



*KNOWLEDGE ENHANCEMENT EVENTS:
CBR WORKSHOP
AFTER ACTION REPORT*

SOUTH METRO FIRE AUTHORITY

CENTENNIAL, CO

JANUARY 30-31, 2012



**Homeland
Security**



Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE 31 JAN 2012	2. REPORT TYPE Final	3. DATES COVERED 31 Jan 2012 - 29 Feb 2012			
4. TITLE AND SUBTITLE Wide Area Recovery and Resiliency Program (WARRP) CBR Workshop After Action Report		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S) Mower, John		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Cubic Corporation 2280 Historic Decatur Road, Suite 200 San Diego, CA 92106		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Lori Miller Department of Homeland Security Science and Technology Directorate Washington, DC 20538		10. SPONSOR/MONITOR'S ACRONYM(S) DHS			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S) 6.1.0			
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT The WARRP Chemical, Biological, and Radiological (CBR) Workshop marked the first workshop under the WARRP Knowledge Enhancement Working Group, which represents a series of meetings intended to inform WARRP knowledge products on response and recovery planning. The CBR Workshop aimed at capturing stakeholder perspectives on various critical operating considerations for wide area recovery planning. The critical considerations were discussed in the context of pre-defined CBR scenarios that were tailored for the Denver UASI. The overall goal of the event was to collect information for response and recovery knowledge products that are being developed by WARRP, in support of FEMAs Whole Community approach to emergency management and national resiliency. The knowledge products informed by this event include the Denver UASI All Hazards Regional Recovery Framework and the Technical Reports on Key Response and Recovery Planning Factors for CBR Incidents.					
15. SUBJECT TERMS WARRP, Multi-jurisdictional Coordination, Emergency Response					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 23	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

This Page Intentionally Left Blank

Table of Contents

- 1.0 Executive Summary..... 2
- 2.0 Background 2
- 3.0 Goal & Objectives 3
 - Goal 3
 - Objectives 3
- 4.0 Scope & Format 3
 - Scope 3
 - Format 3
- 5.0 Key Discussion & Outcomes..... 4
- 6.0 Conclusion..... 12
- Annex A – Agenda..... 13
- Annex B –Participants..... 15
- Annex D – Key Points of Contact 17
- Annex E – WARRP Scenarios..... 18
- Annex F – Acronyms 21

1.0 Executive Summary

The Wide Area Recovery and Resiliency Program (WARRP) Chemical, Biological, and Radiological (CBR) Workshop was held on January 30th and 31st at South Metro Fire Authority in Centennial, CO. This event marked the first workshop under the WARRP Knowledge Enhancement Working Group, which represents a series of meetings intended to inform WARRP knowledge products on response and recovery planning. The knowledge products informed by this event include the *Draft Denver Urban Area Security Initiative (UASI) and State of Colorado All Hazards Regional Recovery Framework*, and the Technical Reports on Key Response and Recovery Planning Factors for CBR Incidents. .

The *Draft Denver UASI and State of Colorado All Hazards Regional Recovery Framework*, and the CBR annexes are built around a set of 11 Recovery Support Functions (RSFs) defined by the Denver UASI, and is intended to align with the National Disaster Recovery Framework (NDRF). The Technical Reports focus on key planning factors that align with relevant core capabilities defined under the National Preparedness Goal, as well as the NDRF. All CBR-related knowledge products will be provided to the Federal Emergency Management Agency (FEMA) when completed, with the intent of supporting the Whole Community approach for informed and consistent recovery planning and preparedness at all levels of involvement.

The CBR Workshop captured information on critical operating considerations for wide area recovery planning through a scenario-based discussion forum for select local, state, regional, and federal subject matter experts (SMEs). Day 1 focused on the WARRP radiological scenario; Day 2 focused on the biological and chemical scenarios. Local and State participants were targeted as active members of the discussions, with representatives from emergency management, public health, environmental health, law enforcement, public works, transportation, and private sector. Regional and Federal participants acted as “roving SMEs” on roles, responsibilities, and technical expertise, with representatives from the Department of Health and Human Services (HHS), Department of Energy (DOE), Environmental Protection Agency (EPA), FEMA, National Guard Bureau (NGB), United States Department of Agriculture (USDA), United States Army North (ARNORTH), and 8th Civil Support Team (CST).

2.0 Background

The Departments of Defense and Homeland Security, in close coordination with the Denver UASI, have partnered to establish the WARRP. The purpose of this collaborative program is to study, develop and demonstrate frameworks, operational capabilities and interagency coordination, enabling a timely return to functionality and re-establishment of socio-economic order and basic services through execution of recovery and resiliency activities, as applicable. This program will explore a coordinated systems approach to the recovery and resiliency of wide urban areas, including meeting public health requirements and restoring all types of critical infrastructure, key resources (both civilian and military) and high traffic areas (transit/transportation facilities) following a CBR incident.

3.0 Goal & Objectives

Goal

The goal of the CBR Workshop was to generate discussion amongst State / local representatives from emergency management, local government, and private sector communities to inform two efforts aimed at enhancing CBR recovery planning guidance: (1) Denver UASI and State of Colorado All Hazards Recovery Framework with CBR Annexes, and (2) Technical Reports on Key Response and Recovery Planning Factors for CBR Incidents.

Objectives

- Review and complete, to the extent possible, the content of the CBR annexes for the Denver UASI All Hazards Recovery Framework;
- Vet and validate the key technical information for six Denver UASI RSFs for the CBR annexes;
- Identify key questions to support the development of Key Planning Factors documents for a CBR event.

4.0 Scope & Format

Scope

The WARRP CBR Workshop was a two-day event aimed at capturing stakeholder perspectives on various critical operating considerations for wide area recovery planning. The critical considerations were discussed in the context of pre-defined CBR scenarios that were tailored for the Denver UASI. The overall goal of the event was to collect information for response and recovery knowledge products that are being developed by WARRP, in support of FEMA's Whole Community approach to emergency management and national resiliency.

Workshop participants included response and recovery subject matter experts from local, state, regional, and national organizations. The event was supported by the Pacific Northwest National Laboratory, Lawrence Livermore National Laboratory, Sandia National Laboratories, and Cubic Applications, Inc.

Format

This was a two-day workshop, for additional information on format, see [Annex A – Agenda](#). Participants from various organizations attended and are listed in [Annex B – Participants](#). For information on the planning team, or to get more information on this after action report, see [Annex D – Key Points of Contact](#).

This event used the standard WARRP scenarios to base workshop content. For a summary of these scenarios, see [Annex E – Scenarios](#)

Discussions during the CBR Workshops were broken out by the following 6 RSFs:

1. Economic Development
2. Identify, Stabilize, and Maintain Infrastructure and Property
3. Public Health & Medical Services

4. Public Messaging
5. Debris Management
6. Prioritization of Cleanup

Discussions were based on independent chemical, biological, and radiological scenarios, and focused on the various operating assumptions and considerations across the three phases of recovery: short-, intermediate- and long-term. Each local and state participant was assigned to the RSF breakout that best matched his/her area of expertise.

Approximately 8-10 Federal SMEs acted as “roving SMEs” across the breakouts to provide clarification of roles / responsibilities and technical expertise as needed. Participating agencies included: HHS, DOE, EPA, FEMA, NGB, USDA, and 8th CST.

Each breakout session was facilitated by a member of the Denver UASI and State of Colorado All Hazards Regional Recovery Framework Writing Team (FWT), and supported by a member of the Key Planning Factors team. The facilitators led the breakout groups with a discussion guide (aka “cheat sheet”) that contained questions of interest to those responsible for drafting the response and recovery knowledge products.

5.0 Key Discussion & Outcomes

The information below represents key outcomes presented by each RSF breakout group during the “Report Out” sessions.

Table 1 - Key Outcomes from Radiological Scenario Discussion

RSF Breakout Group	Recovery Phase	Key Outcomes
Identify, Stabilize, and Maintain Infrastructure and Property	All	Establishment of public-private partnerships is top priority.
		Community economic development / redevelopment incentives – who offers them and in what form?
		Impact assessment is necessary and should involve hazard identification, assessment, tracking across 18 sectors. e.g., agriculture, commercial, utilities .
		Cleanup standards need to be realistic and achievable. Clear identification and communication of these standards is essential.
Debris Management	Short-term	Policy for clearance decisions should be established prior to incident.
		Clearance regulation – implement Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)?
		Debris Management Sites for waste segregation, characterization, and staging are key.
		Decisions for on-site / off-site staging is important and drives other decisions.
		Inclusion of debris management issues in public messaging is important for informing the public and building trust. Message planning is needed.
		Waste minimization is key issue.
	Intermediate	Merging local authorities into an Incident Command structure may require regulations.
		Consider establishing waste acceptance criteria in advance.
		Clearance levels should be defined in coordination with existing technology. i.e., Technology-based “what is clean?” standards.
		Guidance and/or policies on self-decontamination and demolition are needed. Includes identification of who is responsible for debris management.
		Funding for private cleanup is a major gap. Possibility for insufficient funds in this area.
	Long-term	Liability for waste is a significant problem, and should be considered prior to incident.
		Long-term management and monitoring of contaminated areas is key. But who pays?
		Definition of “new normal” will be necessary.
Agricultural waste will eclipse all urban waste and overwhelm disposal capacities.		
Agricultural embargo may result in a large area. Unknown how to address this issue.		
Public Health and Medical Services	All	Concerns on maintaining the solvency of private medical system. e.g., reimbursement, capacity, reopening.
		Public education and awareness will help reduce the demand for care on medical system, including mental health.
		Do existing surveillance systems cover radiological incidents? Includes behavioral, environmental,

		and mental health surveillance by FDA, USDA, state and local.
Public Messaging	Short-term	Response messaging and recovery messaging are not separate in the short-term. A public information officer (PIO) should be assigned early to incorporate recovery themes into universal messages.
		Existing relationships are good between local PIO agency and jurisdictions, but the process for large scale escalation is unclear. Who is lead PIO?
	Intermediate	Colorado Department of Public Health and Environment (CDPHE) are lead for public health messaging. They would provide key technical content, including technical talking points to leadership and PIOs.
		Establishing and maintaining public trust is critical. Consider using an Editorial Board process with local media and directors or State and local public health agencies to discuss concerns, issues, and help manage mis-information.
		Mental health community engagement is an essential part of the PIO effort. e.g., virtual clinician office hours, coordination with Volunteer Organizations Active in Disasters (VOAD) and faith-based outreach efforts, incorporate Colorado-Help and 211
Long-term	Public messaging will transition from a “public communication” to “community relations” effort. Focuses: restore consumer confidence, retain business, consumer protection.	
		Transition to long-term community relations messaging involves public-private partnership
Prioritization of Cleanup	All	Prioritization groups with technical experts and stakeholders will need to be established within the Recovery Task Force. Key challenge is identifying the appropriate group members.
		Understanding interdependencies and interrelated issues is critical for effective prioritization.
		Cleanup prioritization will be an evolutionary process that needs to start pre-incident. The decision process needs to be transparent to decision-makers and the public, and defensible.
		Identify objectives and decision-making criteria to support prioritization over the entire recovery process.
		Situational awareness, including updated information from business, is key for on-going re-evaluation of priorities. Re-evaluation factors include: damage and contamination status, facility operations status, etc.

Table 2 - Key Outcomes from Biological Scenario Discussion

RSF Breakout Group	Recovery Phase	Key Outcomes
Identify, Stabilize, and Maintain Infrastructure and Property	Short-term	Assessment and prioritization of impacts is a key issue.
		Plans for prioritization and distribution of medical countermeasures should be reviewed and validated.
		Need to consider personal protective equipment (PPE) requirements to enable operations in critical infrastructure before cleanup is complete.
		Pre-identify cleanup contractors.
		Ensure that critical infrastructure Continuity of Operations Plans (COOP) are activated.
		Need to consider issues related to disposal of contaminated debris.
		Consider collaboration between State and insurance companies to incentivize cleanup.
	Intermediate	If critical infrastructure workers live in contaminated zone, ensure shelter for families and schools for children.
		Public information and education will be important to get correct information to the public. e.g., Provide a definition of public risk.
		Qualitative and quantitative testing needs to be done to eliminate the least contaminated areas of concern to support reoccupancy and prioritization
		Public-private partnerships are necessary to drive the economic engine. e.g., Activities in large public areas, including Mile High and Coors Stadiums.
		Need to provide oversight for cleanup contractors to certify re-entry.
	Long-term	Liability is a key issue.
		Real estate issues need to be considered. e.g, Home/building testing and realistic resale values
		Continued health monitoring will be necessary.
		Continued economic stimulation will be necessary. Factors include: Incentives, taxation, bank loans, abandoned buildings.
Debris Management	Short-term	Public messaging, with coordination across jurisdictions will continue to be a key issue.
		General rules and guidance are needed for the following issues: (1) Decontamination vs. disposal of porous materials (2) Use of new technologies on-site to relieve capacity issues (3) Food spoilage/distribution/disposal and household hazardous waste disposal
		Waste disposal capacities will be overwhelmed. Consider alternate sites in advance?
		Transportation of bulk biological contaminated waste will be an issue that may require a waiver from the Department of Transportation.

Debris Management	Intermediate	It is necessary to develop agreements in advance with EPA, landfills, etc. for waste acceptance criterion and storage requirements.
		Waste minimization is key issue.
		Recontamination and reaerosolization will be a problem. Fixatives and other controls may help reduce.
		The creation of spurious / pop-up waste disposal sites will be a problem. Community dumping areas should be established.
		Need to define the maximum and minimum range for waste acceptance criteria, storage requirements, waste cell containment design, and long-term monitoring.
	Long-term	Competition for resources will be a challenge.
		Cost estimates initially relate to clearance goals for disposal and decontamination, but as technologies and costs change, so much the decision analysis for clearance goals.
		Community engagement and strategy for prioritization will be necessary for preparing the Debris Management Plan.
		Decision support tools are needed for debris management.
		Abandoned properties will be a major waste issue.
Public Health and Medical Services	Short-term	Public messaging is key issue. Messaging should be early, consistent, and focus on importance and proper use of prophylaxis.
		Determining the extent of contamination will support identification of affected population, definition of boundaries. Cross-contamination and tracking is likely to be significant in the first days.
		Prioritization and ramping up of resources, especially medical countermeasures, is key.
	Intermediate	Adequate funding for continuing personnel, supplies is significant concern.
		Issues related to decontamination capacity, fatality management need to be considered.
		Modified standards of care may be necessary due to limitations in medical capabilities.
		Patient tracking is important for proper distribution of medical countermeasures. e.g., liability waivers, vaccines, medications.
		How is normal level of care maintained?
	Long-term	Important to ensure public confidence through normal life activities.
		Public Health burnout is a major concern. Possible shortage of personnel due to turnover.
		Public Health should be involved with Environmental Health to determine remediation standards.
	Public Messaging	Short-term
A biological event will drive early coordination between State, local health agencies and hospital PIOs.		
The Health Action Network (HAN) will be used for statewide outreach.		
		The Joint Information Center (JIC) will be run by the State, with CDPHE as lead.

Public Messaging		CDPHE ensures technical accuracy of messaging, initially using local experts, then transitioning to national experts.
		Anthrax factsheets currently exist in local agencies, but need to be updated.
		Additional outreach will occur through homeowners associations, college campus, media.
		Public messaging on prioritization should include Cipro prioritization and distribution, surrounding state coordination, and travel restrictions.
	Intermediate	Primarily public health challenge during intermediate phase.
		JIC will continue to prioritize and develop messaging
	Long-term	Include inputs from behavior health to manage the worried well
The messaging effort will transition from “public communication” to “community relations”		
Establishing clearance goals and priorities will take a significant effort to be transparent and inclusive. PIO retention will become important.		
Prioritization of Cleanup	All	Prioritization groups with technical experts and stakeholders will need to be established within the Recovery Task Force. Key challenge is identifying the appropriate group members.
		Understanding interdependencies and interrelated issues is critical for effective prioritization.
		Cleanup prioritization will be an evolutionary process that needs to start pre-incident. The decision process needs to be transparent to decision-makers and the public, and defensible.
		Identify objectives and decision-making criteria to support prioritization over the entire recovery process.
		Lessons learned from previous incidents need to be taken into account when developing prioritization process and making decisions.

Table 3 -Key Outcomes from Chemical Scenario Discussion

RSF Breakout Group	Recovery Phase	Key Outcomes
Identify, Stabilize, and Maintain Infrastructure and Property	Short-term	Assessment and prioritization of impacts is a key issue.
		Focus on setting goals, with emphasis on transition from response to recovery.
		Huge effect on hospitals and medical facilities immediately following incident.
		Monitoring is key issue.
	Intermediate	Continued monitoring and decontamination will be necessary.
	Public messaging is important. e.g., Information on hazardous vs. contamination	
Long-term	Focus on enabling community resiliency.	
Positive public messaging to encourage reoccupancy by residents and businesses.		
Debris Management	Short-term	More engineering controls will be needed for handling / segregating / treating materials compared to radiological and biological.
		CDPHE regulates all chemical products. Contaminated materials are listed as Hazardous Waste.
		Monitored natural attenuation may be possible (even enhanced with heat).
		Clearance level planning is even more critical for chemical. Debris Management Plan may want to take a decontamination strategy that is iterative or consider encapsulation (fixatives) for large structures like stadiums. These facilities will require monitoring and maintenance.
	Intermediate	Need to pre-identify materials for disposal vs. decontamination.
		Bulk segregation and waste disposition will require greater engineering controls and more staging space.
		Capability gap – need to understand the potential for cross-contamination from tracking.
	Training needs for waste haulers and contractors will need to be considered.	
	Long-term	Waste disposal sites will require construction of new dedicated cells that will likely fall under CERCLA.
Duration of long-term recovery may be shorter than for radiological or biological.		
Public Health and Medical Services	Short-term	Decontamination is key to minimizing injuries, stopping spread of contamination.
	Public messaging should focus on decontamination, symptoms, treatment, public assurance	
	Intermediate	Public messaging should minimize stressful information and images in the media.
	Medical surveillance should include ocular, asthmatic, cancer registry.	
Long-term	Explore possible insurance caps for cost of long-term medical treatment.	
Public Messaging	All	Compared to radiological and biological, messaging will focus on smaller area, smaller population, shorter term, and horrifying visuals.
		Subject matter experts will provide context of messages. Likely a heavier military presence in the JIC.

Prioritization of Cleanup	Short-term	Containment messaging will be more immediate for chemical incident.
		Immediate visual effects will go viral. The psychological effects may greatly pressure prioritization, and expedite legislature and financial movement.
		Prompt mitigation/cleanup actions (e.g., within first 24 hours) may greatly decrease overall recovery time.
		Immediate overwhelming of local medical care (e.g., burn, respiratory care)
	Intermediate	Potential sample analysis backlog may impact characterization and clearance.
		Common facilities and street materials may have greater impact on sampling and decontamination methods, which may impact integrated cleanup priorities.
		Multi-Agency Coordination (MAC) involves more private entities for this footprint, but still single city, single county.
Long-term	Economic priority dominates for this scenario footprint.	

6.0 Conclusion

Overall, the two-day WARRP CBR Workshop resulted in highly productive discussions on recovery support functions relevant to wide recovery following a catastrophic chemical, biological, or radiological incident in the Denver urban area. This information will support the development of various WARRP response and recovery knowledge products, which are aimed at providing technical information on critical operating considerations and planning factors, with recommendations for recovery planning to support FEMA's Whole Community approach to emergency management and national resiliency.

Annex A – Agenda

January 30, 2012

0800 – 0815	Welcome & Introductions
0815 - 0845	<p>Background Review DENVER UASI Framework CBR Annexes CBR Key Planning Factors Documents</p>
0845 – 0930	<p>Radiological Scenario Introduction Cesium 137 Threat: What is it? Acute & Chronic Exposures</p>
0930 – 1030	<p>Breakout Groups for the 6 RSF's – Short Term Recovery Description of the short-term issues and constraints Review of the RSF's</p>
1030– 1130	<p>Breakout Groups for the 6 RSF's – Intermediate Term Recovery Description of the intermediate issues and constraints Review of the RSF's</p>
1130 – 1200	Lunch
1200 – 1245	<p>Breakout Groups for the 6 RSF's – Long Term Recovery Description of the long term issues and constraints Review of the RSF's</p>
1245 – 1330	Report Out
1330 – 1400	Wrap up/Path Forward
1400	Day I Concludes

January 31, 2012

0800 – 0815	Welcome & Introductions
0815 - 0830	<p>Background</p> <p>Review DENVER UASI Framework CBR Annexes CBR Key Planning Factors Documents</p>
0830 – 0900	<p>Biological Scenario Introduction</p> <p>Anthrax Threat: What is it? Acute & Chronic Exposures Review Biological and Radiological similarities and differences</p>
0900 – 0930	<p>Breakout Groups for the 6 RSF's – Short Term Recovery</p> <p>Description of the short-term issues and constraints Review of the RSF's</p>
0930– 1030	<p>Breakout Groups for the 6 RSF's – Intermediate Term Recovery</p> <p>Description of the intermediate issues and constraints Review of the RSF's</p>
1030 – 1100	<p>Breakout Groups for the 6 RSF's – Long Term Recovery</p> <p>Description of the long term issues and constraints Review of the RSF's</p>
1100 – 1145	Report Out
11450 – 1200	Wrap up/Path Forward
1200 – 1230	Lunch
1230 – 1300	<p>Chemical Scenario Introduction</p> <p>Sulfur Mustard Threat: What is it? Acute & Chronic Exposures Review Chemical, Biological and Radiological similarities and differences</p>
1300 – 1345	<p>Breakout Groups for the 6 RSF's – Short Term Recovery</p> <p>Description of the short-term issues and constraints Review of the RSF's</p>
1345 – 1430	<p>Breakout Groups for the 6 RSF's – Intermediate Term Recovery</p> <p>Description of the intermediate issues and constraints Review of the RSF's</p>
1430 – 1500	<p>Breakout Groups for the 6 RSF's – Long Term Recovery</p> <p>Description of the long term issues and constraints Review of the RSF's</p>
1500 – 1545	Report Out
1545 – 1600	Wrap up/Path Forward
1600	Day 2 Concludes

Annex B –Participants

Last Name	First Name	Organization
Argiz	Armando	Buckley Emergency Management
Askenazi	Michelle	Tri-county Health Department
Bakersky	Pete	FEMA Region VIII
Benerman	Bill	Denver Environmental Health
Briese	Garry	Cubic Applications, Inc.
Buddemeier	Brooke	Lawrence Livermore National Laboratory
Campbell	Chris	Lawrence Livermore National Laboratory
Chard	Mike	Boulder Emergency Management
Davis	Julie	Colorado 211
Dipaolo	Elizabeth	Cubic Applications, Inc.
Disraelly	Deena	Institute for Defense Analysis
Erpelding	Dana	Colorado Department of Public Health and Environment
Evans	Leroy	US Army Northern Command
Field	Scott	Denver Office of Emergency Management
Flurkey	Andy	Colorado Department of Transportation
Gordon	Hunter (Major)	8th Civil Support Team/Colorado National Guard
Graham	Richard	EPA Region VIII
Greenwalt	Robert	Lawrence Livermore National Laboratory
Hard	Dave	Colorado Department of Emergency Management
Hardy	Doug	SPAWAR
Hibbard	Wilthea	Lawrence Livermore National Laboratory
Hodges	Lori	Colorado Department of Emergency Management
Jennings	Steve	Walker Engineering Solutions, LLC
Johnson	Melinda	Metropolitan Medical Response System
Kallam	Hans	Colorado Emergency Preparedness Partnership
Knappe	Doug	Colorado Department of Public Health and Environment
LaDue	Lisa	Boulder Mental Health Partners
Lasswell	Gary	Denver Environmental Health
Lesperance	Ann	Pacific Northwest National Laboratory
Linne	Marcel	Denver Public Works
Lynch	Rose	Englewood Emergency Management
Martinez	Steve	Denver Office of Economic Development
Mason	Byron	Department of Health and Human Services
McKean	Deborah	EPA Region VIII
McSherry	Tim	Jefferson County
Merritt	Stephen	EPA Region VIII
Michalek	Michael	Denver Public Works

Last Name	First Name	Organization
Midgley	Mike	Cubic Applications, Inc.
Miller	Lori	US Department of Agriculture
Morreale	Steve	Department of Energy
Mueller	Eric	Buckley Emergency Management
Natterman	Jeannine	Colorado Department of Public Health and Environment
Nettles	Victor	Federal Protective Service (DHS)
Peterson	Phil	CDPHE - Rad Expert
Pinhiero	Ron	Department of Health and Human Services, Region VIII
Russell	Chris	DHS, Science and Technology Directorate
Sandusky	Jessica	Pacific Northwest National Laboratory
Santagata	Fran	Douglas County Emergency Management
Sater	Larry	Colorado Department of Public Health and Environment
Small	Carol	Jefferson County Office of Emergency Management
Smedley	Chuck	Denver Public Health
Stein	Steve	Pacific Northwest National Laboratory
Steinhour	LeeAnn	Cubic Applications, Inc.
Stelter	Cassandra	Arapahoe County Sheriff's Office
Thompson	Kelli	Cubic Applications, Inc.
Tucker	Mark	Sandia National Laboratories
Walker	Ray	Walker Engineering Solutions, LLC
Williams	Patricia	Denver Office of Emergency Management
Wood-Zika	Annmarie	Lawrence Livermore National Laboratory
Wold	Bob	Colorado Department of Emergency Management

Annex D – Key Points of Contact

Lawrence Livermore National Laboratory

Brooke Buddemeier
brooke2@llnl.gov

Chris Campbell
campbell48@llnl.gov

Robert Greenwalt
greenwalt1@llnl.gov

Wilthea Hibbard
hibbard3@llnl.gov

AnnMarie Wood-Zika
woodzika1@llnl.gov

Pacific Northwest National Laboratory

Ann Lesperance
ann.lesperance@pnnl.gov

Jessica Sandusky
jessica.sandusky@pnnl.gov

Steve Stein
steve.stein@pnnl.gov

Sandia National Laboratories

Mark Tucker
mdtucke@sandia.gov

Cubic Applications

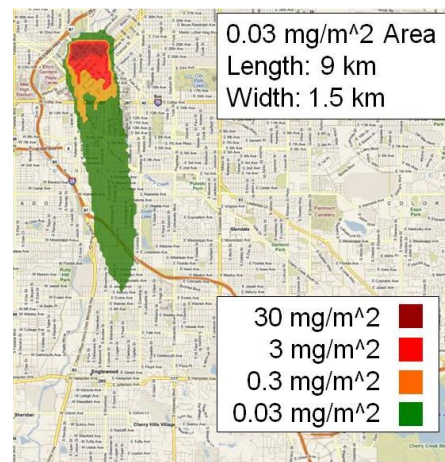
John Mower
John.mower@cubic.com

Annex E – WARRP Scenarios

CHEMICAL SCENARIO

National Planning Scenario #5: Chemical Attack – Blister Agent

- **Blister agent attack on a packed Coors Field (Downtown Denver).** 95 fatalities; over 1,000 hospitalized (max. capacity of field is 55,445)
- **Evacuations/Displaced Persons:** Tens of thousands evacuated and thousands seeking shelter (decontamination required)
- **Significant contamination in affected areas, including the stadium and surrounding area.** Agent has generated a downwind vapor hazard. Approx. contamination = over 5 miles
 - Several high value properties contaminated including Coors Field, Pepsi Center, and Invesco Field Mile High
 - Basic services affected
 - Local businesses affected



Agent Background

Agent YELLOW, which is a mixture of the chemical warfare agents Sulfur Mustard and Lewisite, is a liquid with a garlic-like odor. Sulfur mustard, also known as **mustard gas**, has the ability to form large blisters on exposed skin. Lewisite is a blister agent that contains arsenic, a poisonous element. Skin irritation from sulfur mustard gradually turns into large blisters filled with yellow fluid wherever the agent contacted the skin. Temporary blindness can occur if a victim's eyes are exposed. At very high concentrations, if inhaled, mustard agent causes bleeding and blistering within the respiratory system, damaging mucous membranes and causing pulmonary edema. Severe mustard gas burns (i.e., where more than 50% of the victim's skin has been burned) are often fatal, with death occurring after some days or even weeks have passed. The blister effects of Lewisite occur sooner, and extensive eye exposure can cause permanent blindness.



Scenario

Terrorist agents acquire 175 gallons of Agent YELLOW, equip a small airplane with sprayers and fly the plane at low altitude over **Denver's Coors Field** during a Rockies baseball game. At his closest approach to the stadium, the pilot veers directly towards the target. Ignoring frantic air traffic control calls and an approaching police helicopter, he cuts his speed and drops over the stadium, simultaneously hitting the spray release button. A coarse spray of Agent YELLOW is released. In the stadium, surprise at the appearance of the aircraft turns to panic when the spray is observed coming out of the rear of the plane. **In total, 53,000 people have been either hit by, or breathe vapors of, the Agent YELLOW spray.** Thousands are injured and many are killed in the rush to exit the stadium. People hit in the eyes experience immediate pain, and the first ones out of the stadium are trying to get away as soon and as far as possible. Numerous auto accidents occur in the parking lot and access roads. Some people track contamination into nearby residences, onto public transportation and into hospitals.



BIOLOGICAL SCENARIO

National Planning Scenario #2: Biological Attack – Aerosol Anthrax

- **Two covert anthrax aerosol attacks by an organized worldwide terrorist group.** Tens of thousands of people exposed and thousands of deaths.
- **Evacuations/Displaced Persons:** Tens of thousands evacuated, thousands seek shelter in immediate area (decontamination required)
- **Significant contamination in affected areas, including critical infrastructure, commercial, military & private property.**

Approx. contamination = 2 areas of 10 sq. miles each

- Hundreds of buildings contaminated
- Basic services affected
- Local military installations affected
- Local government operations relocated
- Local businesses affected



Agent Background



Anthrax is a bacterial disease caused by *Bacillus anthracis*. There are three types of this disease: cutaneous anthrax, gastrointestinal anthrax, and inhalation anthrax. Anthrax spores delivered by aerosol spray result in inhalation anthrax, which develops when the bacterial organism is inhaled into the lungs. A progressive infection follows. In most people, a lethal infection is expected to result from inhalation of about 8,000 spores however, a small number of people (particularly the elderly, very young and immunocompromised) may become ill from an exposure as small as 2-4 spores.

Respiratory infection in humans initially presents with cold or flu-like symptoms for several days, followed by severe (and often fatal) respiratory collapse. Historical mortality was 92%, but when treated early (as seen in the 2001 anthrax attacks) observed mortality was 45%. Distinguishing pulmonary anthrax from more common causes of respiratory illness is essential to avoiding delays in diagnosis and thereby improving outcomes. Illness progressing to the fulminant phase has a 97% mortality regardless of treatment.

Scenario

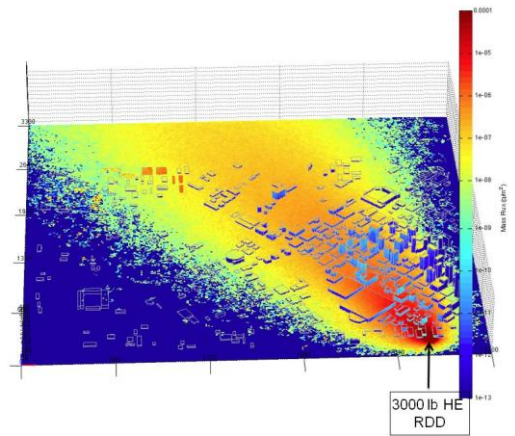
On an autumn Monday morning, a specially fitted truck drives north on I-25. When the truck reaches the Aurora section, the driver's companion turns on a concealed improvised spraying device with a conventional nozzle that rapidly aerosolizes approximately 100 liters of wet-fill *Bacillus anthracis* (anthrax) slurry. The release is sufficient to result in the potential exposure of tens of thousands of persons. Approximately 50 minutes later, a second truck drives along E. Alameda Pkwy. in Aurora, CO releasing a second cloud of anthrax. The wind blows the cloud over Buckley Air Force Base (AFB) contaminating the airstrip and an area extending nearly to the Denver airport.

Two days later, Denver area BioWatch samplers detect the presence of anthrax and it is determined that a bioterrorism event has occurred. The appropriate notifications are made, and patients begin to report to area hospitals.

RADIOLOGICAL SCENARIO

National Planning Scenario #11: Radiological Attack – Radiological Dispersal Devices

- **Two Radiological Dispersal Device (RDD) attacks at the U.S. Mint (downtown) and the Anschutz Medical Campus (Aurora).** Tens of thousands of people exposed and hundreds of deaths.
- **Evacuations/Displaced Persons** 10,000 evacuated to shelters in safe areas (decontamination required prior to entering shelters) 25,000 in each city are given shelter-in-place instructions. Hundreds of thousands self-evacuate from major urban areas in anticipation of future attacks
- **Most radioactive fallout is within tens of miles**, some may be carried up to hundreds of miles.
 - Hundreds of buildings contaminated
 - Basic services affected
 - Local businesses affected
 - Government operations relocated
 - Mass Transit (East-West rail line) affected
 - Local military installations affected



Radioisotope Background

Cesium-137 (^{137}Cs) is a radioactive isotope of cesium. **The half-life of cesium-137 is 30.17 years.** Because of the chemical nature of cesium, it moves easily through the environment. This makes the cleanup of cesium-137 difficult. People may ingest cesium-137 with food and water, or may inhale it as dust. If cesium-137 enters the body, it is distributed fairly uniformly throughout the body's soft tissues, resulting in exposure of those tissues. Exposure to cesium-137 may also be external (that is, exposure to its gamma radiation from outside the body). If exposures to cesium-137 are very high, serious burns, and even death, can result. People may become internally contaminated (inside their bodies) with radioactive materials by accidentally ingesting (eating or drinking) or inhaling (breathing) them, or through direct contact (open wounds). The sooner these materials are removed from the body, the fewer and less severe the health effects of the contamination will be.

Scenario

Terrorist obtain approximately **2,300 curies of ^{137}Cs (CsCl)**, and 1.5 tons of Ammonium nitrate/Fuel oil (ANFO). The explosive and the shielded CsCl sources are packaged into bombs and loaded onto a truck. The total explosive yield in each device is approximately 3,000 pounds. At 11:15 a.m. during the school year, terrorists detonate the **3,000-pound truck bomb** containing the 2,300 curies of ^{137}Cs outside the U.S. Mint in the downtown business district of Denver. The explosion collapses the front of one building and causes severe damage to three others. Windows are blown out of five other buildings. Amid the destruction, ^{137}Cs contamination covers the scene and the contaminated detonation aerosol is lifted more than 100 feet into the air and spread across a wide area.

In Aurora, a second explosion is timed to go off at approximately 12:30 p.m. on the same day outside The Children's Hospital's Emergency Department, the only Level I Pediatric Trauma Center in Colorado, located in the middle of sprawling Anschutz Medical Campus. The time lag is intended to maximize press coverage and spread fear and uncertainty. Local first-response capacity, however, is depleted in cities two and three because many responder assets have been dispatched to assist nearby Denver during the response.

Annex F – Acronyms

ARNORTH	United States Army North
CBR	Chemical, Biological, Radiological
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COOP	Continuity of Operations Plans
CST	Civil Support Team
DOE	Department of Energy
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FWT	Framework Writing Team
HAN	Health Action Network
HHS	Department of Health and Human Services
JIC	Joint Information Center
MAC	Multi-Agency Coordination
NDRF	National Disaster Recovery Framework
NGB	National Guard Bureau
PIO	Public Information Officer
PPE	Personal Protective Equipment
RDD	Radiological Dispersal Device
RSF	Recovery Support Function
SME	Subject Matter Expert
UASI	Urban Area Security Initiative
USDA	US Department of Agriculture
VOAD	Volunteer Organizations Active in Disasters
WARRP	Wide Area Recovery and Resiliency Program