

The United States Air Force Counter-Chemical, Biological, Radiological, and Nuclear Master Plan



FY 2010-2015





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Table of Contents

Chief of Staff of the United States Air Force Foreword	4
Executive Summary	5
Chapter 1: Why C-CBRN Capabilities are Vital to the Air Force Mission	8
Chapter 2: Intent and Application	10
2.1: <i>Vision</i>	10
2.2: <i>Purpose</i>	10
2.3: <i>Application and Scope</i>	10
2.4: <i>Desired End State</i>	12
2.5: <i>Required Capabilities</i>	13
2.6: <i>Authority</i>	15
Chapter 3: Master Plan Principles	17
3.1: <i>Core C-CBRN Program Principles</i>	17
Chapter 4: Approaches to C-CBRN Development	20
4.1: <i>C-CBRN Solutions Development Approach</i>	20
4.2: <i>C-CBRN Advocacy Approach</i>	22
4.3: <i>Operational Standards Development Approach</i>	24
4.4: <i>Education, Training and Exercise Approach</i>	24
Chapter 5: Focus on Identified Gaps in C-CBRN Capability	25
5.1: <i>CBRN Threat Detection and Identification</i>	25
5.2: <i>Identified Gaps in the C-CBRN Pillars</i>	25
5.3: <i>Air Force and Joint C-CBRN Capability Requirement Alignment</i>	26
5.4: <i>Improved CBRN Survivability</i>	26
5.5: <i>Cross-Functional Coordination to Enhance C-CBRN Operational Focus</i>	26
Chapter 6: On the CBRN Horizon: Emerging Threats and Future Technologies	27
6.1: <i>The Biological Horizon</i>	27
6.2: <i>The Chemical Horizon</i>	28
6.3: <i>The Radiological Horizon</i>	28
6.4: <i>Future Technologies</i>	29
Chapter 7: Master Plan and Roadmap Execution	30
7.1: <i>Air Force C-CBRN Council</i>	30
7.2: <i>Policy Working Group</i>	31
7.3: <i>Operational Requirements Technical Study Team</i>	31
7.4: <i>Modernization Working Group</i>	31
7.5: <i>Education, Training, and Exercise Core Working Group</i>	31
7.6: <i>Counter-Radiological Warfare Cross-Functional Working Group</i>	32
7.7: <i>AF/A5XPC Roles and Responsibilities</i>	32
Conclusion	33

Appendices and Annexes

Appendix A: References	34
Appendix B: Glossary	42
<i>Abbreviations and Acronyms</i>	42
<i>Definitions</i>	45
ANNEX 1: FY10-11 C-CBRN Master Plan Roadmaps	48
<i>A1.1: Introduction</i>	48
<i>A1.2: Roadmap Organization</i>	48
<i>A1.3: Roadmap Gap/Solutions Linked with Joint CWMD Military Mission Areas</i>	49
<i>A1.4: Pillar Definitions for the Roadmaps</i>	50
ANNEX 2: C-CBRN Program Background and Overview of Capability Development	52
<i>A2.1: Post Cold War C-CBRN Capability</i>	52
<i>A2.2: A New Threat: The Nexus of Irregular Warfare and CBRN Weapons and Materials</i>	52
<i>A2.3: Key C-CBRN Program Achievements</i>	53



Chief of Staff of the United States Air Force Foreword

Chemical, biological, radiological, and nuclear (CBRN) weapons of mass destruction (WMD) continue to be one of the most serious challenges facing the Air Force. Growing, evolving, and relatively inexpensive, these threats loom as an asymmetric tool that could seriously impact Air Force and Joint operations. The threat is real; the challenge is to effectively counter it by developing full-spectrum, layered Counter-CBRN (C-CBRN) capabilities.

The Air Force has accepted this challenge and must continue developing, fielding, and improving its C-CBRN capabilities. As an integral member of the Joint team, we must also contribute to preventing the proliferation and use of WMD, defending against CBRN threats, and restoring critical missions and essential services following a CBRN attack. The goal of Air Force C-CBRN efforts is to give every Airman the ability to survive, fight, and win in CBRN threat environments. Reaching this goal not only prepare us for contingency operations, it helps us deter these threats before they can be used against our allies or interests.

The *FY2010-2015 United States Air Force C-CBRN Master Plan*, along with the associated roadmaps, will guide, direct, and coordinate the integrated approach required to develop these cross-cutting capabilities. I encourage Airmen across all functional areas to commit to achieving the required capabilities detailed in this plan. In doing so, you will contribute significantly to the Air Force mission – *to fly, fight, and win...in air, space, and cyberspace*.


NORTON A. SCHWARTZ
General, USAF
Chief of Staff



Executive Summary

The Chief of Staff, United States Air Force, approves the execution of the *FY2010-2015 United States Air Force Counter-Chemical, Biological, Radiological, and Nuclear (C-CBRN) Master Plan* (Master Plan). The Master Plan directs and coordinates efforts that establish, maintain, improve, and evaluate Air Force readiness to accomplish the full suite of C-CBRN missions and to operate in a C-CBRN environment.

Chemical, biological, radiological, and nuclear (CBRN) weapons of mass destruction (WMD) remain among the most critical and potentially devastating security challenges facing the United States and its Allies today. The catastrophic impact and relatively low acquisition costs of many CBRN weapons and materials make them attractive asymmetric alternatives to conventional arms for both state and non-state actors alike. Adversary proliferation, acquisition, and use of CBRN weapons and materials constitute a real and growing threat to both Joint and Air Force-specific operations around the world. Whether engaged in major combat operations, irregular warfare, deterrence operations, defense support to civil authorities, operations to provide stabilization security, or cooperative security activities, the Air Force must have the full range of C-CBRN capabilities needed to operate effectively in all CBRN threat environments.



The central vision underlying the Master Plan is for the Air Force to provide Combatant Commanders with the air, space, and cyberspace capabilities needed to counter adversary use of CBRN weapons and materials, and to maintain mission-critical operations in CBRN contaminated environments. To achieve this vision, the Master Plan provides overarching guidance to all Air Force organizations engaged in efforts to develop and improve C-CBRN capabilities. Through the inclusion of executable roadmaps, the Master Plan also directs and coordinates these ongoing efforts. Once developed and implemented, these capabilities will enable the Air Force to maintain mission-critical operations in CBRN threat environments. Ultimately, the Air Force desired end state is to be able to operate in CBRN threat environments as opposed to characterizing C-CBRN missions as a discrete set of operations.

The C-CBRN Roadmaps are the primary engine through which the Air Force develops full-spectrum C-CBRN capabilities. Spanning multiple functional areas, the roadmaps identify gaps in C-CBRN capabilities and provide solution approaches that build capability within each of the Air Force's five C-CBRN doctrinal pillars:

- **Proliferation Prevention:** denying CBRN materials, technology, expertise, and weapons to adversaries.
- **Counterforce:** defeating CBRN weapons and materials before adversaries use them.
- **Active Defense:** disrupting and limiting the effectiveness of an inbound adversary CBRN strike.
- **Passive Defense:** surviving, restoring, and sustaining air and ground combat and combat support operations after a CBRN attack.
- **Consequence Management:** responding to and recovering from the effects of a CBRN incident to include restoring critical military missions and essential operations and services in a permissive environment.

Comparable to the pillar roadmaps, an education, training, and exercise (ETE) section is included to address ETE’s cross-cutting impact on the development of C-CBRN capabilities in the five pillars. Combined, the five pillars and the ETE section establish a framework for developing the full range of C-CBRN capabilities.

The Air Force pillars, and the C-CBRN Roadmaps modeled after them, align with each of the Joint Combating WMD (CWMD) military mission areas as well as the three national-level pillars of nonproliferation, counterproliferation, and consequence management.



Roadmap solution approaches are designed to address Air Force C-CBRN required capabilities and identified capability gaps. The Master Plan establishes required capabilities for each pillar based on Air Force and Joint Combatant Commander requirements detailed in contingency and operational plans. Required capabilities are also taken from Joint CWMD military mission area capabilities-based assessments (CBA) and the Air Force’s C-CBRN Master Plan Capability Assessment (MPCA). In using the roadmaps as a path to achieve required

capabilities, the Air Force will move closer toward the Master Plan’s end state objective.

An essential component in the C-CBRN capability development process is the accurate identification of gaps. The Master Plan highlights critical gaps in C-CBRN capability to better focus roadmap solution approaches that address these challenges. Using Joint CBAs, Air Force subject matter expert input, and MPCA results, the Master Plan addresses a variety of capability gaps within each pillar and in ETE. Some of the critical gaps that span the pillars and ETE section include CBRN threat detection and identification, CBRN survivability, and Air Force C-CBRN and Joint CWMD capability requirement alignment.

The Master Plan also outlines a set of principles that guide Air Force efforts to improve C-CBRN capabilities. The core principles underlying the cross-functional C-CBRN program are that it will:

- focus on capabilities-based improvement;
- include the Total Force;
- integrate offensive and defensive capabilities;
- maintain an operational focus;
- maintain and improve interoperability with Joint and Combined forces;
- combine materiel and non-materiel solutions; and
- integrate execution of operations, programs, and institutional mechanisms.

When followed, these principles provide direction for the cross-functional development of C-CBRN capabilities.

In addition to these principles, the Master Plan highlights broad approaches essential to the Air Force C-CBRN capability development process. First, the Air Force must continue to use the successful solutions development approach built on understanding the science of the threat environment; conducting operational analyses; and developing operational capability improvements. To ensure programs and systems are funded adequately, the Air Force must also refine its approach to C-CBRN advocacy at both the service and Joint levels. Another key approach is the Air Force's continued efforts to develop and validate CBRN-specific operational standards. Finally, the Air Force must further improve its approach to C-CBRN ETE: enabling all Airmen to learn C-CBRN principles, train in functional C-CBRN tactics, techniques, and procedures, and practice integrated operational capabilities through realistic exercises.

The CBRN threat is ever-changing. An overview of emerging threats and future technologies highlights the continuing development of dynamic advances in C-CBRN capabilities designed to counter and offset CBRN threats. To maintain dominance in present and future CBRN threat environments, the Air Force must continue to look toward the chemical, biological, and radiological horizons to accurately anticipate and effectively counter advances in agents, materials, and related delivery systems.

All Air Force organizations, and indeed all Airmen, have a role to play in conducting C-CBRN operations. While some Air Staff and Major Command organizations necessarily play a larger role in the development and implementation of C-CBRN capabilities, the Total Force must gain the ability to operate and conduct critical missions in all CBRN threat environments. The Master Plan establishes the foundational framework and executable direction via the roadmaps to develop the full-spectrum C-CBRN capabilities required to effectively counter and combat the ever-changing, ever-growing CBRN threat.



Chapter 1: Why C-CBRN Capabilities are Vital to the Air Force Mission

Chemical, biological, radiological, and nuclear (CBRN) weapons of mass destruction (WMD) remain among the most critical and potentially devastating security challenges facing the United States (U.S.) and its Allies today. The catastrophic impact and relatively low acquisition costs of many CBRN weapons and materials make them attractive asymmetric alternatives to conventional arms for both state and non-state actors alike. As U.S. forces continue engagement in long-term conflicts around the world, adversaries, including militant terrorist organizations and terrorist-backed insurgency movements, have increased their efforts to obtain CBRN capabilities that undermine and offset U.S. conventional military strength. Additionally, both rogue states and traditional state powers are seeking to acquire CBRN weapons to complement their conventional military capabilities. In confronting these challenges, the U.S. actively seeks to prevent hostile state and non-state actors from acquiring CBRN weapons and materials, and has developed strategies to mitigate the effects of their use at home and abroad.



For the Air Force, the consequences of not effectively addressing these CBRN threats are dire. Adversary use of CBRN weapons and materials has the potential to limit Air Force freedom to operate, launch counterattacks, deploy expeditionary air and space forces, sustain operations, and deny adversary gains. Consequently, the CBRN threat has a fundamental and significant potential impact on the execution of all Air Force missions and support activities.



The nexus of irregular warfare and CBRN weapons and materials, in particular, presents a significant threat to Air Force operations around the world. Defined as a violent, protracted struggle among state and non-state actors for legitimacy and influence over relevant populations, irregular warfare is becoming more prevalent in the face of overwhelming U.S. conventional military superiority. While the Air Force maintains its capability to counter catastrophic challenges emanating from traditional state actors, it must also develop new Counter-CBRN (C-CBRN) capabilities to effectively counter emerging threats

such as CBRN-armed terrorist organizations and insurgency movements that actively engage in irregular warfare activities.

The Air Force solution to these operational challenges is to continue to develop, implement, and deploy multi-layered, comprehensive C-CBRN capabilities. Critical to the implementation of these solutions is the Air Force C-CBRN approach that characterizes CBRN as a threat environment rather than a singular, specialized operation. This approach normalizes Air Force Combating WMD (CWMD) activities and provides direction and organization for numerous capabilities across multiple missions, roles, and functional areas.

Air Force Capabilities Review and Risk Assessment (CRRA) results show that C-CBRN capabilities are critical enablers in each of the Air Force's core competencies.

CBRN threats pose significant challenges to all Air Force operations. Successfully designed and implemented C-CBRN capabilities reduce the likelihood and effectiveness of CBRN attacks and enable the Air Force to sustain operations in CBRN contaminated environments. In turn, these capabilities serve as a deterrent against enemy use of CBRN weapons and agents. Air Force C-CBRN capabilities are as varied as the threats they are designed to counter; not limited to specific functional areas or specialties. When fully implemented, these capabilities will provide the Air Force with the tools needed to survive, operate, and win the fight in any CBRN threat environment.





Chapter 2: Intent and Application

2.1 Vision

The central vision underlying the Master Plan is for the Air Force to provide Combatant Commanders with the air, space, and cyberspace capabilities needed to counter the use of CBRN weapons and to maintain mission-critical operations in CBRN contaminated environments.

2.2 Purpose

The Master Plan provides overarching guidance to all Air Force organizations engaged in efforts to improve C-CBRN capabilities.

Using this overarching guidance, the Master Plan also directs and coordinates Air Force development of improved C-CBRN capabilities. Specific, actionable solutions to identified gaps in Air Force C-CBRN capabilities are provided in C-CBRN roadmaps located in Annex 1 of the Master Plan. These capabilities, once developed and implemented, will enhance the Air Force's ability to prevail in conflicts with adversaries that possess and use CBRN weapons and materials. In addition, the Master Plan directs and coordinates Air Force efforts to establish, maintain, improve, optimize, and evaluate C-CBRN operational readiness in support of homeland defense and military missions abroad.

These [C-CBRN] capabilities, once developed and implemented, will enhance the Air Force's ability to prevail in conflicts with adversaries that possess and use CBRN weapons and materials.

The Master Plan serves as a source document for C-CBRN input into the seven Air Force Concepts of Operations (CONOPS), the CRRA, the Air Force Corporate Structure, and Joint programs. A final, critical function of the Master Plan is to organize Air Force C-CBRN capabilities to contribute effectively to Department of Defense (DoD) layered C-CBRN capability.

2.3 Application and Scope

The Master Plan applies to and directs all Air Force organizations engaged in efforts to improve C-CBRN capabilities. It encompasses all Air Force CBRN-related activities, plans, and programs over the FY10-15 Future Years Defense Program (FYDP) and applies to all Air Force military and civilian personnel. In doing so, the Master Plan supersedes the *United States Air Force Counter-Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (C-CBRNE) Master Plan* of 2004.

The Master Plan does not take precedence over or supersede Joint programs, initiatives, doctrine, or processes. Nor does it take precedence over or supersede any Air Force directives or instructions. However, Air Force contributions to and implementation of C-CBRN related Joint programs, publications, and activities are directed and coordinated in accordance with the Master Plan.

In addition, the Master Plan identifies new CBRN threats and emerging technologies that will likely impact Air Force C-CBRN capabilities in the future. While immediate solutions may not exist to address these threats, the Master Plan coordinates Air Force C-CBRN technology development efforts over the FY10-15 FYDP.

Although Air Force C-CBRN capabilities contribute to overall U.S. deterrence posture, the Master Plan does not address the offensive component of Air Force strategic nuclear deterrence capabilities. The Air Force's offensive nuclear mission falls under the aegis of Global Strike Command. Instead, the Master Plan focuses on the defensive component of Air Force strategic nuclear deterrence, primarily through CBRN survivability activities.

2.3.1 Applying the Five C-CBRN Pillar Framework

Air Force C-CBRN capabilities are applicable to all air, space, and cyberspace operations and are captured in five doctrinal pillars defined in Air Force Doctrine Document (AFDD) 2-1.8, *Counter-Chemical, Biological, Radiological, and Nuclear Operations*. These five pillars are:

- **Proliferation Prevention:** denying CBRN materials, technology, expertise, and weapons to adversaries.
- **Counterforce:** defeating CBRN weapons and materials before adversaries can use them.
- **Active Defense:** disrupting an inbound adversary CBRN strike and limiting a strike's effectiveness.
- **Passive Defense:** surviving, restoring, and sustaining air and ground combat and combat support operations after a CBRN attack.
- **Consequence Management:** responding to and recovering from the effects of a CBRN incident to include restoring critical military missions and essential operations and services in a permissive environment.

When implemented, Air Force C-CBRN capabilities counter the full-spectrum of CBRN challenges across a wide array of threat scenarios including isolated terrorist incidents, low-intensity conflicts, and major theater warfare. Air Force C-CBRN capabilities provide Combatant Commanders with options to effectively counter and combat the use of CBRN weapons and materials, and continue operations in CBRN-contaminated environments. Figure 1 depicts the Air Force's full-spectrum C-CBRN capability.

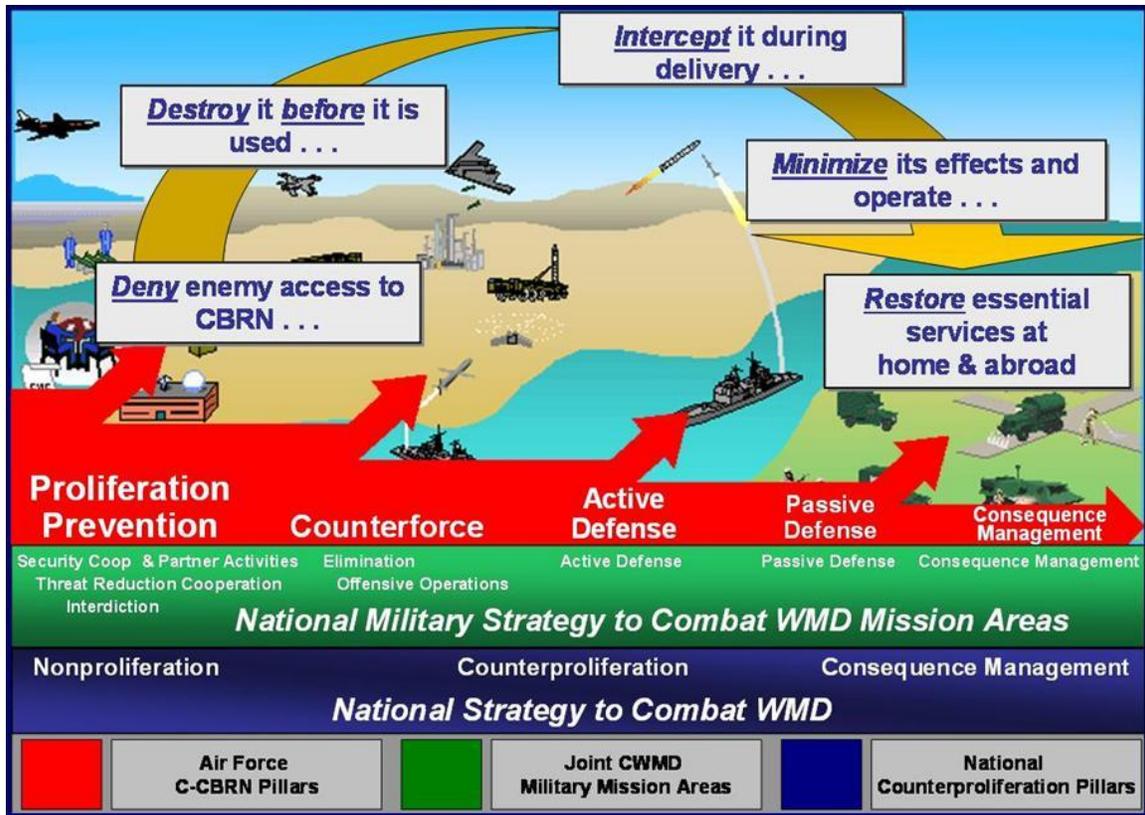


Figure 1: C-CBRN Operational Spectrum

The five pillars provide a framework for organizing Air Force C-CBRN capabilities and demonstrating how these capabilities function as an integrated whole. Maximizing Air Force capabilities in the five pillars will reduce the efficacy of CBRN use, thereby deterring adversaries from considering these weapons and materials as viable military options. In this way, each pillar’s capabilities support and reinforce the others. The pillars serve as the framework for the roadmaps found in Annex 1.

2.3.2 Aligning with Joint and National-Level Guidance

Air Force C-CBRN capabilities inherently blend into Joint operations that deter, dissuade, and prevent both state and non-state adversaries from developing, acquiring, or using CBRN weapons and materials against U.S. interests. As a result, the Air Force pillars align with the eight Joint military mission areas (green band) and support the three national-level CWMD pillars (blue band) depicted in Figure 1. Air Force-unique air, space, and cyberspace capabilities comprise an integral part of Joint and national-level CWMD operations and activities.

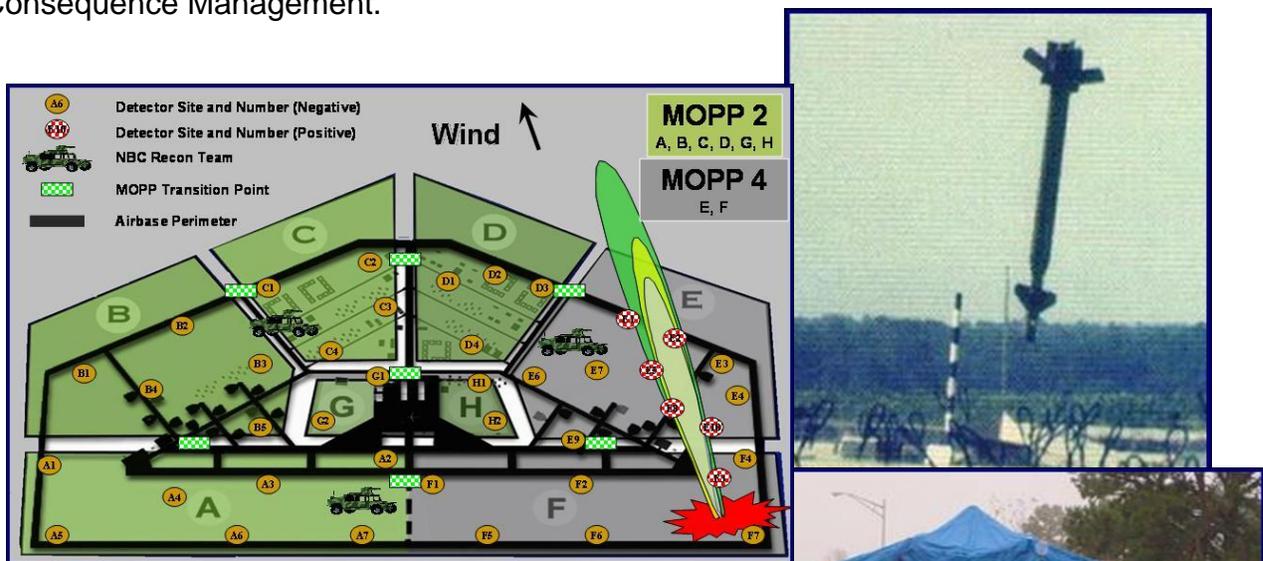
2.4 Desired End State

The end state for the Air Force is to treat CBRN as a threat environment in which the Service will survive and operate, instead of characterizing C-CBRN as a discrete set of operations.

This end state is consistent with *U.S. Joint Forces Command's Joint Operating Environment 2008* that identifies WMD as an expected part of the battlefield environment.

In moving toward this end state, the Air Force, in conjunction with the other Services, supports the National Security Strategy's defined goals of *dissuade, deter, and defeat* to counter WMD. An Air Force that can operate effectively in all CBRN threat environments will help dissuade and deter adversaries from developing, acquiring, and using CBRN weapons and materials. To that end, the Air Force will achieve dominance in CBRN threat environments by:

- fielding the capabilities to defeat CBRN development programs via Proliferation Prevention and Counterforce efforts;
- demonstrating and implementing robust Active and Passive Defense measures; and
- minimizing and mitigating the effects of a CBRN incident through comprehensive Consequence Management.



2.5 Required Capabilities

To achieve the desired end state, the Air Force must develop required capabilities in each C-CBRN pillar. C-CBRN required capabilities are based on Air Force and Joint Combatant Commander requirements found in contingency and operational plans. They are also based on tasks identified in the Joint CWMD military mission area capabilities-based assessments (CBA) and the 2008 C-CBRN Master Plan Capability Assessment (MPCA). Table 1 details required capabilities according to Air Force C-CBRN pillars.

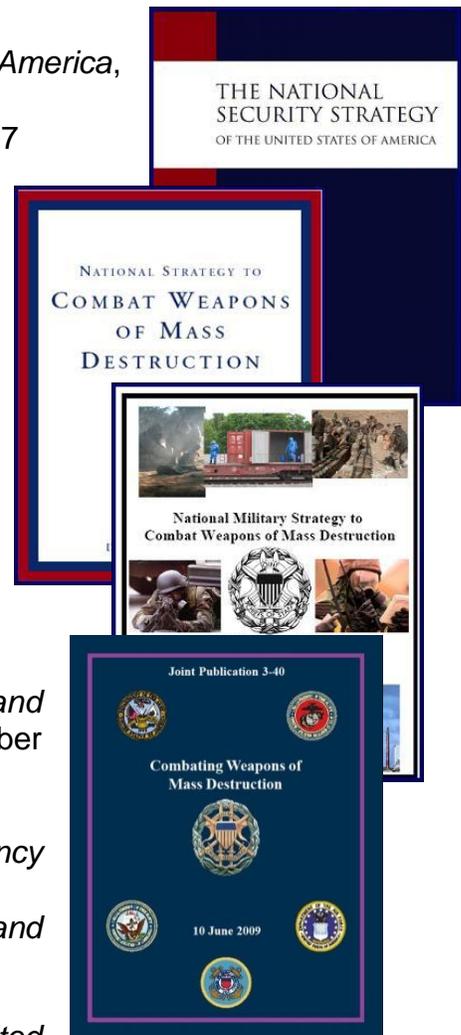
Summary of Required C-CBRN Capabilities	
1.	Prevent and deter the acquisition of CBRN-related technology and materials (Proliferation Prevention)
1.a.	Detect, monitor, and attribute CBRN acquisition, development, and use
1.b.	Demonstrate the ability to operate seamlessly with Joint, Combined, Coalition, and other partners in a CBRN environment
1.c.	Support U.S. Government nonproliferation initiatives
1.d.	Interdict CBRN technology and materials
2.	Defeat the full suite of CBRN capabilities before they can be used against U.S. interests with little or no collateral effect (Counterforce)
2.a.	Defeat CBRN leadership and command and control targets
2.b.	Defeat CBRN delivery platforms and vehicles
2.c.	Defeat CBRN-related facilities and infrastructure
2.d.	Defeat in-transit CBRN materials and weapons
3.	Defeat the full suite of CBRN weapons from air, space, or on the surface inbound to U.S. interests with little or no collateral effect (Active Defense)
3.a.	Surveil, detect, and identify inbound CBRN weapons
3.b.	Provide timely tracking, characterization, and warning of CBRN threats
3.c.	Employ measures that divert or defeat CBRN attacks
3.d.	Assess success of intercept and need to reengage and/or employ C-CBRN passive defense or consequence management activities
4.	Enable and sustain operations in a CBRN environment with minimal degradation of combat capability (Passive Defense)
4.a.	Prepare and shape the battlespace (Shape)
4.b.	Detect and identify CBRN use (Sense)
4.c.	Shield personnel, equipment, and facilities from CBRN contamination and effects (Shield)
4.d.	Minimize the effects of a CBRN attack and quickly restore pre-attack operational capabilities (Sustain)
5.	Prepare and respond to CBRN incidents and restore critical military missions and essential services in a permissive environment (Consequence Management)
5.a.	Prepare response measures to prevent/mitigate the effects of a CBRN incident (Shape)
5.b.	Detect and identify CBRN use (Sense); establish isolation and protective action zones (Shape)
5.c.	Shield personnel from CBRN effects (Shield); take action to support mission continuation decisions (Sustain)
5.d.	Receive and/or provide support to other military installations, federal, state, and local agencies/communities (Sustain)

Table 1: C-CBRN Required Capabilities

2.6 Authority

The Chief of Staff, United States Air Force, approves the execution of this Master Plan. This plan executes tasks required, both explicitly and implicitly, by a wide range of U.S. government directive publications. It is consistent with and supports national policy and Joint and Air Force doctrine as promulgated by the *National Strategy to Combat Weapons of Mass Destruction*; the *National Military Strategy to Combat Weapons of Mass Destruction*; Joint Publication (JP) 3-40, *Combating Weapons of Mass Destruction*; JP 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear (CBRN) Environments*; and AFDD 2-1.8, *Counter-Chemical, Biological, Radiological, and Nuclear Operations*. Other key publications guiding and directing Master Plan objectives include:

- *The National Security Strategy of the United States of America*, March 2006
- *The National Strategy for Homeland Security*, October 2007
- *National Defense Strategy*, June 2008
- DoD Directive (DoDD) 2060.02, *Combating Weapons of Mass Destruction (WMD) Policy*, April 2007
- DoD Instruction (DoDI) 3150.09, *The Chemical, Biological, Radiological, and Nuclear (CBRN) Survivability Policy*, September 2008
- Homeland Security Presidential Directive 5, *Management of Domestic Incidents*, February 2003
- Deputy Secretary of Defense Memorandum, *Preparedness of U.S. Military Installations and Facilities Worldwide Against Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive Attack*, September 2002
- DoDD 2000.12, *DoD Antiterrorism Program*, August 2003
- JP 3-41, *Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive Consequence Management*, October 2006
- JP 3-07.2, *Antiterrorism*, April 2006
- Air Force Policy Directive (AFPD) 10-25, *Emergency Management*, September 2007
- AFPD 10-26, *Counter-Chemical, Biological, Radiological, and Nuclear Operations*, September 2007



According to the 2006 *National Security Strategy of the United States*:

Countering proliferation of WMD requires a comprehensive strategy involving strengthened nonproliferation efforts to deny these weapons of terror and related expertise to those seeking them; proactive counterproliferation efforts to defend against and defeat WMD and missile threats before they are unleashed; and improved protection to mitigate the consequences of WMD use. We aim to convince our adversaries that they cannot achieve

their goals with WMD, and thus deter and dissuade them from attempting to use or even acquire these weapons in the first place.

While providing guidance and direction to Air Force C-CBRN efforts, the Master Plan executes tasks that align with the highest national and DoD CWMD guidance and direction.

A complete list of Master Plan references is provided in Appendix A.





Chapter 3: Master Plan Principles

3.1 Core C-DBRN Program Principles

The Air Force C-DBRN program is based on seven core principles that guide the development of C-DBRN operational capabilities. When followed, these principles provide a framework for efforts to obtain the end state capability of being prepared to operate effectively in a CBRN threat environment. These principles state that the Air Force C-DBRN program will:

- be capabilities-based;
- be Total Force inclusive;
- integrate offensive and defensive capabilities;
- maintain an operational focus;
- maintain and improve interoperability with Joint and Combined forces;
- combine materiel and non-materiel solutions; and
- integrate execution of operations, programs, and institutional mechanisms.



3.1.1 Capabilities-Based

Air Force efforts will focus on developing C-DBRN required capabilities by closing identified gaps instead of using a threat- or platform-centric approach, as used in developing past Air Force requirements. These required capabilities will align with Air Force roles and missions and CRRRA findings. Furthermore, C-DBRN planning and programming efforts will be prioritized in accordance with gaps in capability identified in Air Force and Joint assessments.

3.1.2 Total Force Inclusive

...all Air Force personnel including active duty, Air Force Reserve Command, Air National Guard, and mission essential civilians and contractors (including foreign nationals) must have the resources to operate in CBRN contaminated environments.

Air Force C-DBRN efforts will continue to involve every Air Force organization and infuse all relevant operational missions and activities. C-DBRN operations are not a discrete set of actions that are executed by a cadre of specialists in isolation of core Air Force missions. Rather, all Air Force personnel including active duty, Air Force Reserve Command, Air National Guard

(ANG), and mission essential civilians and contractors (including foreign nationals) must have the resources to operate in CBRN contaminated environments. Headquarters Air Force, Major Commands (MAJCOM), and specific functional organizations that have greater institutional

experience and expertise in dealing with CBRN threats are responsible for ensuring that core C-CBRN tenets are integrated throughout the Air Force.

3.1.3 Integrated Offensive and Defensive Capabilities



The Air Force will continue to apply layered offensive and defensive capabilities across the full range of C-CBRN operations and activities. Employing both offensive and defensive C-CBRN capabilities provides Combatant Commanders with a wide-range of options, ensuring maximum operational effectiveness in CBRN contaminated environments and against CBRN-armed adversaries. Continued Air Force development of full-spectrum C-CBRN options is critical to the successful deterrence and management of CBRN threats.

3.1.4 Operational Focus

All Air Force C-CBRN efforts are focused on enabling core air, space, and cyberspace missions. These efforts include the full range of C-CBRN operations: deny enemy access, defeat CBRN before use, intercept CBRN inbound to the target, minimize CBRN effects, and restore mission essential operations following an attack. Effective C-CBRN operational standards will play an important role in measuring, and then improving, C-CBRN support for Air Force missions.

All Air Force C-CBRN efforts are focused on enabling core air, space, and cyberspace missions.

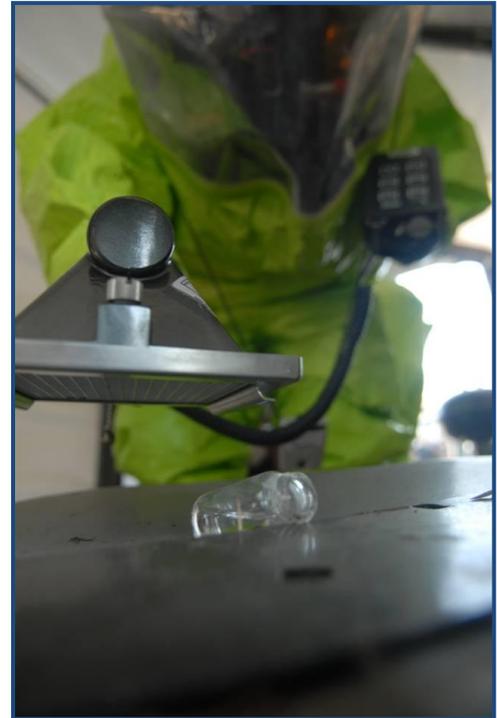
3.1.5 Joint and Combined Force Interoperability

C-CBRN missions and activities will be executed in Joint and Combined operations. As a result, the Air Force will increase interoperability with other Services through Joint operations and activities, as well as with Allied and Coalition partners, to counter the full range of CBRN threats. To achieve full interoperability, the Air Force will continue to align its C-CBRN efforts with Joint CWMD military mission area requirements. The Air Force must also advocate for the integration of Air Force-unique C-CBRN capabilities at the Joint and DoD levels.



3.1.6 Combined Materiel and Non-Materiel Solutions

The Air Force will continue to develop and institutionalize both materiel and non-materiel solutions across the doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) framework. The Air Force has made substantial progress developing effective non-materiel solutions including the counter-chemical warfare (C-CW), counter-biological warfare (C-BW), and counter-radiological warfare (C-RW) CONOPS; Education, Training, and Exercise (ETE) C-CBRN core competencies; and the All-Hazards Response Training (AHRT) program. While non-materiel solutions are still required, the Air Force will focus on acquiring and fielding materiel capabilities such as reliable and operationally useful chemical-biological (CB) detection equipment, CBRN decontamination systems, as well as CBRN survivability solutions (e.g., hardening of mission critical systems to mitigate the effects of electro-magnetic pulse [EMP]).



3.1.7 Integrated Execution

Integrated execution efforts link and align existing Air Force C-CBRN operational capabilities, programs, and institutional mechanisms. Once aligned, the Air Force will use its C-CBRN capabilities, programs, and institutions to more effectively support Joint CWMD planning and operational capabilities. Enhanced integration will provide the Air Force with more leverage to meet C-CBRN advocacy goals and enable more efficient identification of requirements and the development of capabilities at both the Air Force and Joint levels.





Chapter 4: Approaches to C-DBRN Development

The Air Force engages in four approaches to develop and maintain effective C-DBRN operational capabilities. The first of these approaches involves developing operational solutions based on scientific research, operational analyses, and the creation of capability improving guidance and tools. Effective solutions development is contingent on C-DBRN programs receiving adequate funding. Therefore, the second approach describes the Air Force advocacy plan to obtain required funding for C-DBRN programs and capability development.

In addition to these two approaches, the Air Force will also continue developing comprehensive C-DBRN operational standards and building on existing ETE initiatives.

4.1 C-DBRN Solutions Development Approach

All Air Force C-DBRN DOTMLPF solutions are designed to improve operational capabilities. The Air Force approach to developing operationally focused C-DBRN solutions is a three stage process beginning with the completion of relevant scientific and technical studies, followed by the development of operational analyses, and concluding with the implementation of policy guidance and tools to improve operational capability.

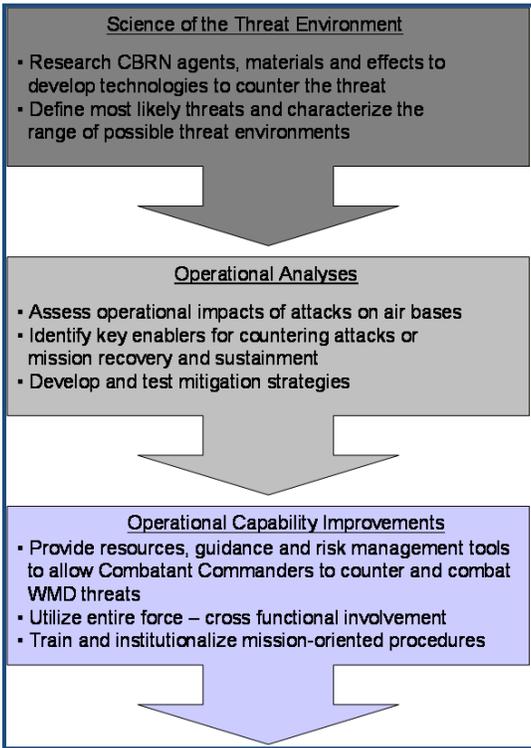


Figure 2: Air Force C-DBRN Solutions Development Approach

4.1.1 Science of the Threat Environment

The Air Force faces a CBRN threat environment that is constantly evolving as technologies develop, improve, and proliferate. The development of effective DOTMLPF solutions requires an accurate, scientific description and characterization of CBRN threats. With a clear understanding of the threat, the Air Force can continue to assess the likelihood of specific types of CBRN attacks in various operating environments (e.g., permissive versus non-permissive). Constant review of scientific literature, both military and civilian, provides the Air Force with a current and sound foundation for conducting operational analyses. The Air Force is committed to maintaining existing scientific efforts and developing new research initiatives, leveraging appropriate Air Force and Joint organizations to maximize scientific collaboration.

4.1.2 Operational Analyses

Operational analyses combine the scientific understanding of the threat with analysis of the impact that CBRN attacks are likely to have on operations. The Air Force has applied operational analyses to generate large operational gains in the areas of C-CW and C-BW via the development and implementation of the C-CW and C-BW CONOPS. The Air Force will continue to conduct operational analyses to better understand the impacts of CBRN attacks on operational effectiveness. These analyses identify key enablers for mission recovery and sustainment following CBRN attacks. They are also used to develop and test the effectiveness of CBRN mitigation strategies in improving operational capability.

4.1.3 Operational Capability Improvements

The Air Force uses scientific understanding of the threat environment and analyses of the operational impacts of CBRN usage to develop guidance and tools that improve C-CBRN operational capability. Guidance includes Air Force instruction and direction to the Total Force regarding C-CBRN policy and procedures. Scientific understanding and operational analyses also enable the Air Force to develop powerful C-CBRN tools, such as Operational Risk Management



(ORM) tables, that provide commanders with the information and resources needed to make informed decisions required to effectively counter and combat the effects of CBRN use.

Operational capability improvements are also the product of the education, training, and exercising of Air Force personnel on mission-oriented CBRN procedures. Education, training, and exercise in C-CBRN operational procedures are essential elements to building a force that is capable of understanding the hazards associated with specific CBRN agents and effectively operating in all threat environments.

4.2 C-CBRN Advocacy Approach

Air Force C-CBRN efforts are complex and multi-dimensional activities that cut across all core missions and functional areas. Consequently, there is no single champion to advocate for the resources needed to organize, train, and equip Airmen to successfully conduct operations across the full-spectrum of C-CBRN threat environments. To ensure C-CBRN capabilities and associated programs and systems are resourced and sustained properly, the Air Force will continue funding advocacy efforts for C-CBRN capability development. The Air Force will institutionalize a C-CBRN resource advocacy process for engaging appropriate Air Force and Joint Staff organizations to accomplish this objective. The program and system advocacy process will align C-CBRN operating requirements across the Air Force and with the Joint community. It will also enable cohesive and stream-lined advocacy for C-CBRN equities and funding at both the Air Force and Joint levels.

4.2.1 Identifying Operational C-CBRN Capabilities and Gaps

The Air Force will use capabilities-based planning and assessments to support investment in C-CBRN research and development efforts and appropriate C-CBRN programs and systems, to included training and sustainment initiatives. To do this effectively, the Air Force must accurately identify key operational requirements and assess the appropriate level of funding required to develop, field, and maintain the capability. Using Air Force capabilities-based planning and Joint CBAs, the Air Force will continue to identify gaps and solutions in its ongoing efforts to influence and refine C-CBRN investment plans and strategies.

4.2.2 Advocating for Capability Development

Once C-CBRN operational requirements are identified, the requirements community will proactively participate in Air Force and Joint processes to advocate for capability development. Additionally, Air Force MAJCOMs will continue to integrate C-CBRN capabilities into core Air Force competencies. Advocacy for wing-level, MAJCOM, and Headquarters Air Force C-CBRN requirements will be championed by the operational community across the Air Force Corporate Structure process. Recognizing the operational criticality of C-CBRN capabilities and using existing investment mechanisms and structures ensures that C-CBRN requirements are accurately characterized and adequately funded in the Program Objective Memorandum.

Strong advocacy and detailed technical input to the JRO-CBRND and USSTRATCOM will ensure capabilities critical to the Air Force are addressed at the Joint level.

While Air Force-level advocacy is essential to meeting C-CBRN capability requirements, the need to advocate effectively in Joint processes is also critical. Two primary Joint organizations

integrate and coordinate CWMD requirements across the military mission areas: the Joint Requirements Office for CBRN Defense (JRO-CBRND) and U.S. Strategic Command (USSTRATCOM). To address all C-CBRN capability requirements, the Air Force will engage both organizations through established processes and channels. Strong advocacy and detailed technical input to the JRO-CBRND and USSTRATCOM will ensure capabilities critical to the Air Force (or critical to the Joint Force, but which the Air Force is best positioned to provide) are addressed at the Joint level. This advocacy will help the Air Force obtain appropriate funding from the Joint community.

JRO-CBRND is the only office within DoD responsible for the planning, coordination, and oversight of Joint CBRN defense operational requirements. As such, it is the Joint Chiefs of Staff's source for CBRN defense expertise relating to Passive Defense, Consequence Management, Force Protection, and Homeland Security. Appropriate Air Force functional offices will ensure that the Air Force's Passive Defense and Consequence Management requirements are advocated through the JRO-CBRND and integrated into the Joint requirements process.



USSTRATCOM is the lead organization for the synchronization of regional CWMD plans. As with JRO-CBRND advocacy, the Air Force will engage USSTRATCOM since many C-CBRN operational requirements are vetted through this organization. The Air Force operations and requirements communities will engage USSTRATCOM at planning conferences, combatant command CWMD conferences, and at regular J5-organized CWMD meetings to promote Service equities in Joint C-CBRN capability development.

The Air Force will also work closely with the Defense Threat Reduction Agency (DTRA). In managing DoD CWMD science and technology development and housing USSTRATCOM's Center for CWMD, DTRA oversees and coordinates multiple projects that have the potential to positively impact Air Force and Joint C-CBRN capabilities. Advocacy will focus on continued DTRA funding and support for C-CBRN research and development projects at Air Force laboratories and research facilities.

The Air Force will also continue advocacy efforts with the Joint Program Executive Office for Chemical-Biological Defense (JPEO-CBD) as well. JPEO-CBD is the principal advocate and single DoD point of contact (POC) for all CBRN detection, vaccine, and medical diagnostic acquisition. Therefore, the Air Force will engage the JPEO-CBD to help ensure its operational requirements are met in each of these areas.

4.3 Operational Standards Development Approach

The Air Force will develop and validate operational standards for wartime and peacetime C-CBRN operations in both permissive and non-permissive environments. Operational standards identify the minimum proficiencies required to conduct mission-essential and mission-enabling tasks that provide Air Force commanders the means to sustain operations and achieve mission objectives in CBRN environments. To be effective, operational standards must be relevant, measurable, and achievable. Based on scientifically rigorous assessments and balanced with operational realities, these standards should also be broad enough to allow for mission-specific tailoring. Once in place, the Air Force can use these operational standards as a baseline for the development of solutions to specific CBRN threats.

4.4 Education, Training, and Exercise Approach

As a cross-cutting enabler within the roadmap organizational construct, ETE is foundational to the development and maintenance of Air Force C-CBRN capability. The Air Force will institutionalize a cross-functional, end-to-end (accession-to-separation) approach to C-CBRN ETE. To that end, Air Force course managers will incorporate C-CBRN instruction in all appropriate courses.

An effective ETE program enables all Air Force personnel to learn C-CBRN principles; train on functional C-CBRN-related tactics, techniques, and procedures (TTP); and practice integrated operational capabilities through realistic wing, MAJCOM, and national-level exercises. ETE core competencies, published in Air Force Manual (AFMAN) 10-2605, *Education, Training, and Exercise Competencies for Counter-Chemical, Biological, Radiological, and Nuclear Operations*, establish required knowledge, skills, and abilities (KSA) across each of the C-CBRN capability pillars.

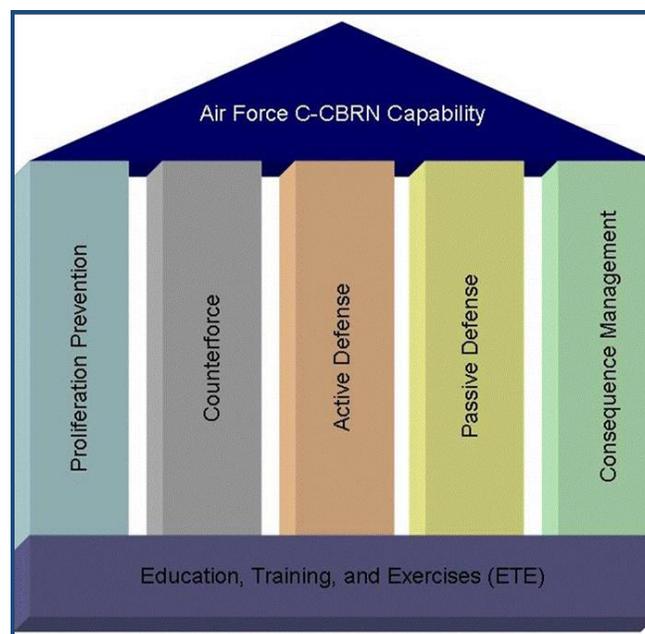


Figure 3: Roadmap Pillar and ETE Foundation



Chapter 5: Focus on Identified Gaps in C-CBRN Capability

Although the Air Force has made substantial progress in the development of C-CBRN capabilities, much work remains to effectively counter the full range of CBRN threats. Aligning broadly with Air Force capabilities-based planning and requirements development and related processes, the Master Plan directs and coordinates Air Force C-CBRN operational capability requirements to meet a wide range of CBRN challenges. To achieve this end, the roadmaps are designed to inform, guide, and drive efforts to meet these capability requirements.

Gap identification is critical to the capability development process. The Master Plan and roadmaps address capability gaps identified in credible C-CBRN Joint- and Service-level studies such as Joint CBAs, the Air Force CRRA, and the MPCA. Using gap analysis found in these and other assessments as a baseline, the roadmaps describe solution approaches using a cost-benefit methodology to maximize capability production.

The principal gap obstructing Air Force C-CBRN capabilities is a limited ability to effectively detect and identify CBRN threats.

5.1 CBRN Threat Detection and Identification

The principal gap obstructing Air Force C-CBRN capabilities is a limited ability to effectively detect and identify CBRN threats. This limitation impacts capabilities in all of the C-CBRN pillars. Successfully integrating emerging technologies and TTPs into CBRN detection, identification, and Intelligence, Surveillance, and Reconnaissance (ISR) equipment and operations will enable the Air Force to better support Joint CWMD missions. Enhancing these capabilities will provide Air Force and Combatant Commanders with accurate and timely warning and characterization of CBRN attacks, including covert strikes, and up-to-date information on adversary CBRN programs.

5.2 Identified Gaps in the C-CBRN Pillars

Capability gaps are identified across all five C-CBRN pillars. Proliferation Prevention gaps primarily address Air Force support for the Joint military mission areas of Security Cooperation and Partnership Activities (SCPA), Threat Reduction Cooperation (TRC), and WMD Interdiction (WMD-I). Counterforce and Active Defense capability gaps are primarily linked to ISR as well as the ability to minimize collateral effects when striking CBRN targets or inbound weapons. In Passive Defense and Consequence Management, the gaps span the inherent differences in the effects of chemical, biological, radiological, and nuclear weapons and materials.

5.3 Air Force and Joint C-CBRN Capability Requirement Alignment



Although Air Force C-CBRN capabilities have the potential to contribute to the execution of Joint CWMD military missions, specific service requirements have not been established for all CWMD military mission areas. The lack of Joint guidance for the employment of Air Force capabilities in the military mission areas complicates both the use of proven Air Force capabilities and the development of new capabilities to support Joint CWMD missions.

5.4 Improved CBRN Survivability

DoDI 3150.09 defines CBRN Survivability as the capability of a system to avoid, withstand, or operate during and/or after exposure to a chemical, biological, radiological, or nuclear environment, without losing the ability to accomplish the assigned mission. CBRN Survivability is divided into chemical, biological, and radiological (CBR) survivability which addresses CBR contamination including radiological fallout, and nuclear survivability which covers initial nuclear weapon effects, such as blast, heat, EMP, and other initial radiation and shockwave effects.

CBRN Survivability is an area requiring increased attention and focus. The wide range of CBRN threats to Air Force operations around the world necessitates enhanced efforts to maintain legacy CBRN mission-critical systems. Additionally, the Air Force will ensure that systems in development incorporate mission-appropriate CBRN survivability key performance parameters and/or key system attributes in design criteria.

5.5 Cross-Functional Coordination to Enhance C-CBRN Operational Focus

Effective operation in a CBRN environment requires cooperation between multiple functional subject matter experts (SME). Air Force first and emergency responders consist of SMEs from the Bioenvironmental Engineer, Fire Emergency Services, Emergency Management, Explosive Ordnance Disposal, Ambulance Services, Security Forces, and other functional areas. These SMEs must maintain or develop a strong understanding of CBRN threat characteristics and how to mitigate their effects. This expertise must be cross-referenced and combined with a strong operational focus to support Air Force core competencies. As new technologies emerge, the SMEs must update their expertise to support the restoration and continuation of critical missions threatened in a CBRN environment.



Chapter 6: On the CBRN Horizon: Emerging Threats and Future Technologies

Improvements in understanding the science of biological, chemical, and radiological agents and materials encompass both new and emerging threats and the technological solutions needed to counter them. The Air Force is committed to understanding and exploiting these discoveries in an ongoing effort to enhance its C-CBRN capability. The purpose of this chapter is to describe elements of emerging CBRN threats that the Air Force may face in future conflicts. In addition, the chapter addresses some key future technologies and equipment that will be used to counter and combat these emerging threats.

6.1 The Biological Horizon



Biotechnology is constantly evolving. As scientific research increases the understanding of biological processes, biological warfare (BW) threats become more significant and likely. Using advances in biotechnology, both state and non-state actors can develop and deploy a wide range of genetically modified and efficiently delivered traditional and non-traditional BW agents. These agents can be deployed covertly and remain undetected for long periods of time, complicating efforts to counter them. Even after detection of a biological incident, agents may appear to be naturally occurring, further exacerbating problems associated with effectively countering BW threats. In addition to traditional and non-traditional BW threats, naturally-occurring disease outbreaks such as Pandemic Influenza pose a serious threat to Air Force operations.

While advances in biotechnology present a variety of new biological threats, the Air Force will benefit from several technological improvements in the field. Improvements include new treatments, vaccines, and prophylaxes for threat agents and more sensitive or broader spectrum identification of biological agents. In air operations, advances in biotechnology are leading to developments in the safe decontamination of aircraft surfaces contaminated by persistent biological agents. In addition, biotechnology is likely to play a role in developing new agent defeat weapons for use in overt and covert Counterforce and Active Defense missions.

Technologies that provide early and accurate tactical warning and characterization of BW attacks are particularly critical to improving Air Force C-BW capabilities. Identification systems using two separate technological approaches in a single unit may provide improvements in identification reliability. To respond to emerging technologies, these identification systems should also include the flexibility to accept new parameters without major system changes. In the near term, systems, such as the Joint Biological Standoff Detection System, integrate new technologies that will improve detection capability in both traditional wartime and emerging homeland security roles.

6.2 The Chemical Horizon

Comparable to the enhancements in biotechnology, scientific research in chemistry has led to the development of more lethal non-traditional chemical agents as well as the technologies to counter these threats. Advances in computer software have led to the development of sophisticated chemical modeling programs. These advances are being used to create more potent chemical warfare (CW) agents which can bypass existing filter systems and detection equipment and elude current treatment options. This progress in computational chemistry is being used for applications such as rational drug design, CW simulant design, and discrete chemical interactions (such as between a painted aircraft surface and a CW agent, for example).



As with C-BW, the Air Force requires effective warning, attack characterization, and reporting capabilities to counter the wide range of CW threats. The M4 Joint Chemical Agent Detector, a handheld or vehicle mounted CW agent and toxic industrial chemical (TIC) vapor detector, includes technological improvements that begin to address this requirement. The Air Force is also acquiring equipment to increase an Airman's ability to survive and operate through a CW attack.



6.3 The Radiological Horizon

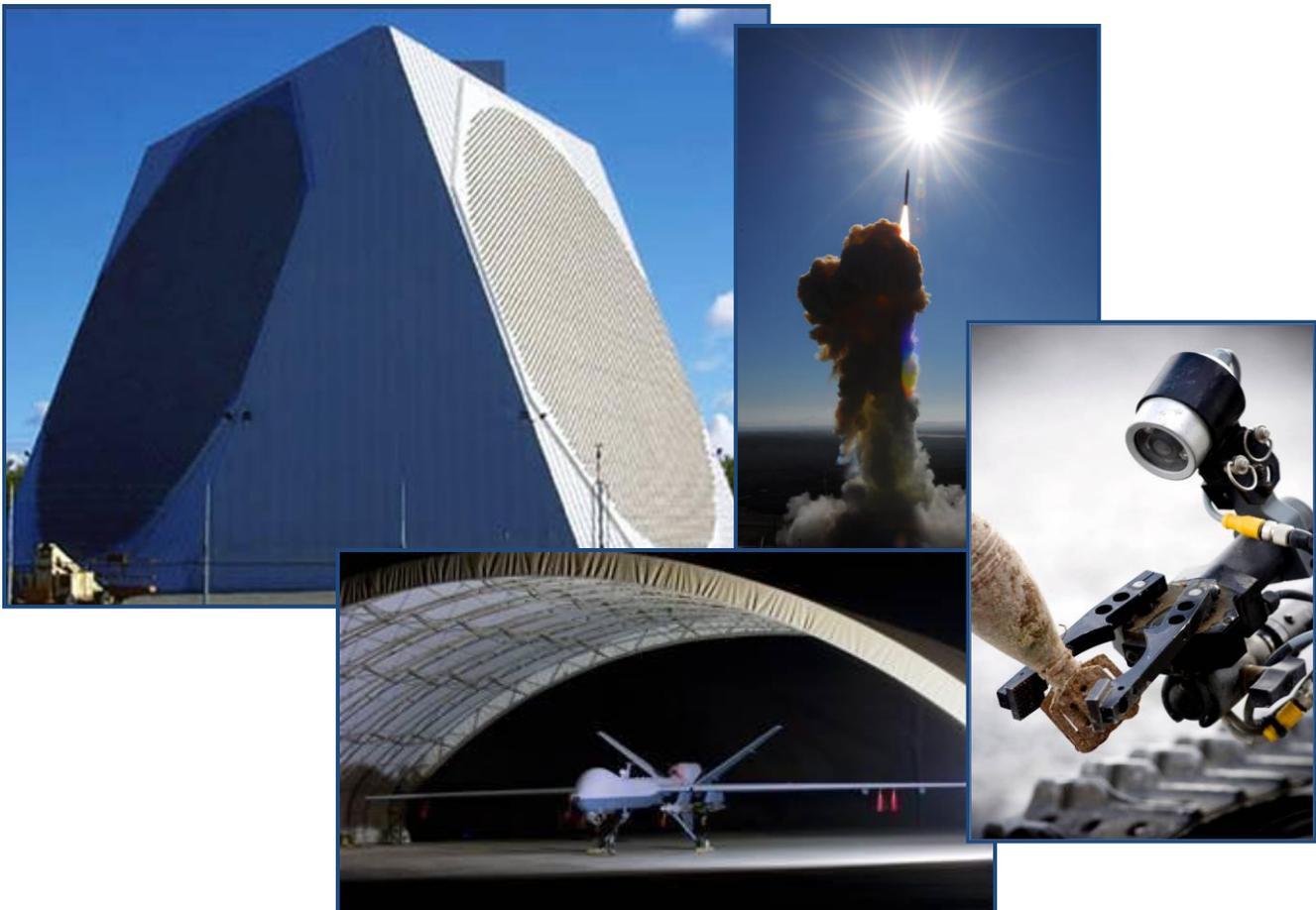
The materials used in radiological warfare (RW) threats are not likely to change. However, new delivery systems or methods of dispersal of radiological materials can increase the RW threat. For example, radiological dispersal devices (RDD) or "dirty bombs" and radiological exposure devices (RED) have the potential to be inexpensive alternatives for state and non-state actors attempting to acquire the capability to contaminate Air Force personnel and facilities.

6.4 Future Technologies

Scientific research is also leading to cutting-edge breakthroughs in a variety of technologies outside the C-CBRN arena that have the potential to directly impact future Air Force C-CBRN capability. The Air Force, in conjunction with the Joint CWMD community, must actively pursue these technologies to enhance its advantage in future conflicts involving CBRN threat environments.

Advances in electromagnetic field theory and particle physics, for example, have the potential to produce truly innovative C-CBRN capabilities. If an electromagnetic and charged field could be generated to protect an air base, it could repel or divert agent clouds, possibly even neutralizing some of the CB agent in the process. In addition, advances in nanotechnology may provide greater energy density for batteries, reducing the size and weight of equipment and making possible handheld CBRN detectors with capabilities now only seen in large, cumbersome units. Nanotechnology innovations may also lead to the development of CB protective and reactive surfaces, thus lessening the need for decontamination resources.

To continue the fight in an ever-changing CBRN threat environment, the Air Force must maintain and improve its awareness of both emerging technologies, to include non-traditional agents, and advancements in current technologies. The Air Force will benefit from understanding which of these technologies can meet Air Force and Joint requirements and how best to field them to enhance C-CBRN capabilities.





Chapter 7: Master Plan and Roadmap Execution

Every Air Force organization has a role to play in C-CBRN operations. At the Headquarters Air Force level, AF/A1, AF/A2, AF/A3/5, AF/A4/7, AF/A8, AF/A9, AF/A10, AF/SG, SAF/AQ, SAF/IA, SAF/IG and their supporting field operating agencies have particularly important roles and responsibilities in the Air Force C-CBRN Program. Their authorities and responsibilities, along with those of the MAJCOMs, are outlined in AFD 10-26, *Counter-Chemical, Biological, Radiological, and Nuclear Operations*, which also provides general C-CBRN responsibilities within the Air Force. In addition to responsibilities outlined in AFD 10-26, the following groups contribute to the execution of this Master Plan.

7.1 Air Force C-CBRN Council

The Air Force C-CBRN Council is chartered by the Air Force Assistant Vice Chief of Staff to address Air Force-wide issues related to countering the CBRN threat on a regular, ongoing basis. The C-CBRN Council supports measures to organize, train, and equip Air Force forces commensurate with guidance set forth in the *National Security Strategy*, *National Defense Strategy*, *National Strategy to Combat WMD*, *Quadrennial Defense Review*, *Strategic Planning Guidance*, *Joint Programming Guidance* and other strategic-level policy documents.

The C-CBRN Council supports measures to organize, train, and equip Air Force forces according to national strategic-level policy.

The C-CBRN Council is chaired by AF/A3/5 and will oversee the execution of this Master Plan.

The C-CBRN Council will direct the development of the five roadmaps and ETE activities. In this capacity, the C-CBRN Council has authority to add, update, and amend these roadmaps and the annexes to this Master Plan. The C-CBRN Council will review the roadmaps and annexes at least annually, changing them as appropriate.

The C-CBRN Council will report periodically to the Air Force Chief of Staff on the execution of this Master Plan. The report may include information such as:

- A general assessment of the state of Air Force C-CBRN capabilities
- C-CBRN capability improvements achieved over the previous year
- Progress achieved in developing and implementing solutions to identified gaps in C-CBRN capability
- Identification of programmatic obstacles preventing or slowing the execution of Master Plan objectives
- Major milestones and plans for the coming year
- Other critical issues relating to the Air Force C-CBRN Program

The C-CBRN Council may also report to the Chief of Staff on specific issues that require resolution as necessary.

The C-CBRN Council, in accordance with its charter, may appoint working groups and study teams to oversee the implementation of roadmap solution approaches.

The C-CBRN Council may appoint offices of primary responsibility (OPR) and offices of collateral responsibility (OCR) consistent with an organization's responsibilities set forth in AFPD 10-26 and AFPD 10-25, *Emergency Management*. Once appointed, the C-CBRN Council may task OPRs to report periodically on the execution of their tasks. In addition, the C-CBRN Council can add or alter OPR tasks.

7.2 Policy Working Group

The Policy Working Group is the primary working group of the C-CBRN Council. As such, its core function is to carry out C-CBRN Council assigned tasks. Policy Working Group members represent their functional organizations and collaborate to provide coordinated responses on C-CBRN programs, processes, and issues. AF/A5XP chairs the Policy Working Group and members include AF/A1SO, AF/A3O-AH, AF/A7CX, AF/A7SO, AFMSA/SGXH, SAF/AQPC, SAF/AQRT, SAF/IGI, and the 709th Nuclear Systems Squadron (NSS).

7.3 Operational Requirements Technical Study Team

The Operational Requirements Technical Study Team, another sub-working group to the C-CBRN Council, is chartered to ensure that the technical aspects related to Air Force C-CBRN operational requirements are fully identified and articulated. The team also ensures that the Air Force effectively applies scientific and technical knowledge to achieve capabilities identified in the Air Force Master Capability Listing. Chaired by AF/A5XP, the Study Team's membership includes AFCESA/CEXR, AFMSA/SGXH, AFRL, AFFPB and the 709th NSS.

7.4 Modernization Working Group

The Modernization Working Group reviews and approves modernization initiatives associated with the Air Force CBRN Defense program. The group's objectives also include reviewing operational analysis to support C-CBRN CONOPS development, coordinating Air Force C-CBRN requirements and program initiatives, and prioritizing and supporting study teams and OPRs, as appropriate. AF/A7CX chairs the working group with member organizations including AF/A4LE, AF/A4LM, AF/A5XP, AFCESA/CEX, AFMSA/SGXH, AFMSA/SGRS, SAF/AQPC, ACC/A7XX, ACC/A8MC, 579th CBSS and the 649th AESS.

7.5 Education, Training, and Exercise Core Working Group

The ETE Core Working Group (CWG) manages and executes the C-CBRN ETE initiative. The ETE CWG oversees institutionalization of a cross-functional, accession-to-separation approach to achieve full-spectrum C-CBRN operational capability and to improve C-CBRN interoperability with sister services and cooperating agencies. AF/A5XP and AETC/A8PX co-

chair the working group with core member representation from AETC/A3TB, AU/CFA, AFMSA/SGXS, AFCESA/CEXR, and the Air Force Counterproliferation Center. Expanded membership includes the JRO-CBRND and other MAJCOM organizations with C-CBRN ETE equities.

7.6 Counter-Radiological Warfare Cross-Functional Working Group

The C-RW Cross-Functional Working Group manages development and implementation of the C-RW CONOPS action plan. Chaired by AF/A5XP, the C-RW Working Group meets regularly to oversee and coordinate specific action items relating to the development and implementation of the C-RW CONOPS. Regular meetings of the C-RW Cross-Functional Working Group will continue until the C-RW CONOPS is fully implemented. OCRs include: AF/A1, AF/A2, AF/A7CXR, AF/A7SO, AFMSA/SGXH, AFCESA/CEXR, AFTAC, ACC, AFSOC, AMC, and SAF/PAX.

7.7 AF/A5XPC Roles and Responsibilities

As Executive Secretary to the C-CBRN Council, AF/A5XPC is the executive agent for implementing council decisions. AF/A5XPC will also be responsible for coordinating the execution of roadmap solution approaches and for preparing reports to the Chief of Staff.

In coordinating the execution of the roadmaps, AF/A5XPC will receive quarterly and annual progress reports from OPRs to present at the Policy Working Group and the C-CBRN Council. On occasion, the C-CBRN Council may task OPRs to report directly, bypassing the Policy Working Group.





Conclusion

The proliferation and use of CBRN weapons and materials have been and continue to be the greatest threat to Air Force operations throughout the world. The Master Plan and roadmaps guide, direct, and coordinate the development, implementation, and institutionalization of Air Force C-CBRN capabilities required to effectively combat the threat. Whether the Air Force is engaged in major combat operations, irregular warfare, or operations in permissive environments, the Master Plan establishes a strategy for building the required C-CBRN capabilities the Air Force needs to effectively combat the threat and win the fight.





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Appendix B: Glossary

Abbreviations and Acronyms

ACC	Air Combat Command
AESS	Aeronautical Systems Squadron
AETC	Air Education and Training Command
AF	Air Force or Headquarters Air Force when used with organization acronyms (i.e., AF/A5XP)
AFCESA	Air Force Civil Engineer Support Agency
AFDD	Air Force Doctrine Document
AFFPB	Air Force Force Protection Battlelab
AFH	Air Force Handbook
AFI	Air Force Instruction
AFIMS	Air Force Incident Management System
AFJI	Air Force Joint Instruction
AFJPAM	Air Force Joint Pamphlet
AFMAN	Air Force Manual
AFMSA	Air Force Medical Support Agency
AFPD	Air Force Policy Directive
AFRL	Air Force Research Laboratory
AHRT	All Hazards Response Training
AFSOC	Air Force Special Operations Command
AFTAC	Air Force Technical Applications Center
AFTTP	Air Force Tactics, Techniques, and Procedures
AMC	Air Mobility Command
ANG	Air National Guard
AU	Air University
BSAT	Biological Select Agents and Toxins
BW	Biological Warfare
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CB	Chemical-Biological
CBA	Capabilities-Based Assessment
CBAD	Chemical Biological Agent Defeat
CBR	Chemical, Biological, and Radiological
CBRN	Chemical, Biological, Radiological, and Nuclear
CBSS	Combat Sustainment Squadron
C-BW	Counter-Biological Warfare
C-CBRN	Counter- Chemical, Biological, Radiological, and Nuclear
C-CBRNE	Counter- Chemical, Biological, Radiological, Nuclear, and High-Yield

	Explosive
C-CW	Counter-Chemical Warfare
CJCS	Chairman, Joint Chiefs of Staff
CJCSI	Chairman, Joint Chiefs of Staff Instruction
CMPRS	C-CBRN Master Plan Roadmap System
C-NBC	Counter-Nuclear, Biological, and Chemical
CONOPS	Concept(s) of Operations
CRRA	Capabilities Review and Risk Assessment
C-RW	Counter-Radiological Warfare
CW	Chemical Warfare
CWMD	Combating Weapons of Mass Destruction
CWG	Core Working Group
DCP	Disease Containment Plan
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DOE	Department of Energy
DOTMLPF	Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities
DTRA	Defense Threat Reduction Agency
ECD	Estimated Completion Date
EET	Exercise Evaluation Team
ELM	Empirical Lethality Model
EMP	Electro-Magnetic Pulse
ETE	Education, Training, and Exercise
FM	Field Manual
FYDP	Future Years Defense Program
HPW	Human Performance Wing
HSPD	Homeland Security Presidential Directive
IED	Improvised Explosive Device
ID	Integrated Defense
IND	Improvised Nuclear Device
ISR	Intelligence, Surveillance, and Reconnaissance
JP	Joint Publication
JPEO-CBD	Joint Program Executive Office for Chemical and Biological Defense
JRO-CBRND	Joint Requirements Office CBRN Defense
KSA	Knowledge, Skills, and Abilities
MAA	Mutual Aid Agreements
MAJCOM	Major Command
MDD	Material Development Decision
MeRET	Medical Response Exercise and Training
MOPP	Mission Oriented Protective Posture
MPCA	Master Plan Capabilities Assessment
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological, and Chemical

NBCC	Nuclear, Biological, Chemical, and Conventional
NORAD	North American Aerospace Defense Command
NSPD	National Security Policy Directive
NSS	Nuclear Systems Squadron
OCR	Office of Collateral Responsibility
OPR	Office of Primary Responsibility
ORM	Operational Risk Management
OSD	Office of the Secretary of Defense
PHEO	Public Health Emergency Officer
POC	Point of Contact
RDD	Radiological Dispersion Device
RED	Radiological Exposure Device
RW	Radiological Warfare
SAF	Secretary of the Air Force
SCPA	Security Cooperation and Partnership Activities
SERPENT	Simulation Environment and Response Program Execution Nesting Tool
SG	Surgeon General
SME	Subject Matter Expert
STANAG	Standardization Agreement
TIC	Toxic Industrial Chemical
TTP	Tactics, Techniques, and Procedures
TRC	Threat Reduction Cooperation
U.S.	United States
USAMRIID	U.S. Army Medical Research Institute of Infectious Diseases
USAMRICD	U.S. Army Medical Research Institute of Chemical Defense
USSTRATCOM	United States Strategic Command
UTC	Unit Type Code
WMD	Weapons of Mass Destruction
WMD-I	WMD Interdiction

Definitions

<p>Active Defense</p>	<p>1) Operations to defeat the full suite of CBRN weapons inbound to U.S. interests with little or no collateral effects. (AFDD 2-1.8, <i>C-CBRN Operations</i>, January 2007)</p> <p>2) Measures that include, but are not limited to, missile defense (ballistic and cruise), air defense, special operations, and security operations to defend against conventionally and unconventionally delivered WMD. (<i>National Military Strategy to Combat Weapons of Mass Destruction</i>, February 2006)</p> <p>3) Active measures to defeat an attack with chemical, biological, radiological, or nuclear weapons by employing actions to divert, neutralize, or destroy those weapons or their means of delivery while en route to their target. (JP 3-40, <i>Combating Weapons of Mass Destruction</i>, June 2009)</p>
<p>Consequence Management</p>	<p>1) Actions taken to maintain or restore critical military missions and essential services, and manage and mitigate problems resulting from CBRN-related disasters and catastrophes, including natural, manmade, or terrorist incidents. (AFDD 2-1.8, <i>C-CBRN Operations</i>, January 2007)</p> <p>2) Actions taken as part of the defense of the American homeland to respond to the consequences of WMD use on our soil, against our forces deployed abroad, and against our allies. (<i>National Strategy to Combat Weapons of Mass Destruction</i>, December 2002)</p> <p>3) Actions taken in the U.S. or abroad (when authorized by the President and at the request of a host nation) to reduce the effects of a WMD attack or event, including Toxic Industrial Chemicals (TIC) and Toxic Industrial Materials (TIM), and assist in the restoration of essential operations and services at home and abroad. (<i>National Military Strategy to Combat Weapons of Mass Destruction</i>, February 2006)</p> <p>4) Actions authorized by the Secretary of Defense to mitigate the effects of a WMD attack or event and restore essential operations and services. (JP 3-40, <i>Combating Weapons of Mass Destruction</i>, June 2009)</p>
<p>Counterforce</p>	<p>Operations that provide the combatant commanders with the ability to defeat the full suite of CBRN capabilities before they can be used against U.S. interests with little or no collateral effects. (AFDD 2-1.8, <i>C-CBRN Operations</i>, January 2007)</p>
<p>Counterproliferation</p>	<p>Actions, such as the detection and destruction of an adversary's WMD assets or employing active and passive defense operations, which the military, intelligence, technical, and law enforcement communities take to prevent the movement of WMD materials, technology, and expertise to</p>

	hostile states and terrorist organizations. (<i>National Strategy to Combat Weapons of Mass Destruction</i> , December 2002)
WMD Elimination Operations	<p>1) Operations to systematically locate, characterize, secure, disable, and/or destroy a state or non-state actor's WMD programs and related capabilities in hostile or uncertain environments. (<i>National Military Strategy to Combat Weapons of Mass Destruction</i>, February 2006)</p> <p>2) Actions undertaken in a hostile or uncertain environment to systematically locate, characterize, secure, and disable, or destroy WMD programs and related capabilities. (JP 3-40, <i>Combating Weapons of Mass Destruction</i>, June 2009)</p>
WMD Interdiction Operations	<p>1) Operations designed to stop the transit of WMD, delivery systems, associated and dual-use technologies, materials, and expertise between states of concern and between state and non-state actors, whether undertaken by military or by other agencies of government (e.g., law enforcement). (<i>National Military Strategy to Combat Weapons of Mass Destruction</i>, February 2006)</p> <p>2) Operations to track, intercept, search, divert, seize, or otherwise stop the transit of WMD, its delivery systems or related materials, technologies, and expertise. In peacetime, WMD interdiction operations are planned and executed in order to intercept dual-use materials and expertise in transit aboard nonmilitary transports. (JP 3-40, <i>Combating Weapons of Mass Destruction</i>, June 2009)</p>
Nonproliferation	Measures to strengthen multilateral arms control regimes, maintain threat reduction assistance programs, and improve export controls. (<i>National Strategy to Combat Weapons of Mass Destruction</i> , December 2002)
Offensive Operations	<p>1) Kinetic (both conventional and nuclear) and/or non-kinetic (e.g., information operations) options to deter or defeat a WMD threat or subsequent use of WMD and which encompass the detection, identification, disruption, and/or destruction of an adversary's WMD assets, means of delivery, associated facilities, and other high-value targets necessary to achieve the desired effects and objectives. (<i>National Military Strategy to Combat Weapons of Mass Destruction</i>, February 2006)</p> <p>2) Actions to disrupt, neutralize, or destroy a WMD threat before it can be used, or deter subsequent use of such weapons. (JP 3-40, <i>Combating Weapons of Mass Destruction</i>, June 2009)</p>
Passive Defense	1) Measures to minimize or negate the vulnerability to and minimize the effects of WMD use against U.S., partner, and allied Armed Forces as well as U.S. military interests, installations, and critical infrastructure that will enable sustained air and ground combat and combat support operations in a CBRN environment. (AFDD 2-1.8, <i>C-CBRN</i>)

	<p><i>Operations</i>, January 2007)</p> <p>2) Measures to minimize or negate the vulnerability and minimize effects of WMD use against U.S. and partner/Allied forces, as well as U.S. military interests, installations, and critical infrastructure. (<i>National Military Strategy to Combat Weapons of Mass Destruction</i>, February 2006)</p> <p>3) Passive measures taken to minimize or negate the vulnerability to, and effects of, chemical, biological, radiological, or nuclear attacks causing a high order of destruction or mass casualties. This mission area focuses on maintaining the joint force's ability to continue military operations in CBRN environments. (JP 3-40, <i>Combating Weapons of Mass Destruction</i>, June 2009)</p>
Proliferation Prevention	<p>Actions designed to restrict the spread of CBRN weapons and prevent adversary acquisition of CBRN materials and technology by supporting political, military, economic, and diplomatic efforts to discourage acquisition. (AFDD 2-1.8, <i>C-CBRN Operations</i>, January 2007)</p>
Security Cooperation and Partnership Activities	<p>1) Military activities that support international efforts to combat WMD and which should promote improved partnership capacity to combat WMD. (<i>National Military Strategy to Combat Weapons of Mass Destruction</i>, February 2006)</p> <p>2) Activities to improve or promote defense relationships and capacity of allied and partner nations to execute or support the other military mission areas to combat WMD through military-to-military contact, burden sharing arrangements, combined military activities, and support to international activities. (JP 3-40, <i>Combating Weapons of Mass Destruction</i>, June 2009)</p>
Threat Reduction Cooperation	<p>1) Activities undertaken with the consent and cooperation of host nation authorities to enhance physical security; emplace detection equipment, and reduce, dismantle, redirect, and/or improve protection of a state's existing WMD programs, stockpiles, and capabilities. (<i>National Military Strategy to Combat Weapons of Mass Destruction</i>, February 2006)</p> <p>2) Actions undertaken with the consent and cooperation of host nation authorities in a permissive environment to increase physical security, and to reduce, dismantle, redirect and/or improve protection of a state's existing weapons of mass destruction program, stockpiles, and capabilities. (JP 3-40, <i>Combating Weapons of Mass Destruction</i>, June 2009)</p>



ANNEX 1: FY10-11 C-CBRN Master Plan Roadmaps

A1.1 Introduction

Using Master Plan guidance, the FY10-11 Roadmaps are actionable solution sets that direct and execute improvements in C-CBRN capability. Specifically, the roadmaps focus on closing identified gaps in Air Force C-CBRN capabilities. These gaps are identified in a variety of credible DoD CWMD documents, to include Joint CBAs, the CRRA, the MPCA, and other recognized studies and surveys. The gaps also include C-CBRN SME inputs vetted during the Roadmap Build Workshop held in February 2009.

The roadmaps are living documents that are updated every two years. The FY10-11 Roadmaps are the first in a set of three planned for execution during the FY10-15 timeframe. The Air Force C-CBRN Council approves the roadmaps and monitors their progress through the Policy Working Group.

A1.2 Roadmap Organization

The roadmaps organize and group capability gaps and related solution sets using the Air Force's five C-CBRN pillars: Proliferation Prevention, Counterforce, Active Defense, Passive Defense, and Consequence Management. Each pillar constitutes a separate roadmap that contains multiple solutions designed to improve C-CBRN capabilities within that pillar. A separate section, comparable to the Roadmaps, addresses solutions for improving Air Force C-CBRN ETE.

A1.2.1 Individual Roadmap Sections

Each pillar roadmap includes two sections: an introduction and worksheets, respectively. The introduction consists of a summary of gaps and subsequent solutions. The worksheets consist of a gap, solution approach, and specific solutions that comprise the overall approach.

The Passive Defense and Consequence Management Roadmaps are divided into four parts: three are exclusive to the specific elements of C-CW, C-BW, and C-RW, and the fourth is a general group that includes gap/solution set worksheets that cross-cut all of these elements.

A.1.2.2 The Gap/Solution Set Approach

Each roadmap gap/solution set worksheet lists a single identified gap in capability and a tailored solution approach designed to fill the gap. Every solution approach is then broken down into actionable, specific solutions that must be completed to address that specific gap. Depending on the solution approach and the nature of the capability gap, some specific solutions require sequential completion while others can be undertaken simultaneously.

In addition, all roadmap gap/solution set worksheets contain information on the OPR, the POCs across the Air Force, the OCRs, estimated completion dates (ECD), and a roadmap tracking number. The worksheet's structure is designed to assist OPRs and POCs in tracking progress in developing capabilities.

UNCLASSIFIED				
Roadmap	PD	Individual Capability Gap	(U) Limited ability to protect and sustain Mobile Ground System operations in a CBRN environment. (2003 and 2008 AFSPC ORI-CI Reports)	
Roadmap Subset	GENERAL			
Tracking Number	PD-12	Solution Approach	(U) Develop plans and TTPs to ensure the Mobile Ground System can operate through or sustain operations in a CBRN environment.	
Worksheet (WS) OPR	AFSPC/A3FS			
ECD	2QFY12	Status/Notes		
Specific Solutions (SS)		SS OPR	ECD	Notes
(U) 1) Develop and implement a plan/TTPs to ensure Mobile Ground System operations can sustained in CBRN environments.		AFSPC/A3FS	4QFY11	(U) OCR -- AF/A5XP, SAF/XC
(U) 2) Develop and implement a plan/TTPs to ensure field-deployed individuals, equipment, and fixed sites can be decontaminated.		AFSPC/A3FS	4QFY11	(U) OCR -- AF/A7CX, SAF/XC
(U) 3) Develop and implement a plan/TTPs to protect field-deployed individuals against multiple CBRN attacks during a single sortie.		AFSPC/A3FS	4QFY11	(U) OCR -- AF/A5XP, SAF/XC
(U) 4) Develop and implement a plan/TTPs to ensure interim and long-term CBRN collective protection is provided for field-deployed Mobile Ground System personnel.		AFSPC/A3FS	4QFY11	(U) OCR -- AF/A7CX, SAF/XC
(U) 5) Develop and implement a plan/TTPs to treat, transport or quarantine contaminated or contagious field-deployed Mobile Ground System personnel.		AFSPC/A3FS	4QFY11	(U) OCR -- AF/A5XP, SAF/XC
(U) 6) Update the mission capabilities to ensure C-CBRN support requirements are identified.		AFSPC/A3FS	2QFY12	(U) OCR -- AF/A5XP, SAF/XC
Contact Information				
POC	Office Symbol	Telephone	Email	
	AFSPC/A3FS (OPR)			
	AFSPC/A3FS			
	AFSPC/A30X			
	AF/A5XP			
	AF/A7CX			
UNCLASSIFIED				

Figure 1: Sample FY10-11 Roadmap Worksheet

A1.3 Roadmap Gap/Solutions Linked with Joint CWMD Military Mission Areas

The roadmap gap/solution sets are also linked to the Joint military mission areas. For example, solutions designed to close Air Force Proliferation Prevention capability gaps are coded to identify improvements in TRC, SCPA, and WMD-I capabilities. This allows the Master Plan OPR to determine Air Force-unique improvements in specific Joint CWMD military mission areas.

A1.4 Pillar Definitions for the Roadmaps

The roadmaps use the following pillar definitions, derived from AFDD 2-1.8, to frame the development of Air Force C-CBRN operational capability. These definitions provide the specificity needed to measure progress made in filling capability gaps in each pillar.

Proliferation Prevention:	Actions designed to restrict the spread of CBRN weapons and prevent adversary acquisition of CBRN materials and technology by supporting political, military, economic and diplomatic efforts to discourage acquisition.
Counterforce:	Operations that provide the combatant commanders with the ability to defeat the full suite of CBRN capabilities before they can be used against U.S. interests with little or no collateral effects.
Active Defense:	Operations to defeat the full suite of CBRN weapons inbound to U.S. interests with little or no collateral effects.
Passive Defense:	Measures to minimize or negate the vulnerability to and minimize the effects of WMD use against U.S., partner, and allied Armed Forces as well as U.S. military interests, installations, and critical infrastructure. These measures will enable sustained air and ground combat and combat support operations in a CBRN environment.
Consequence Management:	Actions taken to maintain or restore critical military missions and essential services, and manage and mitigate problems resulting from CBRN-related disasters and catastrophes, including natural, manmade, or terrorist incidents.

-Derived From AFDD 2-1.8, Counter-Chemical, Biological, Radiological and Nuclear Operations

Figure 2: Pillar Definitions

The United States Air Force C-CBRN Master Plan FY10-11 Roadmaps



ANNEX 1: Proliferation Prevention, Counterforce, Active Defense, Passive Defense, Consequence Management, and ETE Roadmap introductions, summary tables, and worksheets are not included due to classification. Full versions are available on the C-CBRN Master Plan Roadmap System (CMPRS) unclassified and classified databases.

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ANNEX 2: C-DBRN Program Background and Overview of Capability Development

A2.1 Post Cold War C-DBRN Capability

In the years immediately following the end of the Cold War, the Air Force lowered its C-DBRN posture in response to a perceived reduction in the CBRN threat resulting from the collapse of the Soviet Union. It was in this context that the Air Force curtailed Mission Oriented Protective Posture (MOPP) 4 operations, considering them to be prohibitively expensive and difficult to execute relative to the diminished CBRN threat. Also, during this period, the Air Force's operational community relegated air base operations, many critical to effective defense against CBRN attacks, to a support function. In Counterforce operations, the Air Force considered CBRN to be one of many target sets, eschewing unique CBRN intelligence, targeting, and ordnance requirements.

These actions, along with many others, had the cumulative effect of decreasing Air Force emphasis on C-DBRN operations and expertise. Consequently, by the late 1990s many studies concluded that the Air Force would not be able to operate in CBRN environments without experiencing significant degradation in operational capabilities.

The 1997 *Air Force Counterproliferation Master Plan* was the Air Force's first step toward organizing the efforts of its disparate C-DBRN communities into a cohesive, Service-wide counterproliferation operational capability. As such, the 1997 Master Plan established a foundation for future C-DBRN capability growth within the Air Force. Important 1997 Master Plan achievements include the publication of AFDD 2-1.8, *C-NBC Operations*; the development and implementation of an Air Force C-CW CONOPS; the formation of the Air Force C-DBRN Council; and the establishment of AF/A5XP Strategic Plans and Policy as the operational lead for all Air Force C-DBRN efforts. Also critical was the Chief of Staff of the Air Force's approval, in February 2000, of the Counterproliferation Readiness Initiative, indicating Air Force senior leadership's focus on the improvement of capabilities needed to survive and operate in a CBRN threat environment.

A2.2 A New Threat: The Nexus of Irregular Warfare and CBRN Weapons and Materials

On the morning of September 11, 2001, the U.S. was awakened to the catastrophic lethality and global reach of anti-American extremism. Based in Afghanistan, the al-Qaeda terrorist network succeeded in coordinating strikes against the World Trade Center in New York City and the Pentagon in the National Capital Region when nineteen lightly armed assailants hijacked four commercial airliners. The 9/11 attacks demonstrated the destructive potential of irregular warfare tactics and foreshadowed the potential for mass destruction that could occur if al-Qaeda or like-minded terrorist organizations obtained CBRN weapons or materials.

Enhancing the urgency of the post-9/11 terrorist threat is al-Qaeda's publicly stated desire to obtain CBRN capabilities for use against the U.S. and other Western targets. When asked about his organization's efforts to acquire chemical and nuclear weapons and materials, al-Qaeda's leader, Osama bin Laden, stated, "I would say that acquiring weapons for the defense of Muslims is a religious duty."

Likewise, Iraqi insurgents, many of whom have ties to al-Qaeda, have used chlorine-laced Improvised Explosive Devices (IED) against civilian populations multiple times since October 2006. While the number of casualties produced in these chemical attacks has been relatively small, chlorine IEDs have proven effective in terrorizing local populations and in complicating U.S. and Coalition efforts to stabilize the country.

This nexus of irregular warfare and CBRN weapons and materials has created new threats to Air Force operations around the globe in both permissive and non-permissive environments. While the Air Force works to retain its capability to counter catastrophic challenges emanating from traditional state actors, it must also develop new C-CBRN capabilities to effectively counter emerging threats such as CBRN-armed international terrorist organizations and insurgency movements in Iraq and Afghanistan.

A2.3 Key C-CBRN Program Achievements

The *2004-09 Air Force C-CBRNE Master Plan* has played an important role in directing and coordinating the development and implementation of C-CBRN capabilities to meet the changing threat environment. Guiding the development of solutions to counter the full spectrum of CBRN threats, the 2004 Master Plan has led to key materiel and non-materiel achievements within each of the Air Force's five C-CBRN pillars and in ETE.

A2.3.1 Proliferation Prevention

In the Proliferation Prevention pillar, the publication of AFPD 10-39, *Safeguarding Biological Select Agents and Toxins* (BSAT) in 2006 and Air Force Instruction (AFI) 10-3901, *Minimum Security Standards for Safeguarding Biological Select Agents and Toxins* in 2007 has led to the implementation of stronger measures to secure BSAT at Air Force Biosafety Level 3 laboratories. Moreover, the Air Force has integrated biological agent issues into its personnel reliability program in accordance with the publication of these documents. The Air Force has enhanced proliferation awareness and interoperability among allies through military engagement programs with Australia, Israel, and the United Kingdom. Additionally, the Air Force has worked with the Joint Staff to define its role in WMD-I and the Proliferation Security Initiative.

A2.3.2 Counterforce

The Air Force has developed new Counterforce pillar capabilities as well. An important advancement has been the 709th NSS development of the Simulation Environment and Response Program Execution Nesting Tool (SERPENT). SERPENT is an end-to-end target planning tool that simulates offensive operations or Counterforce attacks on chemical and/or

biological targets. Strike planners have used SERPENT for target planning in Operation IRAQI FREEDOM and in Operation ENDURING FREEDOM. Air Operations Center planners have also used SERPENT reach-back functionality to gain pre-strike analysis of collateral damage effects.

As part of SERPENT, the 709th NSS has further improved Air Force Counterforce capabilities through the development of an Empirical Lethality Model (ELM). ELM algorithms have improved the predictive accuracy of CB agent responses following Counterforce strikes, enabling decision-makers to better assess the collateral impact of offensive operations against these targets.

Also in the Counterforce arena, Air Combat Command's (ACC) Requirements Directorate (ACC/A8), with support from AF/A5XPC, developed a capability development document for the Chemical Biological Agent Defeat (CBAD) weapon. Air Force efforts to acquire CBAD are ongoing.

A2.3.3 Active Defense

Air Force capabilities have also improved in the Active Defense pillar over the past five years. Integrated Defense (ID) and force protection transformation have improved the ability of the Air Force installations to defend against ground-based CBRN threats. The ID force protection capability is built on the concept that every Airman is a sensor and defender of the installation. With proper C-CBRN education and training, all Airmen improve their ability to identify inbound, ground-based CBRN threats to installations.

A2.3.4 Passive Defense

In Passive Defense, the Master Plan guided the development and improvement of numerous capabilities within and across the pillar's component elements of C-CW, C-BW, and C-RW.

C-CW is the most mature element of the Passive Defense pillar. The C-CW CONOPS started implementation in 2002 and has been successfully institutionalized across the Air Force. The Air Force Inspection Agency Management Assessment (Eagle Look) of the C-CW CONOPS determined Airmen have a strong understanding of the C-CW CONOPS' key tenets – chemical characteristics, hazard duration, MOPP, and de-MOPP procedures. The end result is decision-makers at high-threat installations are able to minimize risk to personnel with minimal impact to mission capability, and installation personnel, in turn, are able to successfully implement decision-maker instructions.

Over the past five years, the Air Force has continued to improve the C-CW CONOPS by studying the impact of chemical agents on operational mission capability. This research has led to the development of tools and strategies to mitigate the effects of these threats. For example, to counteract detector limitations, the Air Staff developed chemical hazard duration tables to help commanders determine when to release forces from MOPP, facilitating more efficient execution of the mission.

Other improvements in C-CW have been in the area of large frame aircraft decontamination. The Air Force has strengthened its understanding of chemical agent characteristics and their impact on airframes by participating in CB agent tests such as Large Frame Aircraft Decontamination Demonstrations. In collaboration with AFRL 711HPW/RHPC, AMC has led the C-CW CONOPS refinement effort with extensive CB testing designed to inform processes that will ensure the continuation of mobility operations in and through chemically contaminated environments.

The C-BW element of Passive Defense, like C-CW, has seen substantial capability improvement in the previous five years. Much of the progress made in Air Force C-BW capability has resulted from the development and implementation of the C-BW CONOPS due to reach full operational capability in 2009. Designed to prepare effective responses to BW attacks and naturally occurring disease outbreaks, the C-BW CONOPS has led to non-materiel capability improvement in the way installations conduct restriction of movement procedures, medical treatment, prophylaxis distribution, dissemination of information to personnel, and psychological care.

Essential to the C-BW CONOPS effort has been the development of individual installation disease containment plans (DCP). AF/A5XPC, working closely with the A7 and SG communities, led the effort to develop and publish AFI 10-2604, *Disease Containment Planning Guidance*, establishing requirements for individual installation DCPs. In addition to AFI 10-2604, the C-CBRN community has developed a sample DCP template, a DCP validation tabletop exercise, and an exercise facilitator's guide to aid installations in building DCPs.

Also crucial to the C-BW CONOPS implementation effort has been the publication of AFI 10-2603, *Emergency Health Powers on Air Force Installations*. This document outlines the public health emergency powers of installation commanders and directs commanders to appoint a Public Health Emergency Officer (PHEO) for C-BW planning and response efforts. AFI 10-2603 and AFI 10-2604 both increase installation effectiveness in planning, responding, and recovering from a biological event. These publications are critical to the Air Force's implementation of disease containment principles and improve interoperability across installations, between installations and higher headquarters, and civil authorities.

Air Force Passive Defense capabilities have also been bolstered by the development of the C-RW CONOPS. Beginning with an initial Concept Study in March 2004 and followed by five baseline studies finished in December 2005, a Draft C-RW CONOPS was completed in October 2007.

The C-RW CONOPS is designed to give commanders guidance, procedures, and tools to manage and recover from the effects of radioactive material. Once implemented, the CONOPS will enable the Air Force to work through an RW event, allowing for the completion of critical missions, while keeping personnel exposure to radioactive agents as low as reasonably achievable. The CONOPS provides C-RW-specific ORM tools, critical mission operational exposure guidelines, isolation and protective action distance guidelines, updated shelter-in-place procedures, revised dosimeter use guidelines, and specific exposure profiles

for improvised nuclear devices (IND). The C-RW CONOPS also provides realistic threat profiles and hazard characteristics for RDDs, INDs, REDs, and nuclear reactor fuel storage pools.

Many cross-element improvements in Air Force Passive Defense capability have been developed as well. Among these, one of the most important was the updating of the Comprehensive Emergency Management Plan 10-2 template to assist Air Force installations in developing CBRN plans. Another important, cross-element advancement has been the development of C-CBRN force protection measures for incorporation into AFI 10-245, *Air Force Antiterrorism Standards* and AFI 10-2501, *Emergency Management Program Planning and Operations*.

There have been several other cross-cutting Passive Defense capability improvements in the past five years, specifically within the emergency management field. Based on presidential direction, AF/A7 established the Air Force Incident Management System (AFIMS), which incorporates the National Incident Management System approach, to set the framework for interoperability among other response and preparedness agencies outside the Air Force. AFIMS establishes common terminology that allows diverse operational management and support entities to work together across a wide variety of incident management functions. Also, the Emergency Management career field has developed new Unit Type Codes (UTC) that are capability-based versus threat-based. These new UTCs have the means and flexibility to respond both to irregular warfare and traditional military threats.

In addition, the ANG has improved its ability to address emergency response requirements. These improvements include training and equipping emergency management teams to respond individually or in support of Army civil support teams. Team members are trained to the hazardous materials technician level, and equipment packages are prepositioned in all Federal Emergency Management Agency regions to support homeland defense initiatives.

Like their emergency management counterparts, members of the ANG Fire and Emergency Services are trained as hazardous materials technicians. They also have mutual aid agreements (MAA) with many regional and municipal governmental bodies, allowing for rapid response to a CBRN incident on the installation or in the civilian community.

A2.3.5 Consequence Management

As with the other C-CBRN capability pillars, Air Force Consequence Management capabilities have improved over the previous five years. This is evidenced by the fact that DoD has made the Air Force the lead service for specialized Consequence Management operations supporting national technical nuclear forensics in cases of nuclear or radiological attacks against the homeland.

In addition, Air Force Consequence Management progress includes the completion of MAA templates to assist installations in negotiating agreements with local and regional agencies and civil authorities. Another area of progress was the AF/SG-led CODE SILVER tabletop exercises and training sessions. Held at 94 installations, CODE SILVER promoted a

coordinated Air Force medical community response to CBR incidents occurring on Air Force installations. Another key capability improvement has been the fielding of additional radiation detection equipment on Air Force installations to better enable Airmen to counter the effects of nuclear and RW attacks.

Air Force Consequence Management capabilities also improved due to the initiation of the Medical Response Exercise and Training Program (MeRET). MeRET was comprised of a PHEO seminar, medical exercise evaluation team training, functional exercise, and a C-CBRN tabletop exercise that subsequently became AHRT. AHRT tests installation responses and capabilities during crises including CBRN events. Air Force Medical Support Agency's Medical Readiness Homeland Medical Plans Division (AFMSA/SGXH), coordinating with Headquarters Air Force's Readiness Emergency Services Branch (AF/A7CXR), developed, funded, and conducted the AHRT program at wing-level. The AHRT program consists of C-CBRN training for specialized and functional teams, exercise evaluation teams, as well as C-CBRN tabletop exercises for unit leaders.

A2.3.6 Education, Training, and Exercise

The Air Force C-CBRN Council established the C-CBRN ETE Initiative to institutionalize a cross-functional, accession-to-separation approach to achieve a full spectrum C-CBRN operational capability. The ETE Initiative's goal is to identify the C-CBRN KSAs that senior leaders, functional area experts, and all Airmen need to successfully operate in a CBRN environment and incorporate them into education, training and exercises. An important ETE success has been the publication of a comprehensive competency list detailing required KSAs across the five C-CBRN capability pillars in AFMAN 10-2605, *Education, Training, and Exercise Competencies For Counter-Chemical, Biological, Radiological, and Nuclear Operations* in June 2008.

The 2004 Master Plan has proved successful in directing and coordinating numerous efforts across the spectrum of Air Force C-CBRN capabilities. These accomplishments have improved Air Force C-CBRN capabilities to better meet the catastrophic challenges of the ever-changing CBRN threat.





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