personnel upon detection of a CB environment and while wearing CBRN protective ensembles. This information will include but not be limited to environmental conditions, ergonomic requirements, protective equipment utilization, exposure times and wear cycles. The participants will be asked to consider the following possibilities:

- a. HAZMAT Incidents
 - b. SWAT
 - c. Evacuation
 - d. Isolation
 - e. Alerting
 - f. Facilitation
2. Identify the appropriate PPE needed by law enforcement officers to fulfill each of the identified functions/tasks. The facilitator will ask the participants:
 - a. what, if any, PPE they currently have;
 - b. how is your present PPE worn (what is worn over and under the system)
 - c. what PPE is currently available for law enforcement officers;
 - d. are there any compatibility issues with the PPE
 - e. how is PPE stored
 - f. does your agency have Standard Operating Procedures (SOP) specifically addressing PPE
 - g. what training systems are in place
 - h. how does your Department choose PPE;
 - i. what specific PPE is needed for each of the identified functions/tasks?
 3. Determine any gaps that exist relative to what is currently available and what is needed as determined by the focus groups.

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www.malettsc.org www.ctc.org

ATTACHMENT 3 – FACILITATOR & PARTICIPANT BIO'S



CTC, Inc. **Public Safety Technology Center**

Requirements Assessment

Personal Protective Equipment (PPE) For Law Enforcement in Chemical, Biological, Radiological, and Nuclear (CBRN) Environments

June 13, 2006

Facilitators

Chief Stephen Doherty (Ret.)

Program Manager
CTC Inc., Public Safety Technology Center
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sdoherty@ctc.org

Chief Doherty has thirty-three years experience as law enforcement professional serving with three separate Boston area police departments. He has multi-agency experience in patrol, investigations, prosecution, policy development, and critical incident management as well as command administrative issues.

He served for twelve years as the Chief of the Wakefield (MA) Police Department. Chief Doherty holds a Bachelors Degree in Law Enforcement and a Masters Degree in Criminal Justice from Northeastern University. He is a graduate of the FBI National Academy and the FBI Law Enforcement Executive Development Association, serving as the national president for FBI - LEEDA in 1999.

Chief Doherty has presented workplace violence case studies and critical incident prevention strategies before the American Society for Industrial Security, the Academy of Criminal Justice Sciences, the Employee Assistance Professionals Association, Babson College, Northeastern University, the International Association of Chiefs of Police, Massachusetts Chiefs of Police Association and Philip Morris Corporation. Chief Doherty consulted on the FBI National Symposium on Workplace Violence in 2002 and contributed to the FBI monograph entitled “*Workplace Violence-Issues in*

Response. Chief Doherty consulted with and presented at the US Center for Disease Control -National Institute for Occupational Safety and Health workplace violence prevention conference in November 2004.

He has written numerous articles on critical incident awareness and workplace violence prevention. He has appeared on “*60 Minutes*”, “*CNN*”, and the NBC “*Today Show*” speaking on workplace violence, sports violence and access to firearms by persons with a history of mental illness.

Chief Doherty is a nationally recognized expert on issues of workplace violence. Chief Doherty’s extensive knowledge of police procedures in tandem with his expertise in the dynamics of relationships and organizational communications make him uniquely suited to establish violence prevention and critical incident mitigation strategies to both law enforcement and the private sector.

In 2005 Chief Doherty joined the staff of the Center for Technology Commercialization in its Public Safety Technology Center as a Program Manager. He currently manages the Massachusetts Law Enforcement Technology & Training Support Center. (MALETTSC) (www.malettsc.org). The Center provides introduction of new technologies to State and local public safety agencies, assistance for the procurement of technology and equipment, acting as an “independent broker” to the law enforcement agencies, collaborating with other Federal agencies to create local test beds for new technology pilots, provide law enforcement needs to DOJ and DHS to implementing the transfer of technologies from the Department of Defense under the section 1401 process and assimilating new crime prevention and problem solving processes from the Departments of Defense and Homeland Security into the community policing.

Chris Gesswein

Center for Technology Commercialization
NASA Northeast Regional Technology Transfer Center
Executive Director - New York
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Chris brings a wealth of abilities to the CTC team. His highly diverse technical acumen and bandwidth gives CTC insight into a variety of important commodity areas of Homeland Security & Domestic Preparedness including, Nuclear Biological Chemical (NBC) stand-off/point detection, decontamination and individual personal protection. As a Chemical/Biological Defense Consultant w/ Booz Allen & Hamilton in the mid 90’s, Chris was involved with numerous tasks related to Chemical Biological Defense including:

- NBC Preparedness Annual Report to Congress 1996-1998;
- CBDCOM/SBCCOM – Strategic Planning & Annual Report 1996-1997 (Winner of DoD best in class Annual Report, Received Commander’s Medal for

CBDCOM/Natick Strategic Planning Offsite meeting during the command merger in 1997);

- NBC Joint Services Logistics Support Plan 1996-1998;
- Program Manager Joint Services Sensitive Equipment Decontamination;
- Lead Consultant involved with execution of the initial 125 city first responder training activities mandated by Nunn-Lugar legislation;
- Program Manager Domestic Preparedness Lessons Learned.

Leveraging his past experiences in academic technology transfer and business development, Chris is heavily involved with projects related to technology transfer & commercialization for the first responder community.

Focus Group Participants

Lieutenant Eddie Allen

Emergence Management Coordinator
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Lieutenant Ed Allen is a 19 year veteran of the Seminole County Sheriff's Office (FL), currently assigned as the agency's Emergency Management Coordinator. In addition, he is the agency's PPE Program Coordinator and SWAT Tactical Operations Commander. He is a Lead Instructor for the National Tactical Officers Association, where he developed and taught the *Tactical Operations in a Hazardous Environment Course*. He is an OSHA Authorized PPE and Safety Trainer, a DHS Authorized WMD Awareness Trainer and an SCBA Maintenance Technician.

Lt. Allen currently sits on the Inter Agency Board (IAB) Training Subgroup, the NFPA Technical Committee on Hazardous Material Response Personnel (472 Standard) and the newly formed ASTM Committee on Law Enforcement Responder PPE.

Charles D. Barranco

Homeland Security Coordinator (CID)
Aiken County Sheriff's Office
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cbarranco@aikencountysc.gov

Mr. Charles D. Barranco is the Homeland Security Coordinator for the Aiken County Sheriff's Office. His responsibilities include compliance with federal guidelines,

designing plans, grant writing and procurement, sex offender registry, public information officer, bloodhound tracking team, gangs and information sharing efforts. Prior to his current assignment, he was a Sergeant in the Special Operations Division with the Aiken Department of Public Safety, which included bloodhound tracking team, narcotic detection K-9's, traffic, fugitive apprehension, VIP security and animal control.

His educational background includes a B.A. in Sociology from the University of South Carolina and he is also a Distinguished Graduate of the South Carolina Criminal Justice Academy.

Mr. Barranco was one of the responders to a January, 2005 train wreck in which a north bound Norfolk Southern freight train collided with a standing train that was unloading coal in Graniteville, SC. There were three 90 ton chlorine cars that derailed, one which experienced a release resulting in nine fatalities. The State Law Enforcement Division (SLED) in South Carolina had issued each law enforcement officer in the state a PPE (personnel protective equipment) kit just three months prior to the incident. The kit consisted of a Tyvek suit, Chem tape, over boots; two sets of gloves and a gas mask (APR). During initial air sampling in the area of the derailment, chlorine levels were "off the charts" and the decision was made to use SCBAs. Sergeant Barranco, working for the Aiken Department of Public Safety at the time, was involved in the rescue of a family less than 75 yards from the derailment. The rescue was one of many which occurred that morning in the event that lasted 14 days.

Lieutenant Commander Paul J. Brochu

United States Navy
Technical Cell Director
Chemical Biological Incident Response Force
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Lieutenant Commander Brochu is a U.S. Navy Medical Service Corps Industrial Hygiene Officer, with a special interest in chemical, biological, and radiological incident assessment and response. He is currently serving as the Director of the Technical Cell at the U.S. Marine Corps Chemical Biological Incident Response Force home ported in Indian Head, Maryland. LCDR Brochu is an American Board of Industrial Hygiene Certified Industrial Hygienist (CIH).

He received a B.A. in biology from Middlebury College. After completing Naval Officer Candidate School, he was commissioned as a Surface Warfare Officer. He served as Auxiliaries Officer and Combat Information Center Officer and completed a deployment to the Persian Gulf during the Iran Iraq War. In 2000, he completed an M.S in Environmental Health, with a concentration in industrial hygiene, at the Harvard University School of Public Health.

LCDR Brochu's first assignment as an Industrial Hygiene Officer was to Naval Hospital Oakland. He later served as Safety Officer aboard USS FRANK CABLE. LCDR Brochu reported to the Navy Environmental and Preventive Medicine Unit 6, Pearl Harbor as the leader of the Pacific Forward Deployable Preventive Medicine Unit, a twelve-person team that provided preventive medicine services and environmental baseline assessment, including chemical, biological and radiological response and monitoring to units throughout the Pacific. LCDR Brochu also served in a fellowship with the US Environmental Protection Agency (EPA) Environmental Response Team in Edison, NJ, where he supported several interagency working groups on health and safety issues and participated in numerous consequence management training courses. He also assisted the EPA as a member of the Scientific Planning and Support Group on site during the Ricin attack on the Dirksen Senate Office Buildings in February 2004.

Jay DeBold

Regional STAR/TRT Commander
Ohio Department of Rehabilitation and Correction
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Mr. DeBold is employed by the Ohio Department of Rehabilitation and Correction and currently serves as the Regional STAR/TRT Commander. He has 19 years experience with special response teams including Regional Commander, Regional Assist Squad Leader, Institutional SRT Leader, SRT Member, USAF EST team and an ICS Instructor for 11 yrs. He has also been a guest speaker for ACA, NIC, NIJ, NABJA seminars.

His relevant training includes: SRT Instructor Trainer, SRT Instructor and Course Coordinator; ICS-200, 300, 400 Section Chief; Exercise Design & Development; PPE TWG NIJ-Washington D.C; and WMD Tactical Commander.

Mr. DeBold is a certified instructor in Firearms, Unarmed Self Defense, Communications, SRT (instructor trainer), Use of Force, ICS, and WMD Tactical Commanders Course. He also has 107 Credits towards a B.A.

Sergeant Michael Domnarski

Stop Team Commander (Special Operations)
Massachusetts State Police
Westover Air Force Base
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Sergeant Domnarski is a 21-year veteran of the Massachusetts State Police. Since his academy graduation in 1985, he has worked in various patrol assignments in rural Western Massachusetts. In addition, he has patrolled in urban high crime areas as a pioneer member of the Springfield Zero Tolerance Unit, as well as a supervisor of the Holyoke Community Action Team. He has also served assignment as a troop patrol supervisor.

Sgt. Domnarski has enjoyed service as an academy instructor; he has completed 4 tours of recruit training duty as a drill instructor and two as the "Senior Drill." He has also served as the departments first Range Master. Since 1990, Sergeant Domnarski has served collateral duty with the department's tactical unit, the Special Tactical Operations Team (STOP). He is currently assigned as the STOP Team Commander.

Sgt. Domnarski is a 23-year veteran of the U.S. Army and Army National Guard and is currently assigned to a Military Police Company. He holds a Bachelors Degree in Criminal Justice.

Stephen Foley, Director

Special Operations - Hazardous Material Response Team

U.S. Capitol Police

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Stephen Foley currently serves as the Director of the United States Capitol Police Special Operations - Hazardous Material Response Team in Washington, D.C. He served as the Incident Commander during the Ricin Incident at the Dirksen Senate Office Building in February, 2004. Prior to his appointment at the U.S. Capitol, he worked as a Senior Fire Service Specialist at the National Fire Protection Association in Quincy, MA.

His educational background includes a B.S. in Fire Science Administration; a Masters in Business Management; Graduate, Executive Fire Officer Program at the National Emergency Training Center, Emmitsburg, MD; the Executive Program for Local and State Government Officials at John F. Kennedy School of Government, Harvard University; and the Chief Fire Officer Program at Suffolk University. This past June, he graduated from the John F. Kennedy School of Government, Harvard University program on National Preparedness Leadership Initiative.

Director Foley serves as a faculty member and curriculum developer at the National Emergency Training Center and a guest lecturer for the Brigade Command Course at the British Fire Service College Moreton-on-Marsh, UK.

George “Joe” Grass
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Mr. Grass is a U.S. Department of Energy Certified Instructor for Wackenhut Services, Inc. He is also a WMD Instructor and Program Officer for the Savannah River Site Tactical Response Force. His current duties include developing curriculum, researching WMD PPE detection and decontamination equipment; and advising senior management on procurement. Mr. Grass was instrumental in the development of procedures and written information for emergency response plans dealing with the detection, operational security actions and decontamination activities in a WMD environment. He also coordinates small and large-scale training events for other site assets such as the decontamination operations for the Fire Department.

Mr. Grass’ related experience includes being the United States Marine Corps, Staff Non Commissioned Officer assigned to the Chemical Biological Incident Response Force (CBIRF). He participated in numerous Presidential and Foreign Heads of State events where protection from WMD threat was a critical priority. Joe was instrumental in the development, supervision and execution of comprehensive plans to protect the President of the United States, cabinet members and visiting dignitaries. He is a retired Gunnery Sergeant in the USMC where he served as the Nuclear, Biological and Chemical (NBC) NCO and Commander of a FOX NBC Reconnaissance Vehicle with a mission of moving forward of lead U.S. Forces into Iraq during operations Desert Shield and Desert Storm. Joe has also testified before the U.S. Congress concerning his service in the 1991 Gulf War Theater of Operations.

Mr. Grass has dedicated over 25 years to military and civilian service to the protection of personnel from a WMD threat. Recently, Joe assisted in the response to a major train accident in Graniteville, SC resulting in a spill of Chlorine gas across a large area. Joe assisted responding agencies in checking PPE and ensuring PPE was properly sealed prior to entering the hot zone.

Lieutenant Thomas Nolan
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Tom Nolan has been a Police Officer with the Upper Merion Township Police Department since 1985 and currently holds the rank of Lieutenant. During his career he

has worked in and supervised all divisions (Patrol, Investigations & Auxiliary Services) within the police department. While commanding the Auxiliary Services Division, Tom implemented many new technology driven changes within the department. These changes included a new records management system, laptops in patrol vehicles, wireless 802.11 LAN with internet and in-house network connectivity and in-car cameras with remote viewing capabilities. Tom authored an article for 911 Magazine on “Police Technology” and spoke on the topic at the 2003 Cisco Systems National Sales Conference. He is also a member of the ASTM E-54 Homeland Security Standards Group and is the Task Group Leader for the formulation of standards for PPE for Law Enforcement.

Tom has more than 17 years of tactical team experience and is currently the Team Leader for the Central Montgomery County SWAT Team. He holds instructor certifications in all aspects of SWAT operations. He is also certified as a first responder to WMD incidents through DHS. Tom is currently the Section Chairperson for Multi-Jurisdictional SWAT for the National Tactical Officers Association (NTOA). He has authored three articles on SWAT related topics and developed “How to Form a Multi-Jurisdictional SWAT Team” training for the NTOA.

Lt. Nolan received a B.S. Degree in Criminal Justice from Albright College and is currently working toward a Master’s Degree in Public Safety Management from St. Joseph’s University.

Sergeant Paul Petrino, Commander

Crime Scene Entry Team
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Sergeant Paul Petrino is a 20-year member of the Massachusetts State Police, having served in the Division of Field Services and the State Police Detective Unit in Plymouth County. He is currently assigned to the Division of Investigative Services at the Crime Laboratory.

Within the Crime Laboratory System, Sergeant Petrino serves the Forensic Support Commander as the coordinator for the Crime Scene Services Section, Firearms Identification Section, Computer Forensics Unit, CODIS Unit, Crime Scene Response Unit, and the Supervisor of the Special Crime Scene Response Team (SCSR). The SCSR is a specialized team of both sworn and civilian specialty personnel capable of Level A, B, and C entries into contaminated crime scenes.

Sergeant Nicholas J. Roberts

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Sergeant Nick Roberts is the Director of the Firearms Unit and Range Master for the Salt Lake County Sheriff's Office. He has held this position since September, 1998 and has served as an active law enforcement professional for 28 years. Nick is the Past President of the Utah Chapter, F.B.I National Academy (2006 and 2005) and has served on the United States Attorney General's Board on Body Armor since 2002. In his current position with the Sheriff's Office, he continues to train and certify 700 armed members and directs the training of new Jail M-CERT Team. He also has trained and obtained equipment for the Public Crowd Control Unit for the 2002 Winter Olympics. In addition, Nick has been instrumental in the growth of the Range Training Facility by providing outside agency training and institute training to exceed the required legal standards. He is currently pursuing an A.A. in Criminal Science at Salt Lake Community College, is a graduate of the F.B.I National Academy (Session 192), and the Salt Lake County Supervisor Training Program. Nick has pursued graduate studies at the University Virginia through the F.B.I. National Academy and continuing education courses from the Utah Peace Officer Standards and Training, Provo Technical College / Federal program / Fire Fighter Cadet (1 year), and undergraduate studies in Law Enforcement at Suffolk County Community College, New York.

Sergeant Roberts has cutting-edge expertise in of all areas of training and leadership including the F.B.I National Academy. He has been invited to teach at Federal and State levels and has designed, constructed, and implemented extensive training programs. Sergeant Roberts is a member of F.B.I National Academy Associates, a certified firearms instructor, a certified armorer, and a court certified weapons and training expert. He also designed and built the first environmentally-safe firearms range.

Detective Chris Savard

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Detective Savard has been with the Orlando Police Department (FL) since April, 1994. His duty assignments with the Department have included Patrol Operations Bureau, Deputy Chiefs Aide, Tactical Operations Section and the Airport Division. He is currently assigned to the Homeland Security Section. Detective Savard also served as Advance Team Coordinator for Hurricane Katrina Relief in Biloxi, Mississippi (2005).

His educational background includes a B.A. in History from University of Massachusetts and he is currently pursuing a Masters Degree in Strategic Intelligence - Terrorism at the American Military University.

He presently serves as Chairperson for RDSTF Awareness and Co-Chairperson for RDSTF Critical Infrastructure. He is a qualified instructor for the Federal Aviation Authority, /Greater Orlando Aviation Authority and Orlando Police Department—Level 2 DoD Antiterrorism Instructor (FAA-GOAA-OPD) , Lead Instructor on Vehicle Bomb Searches-FAA-GOAA/OPD-OIA, Antiterrorism (FAA-GOAA/OPD-OIA), Individual Protective Measures (OPD-OIA/FAA-GOAA), Active Shooter Technique (OPD-OIA), Antiterrorism Awareness-Valencia Community College-Corporate Training, Weapons of Mass Destruction (OPD-OIA), MP5 Submachine Gun (OPD-OIA), VIP Protection-

United States Police Instructor Teams, Airport Officer Block Training (OPD-OIA), Adjunct MP5 Instructor Orlando SWAT School/Team and Adjunct Tactical Instructor Orlando SWAT School/Team (Valencia Criminal Justice Academy).

Major Robert Stack

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Major Stack has served with the Lexington-Fayette Division of Police for 19 years. His assignments have included Patrol, Training Academy, Patrol - Fourth Platoon (Housing Authority Patrol Supervisor), and Chief's Staff. His current duties include command of the Planning & Analysis Section where policy and procedures are formulated, crime analysis and collision analysis is conducted, and the agency's web site is maintained. Major Stack serves as Lexington's WMD Coordinator while participating in the Department of Justice Domestic Preparedness Program and Office of Domestic Preparedness Programs. In addition, he is responsible for managing and maintaining the agency's national accreditation through the Commission on Accreditation for Law Enforcement Agencies and state accreditation through the Kentucky Association of Chiefs of Police. Major Stack earned a Bachelors Degree in Police Administration in 1986 from Eastern Kentucky University and his Masters Degree in Criminal Justice Administration in 2001 from Eastern Kentucky University.

