BY ORDER OF THE SECRETARY OF THE AIR FORCE

AIR FORCE MANUAL 10-2503

14 MAY 2019

Operations

OPERATIONS IN A CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR (CBRN) ENVIRONMENT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e-Publishing website at **www.e-Publishing.af.mil** for downloading or ordering

RELEASABILITY: There are no releasability restrictions on this publication

---

OPR: AF/A4

Certified by: AF/A4CX
(Col Michael J. Zuhlsdorf)

Supersedes: AFMAN10-2503, 8 May 2019

Pages: 132

This publication implements AFPD 10-25, *Air Force Emergency Management Program*, and supports the integration of AFPD 10-26, *Countering Weapons of Mass Destruction Enterprise*, and AFI 10-2501, *Air Force Emergency Management Program*. This manual supports the integration of actions into a single installation CBRN Defense Program by establishing essential Ability to Survive and Operate (ATSO) standards and CBRN defense training and exercise competencies. It includes current Air Force (AF) doctrine, operational concepts, tactics, techniques, and procedures to enable both survival and the conduct and sustainment of operations in CBRN environments. It also provides commanders with operational standards to use when developing individual, unit, installation, and theater plans, training, and exercises. Within the context of this document, preventative actions are taken throughout the preparedness phase of attack management to protect the warfighter (force survivability) to enable mission continuation through the use of intelligence, inspections, evaluations, the integrated risk management process (IRMP), and improved security methods to prevent or lessen the effects of attacks/incidents. It applies to Total Force units worldwide. Consult the cited instructions, manuals and their supplements for specific policies, procedures and requirements. This publication may be supplemented at any level, but all supplements must be routed to the office of primary responsibility (OPR) listed above for coordination prior to certification and approval.

Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, Recommendation for Change of Publication; route AF Forms 847 from the field through appropriate functional' s chain of command. Ensure that all

records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with Air Force Records Information Management System, and Records Disposition Schedule. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, and T-3") number following the compliance statement. See AFI 33-360, Publications and Forms Management, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the publication OPR for non-tiered compliance items.

Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through appropriate functional' s chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System, and Records Disposition Schedule at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm** recommended changes to AF EM Division, 1260 Air Force Pentagon (4C1057), Washington, District of Columbia 20330-1260 or **usaf.pentagon.af-a4.mbx.a4cx-workflow@mail.mil**.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. The recent changes to this publication includes integrating the ability to survive and operate (ATSO) enabling standards, which includes Air Force (AF)-unique guidance for conducting operations in highly contested CBRN environments, and introduces new considerations for pre, trans, and post-attack actions. It also incorporates analytical data specific to CBRN defense operations and provides Commanders with courses of action to consider when preparing for, responding to, and recovering from CBRN attacks/incidents.

Chapter 1

OPERATIONAL CONCEPTS AND STANDARDS

1.1. Introduction:

1.1.1. Top-level National, Department, and Air Force (AF) strategies drive revision to AF Chemical, Biological, Radiological, and Nuclear (CBRN) defense operations. References include the National Security Strategy, National Defense Strategy, National Military Strategy, and the Department of Defense (DoD) strategy of Countering Weapons of Mass Destruction. This manual provides revised guidance for conducting and sustaining operations in CBRN environments. It also provides expanded procedures to enable total force Airmen to gain an operational advantage in non-permissive environments. The operational concepts and actions within this manual are tools intended to inform AF tactics, techniques, and procedures (TTPs). Use these tools to complete the individual, mission essential, and collective tasks that enable mission accomplishment in contested and CBRN environments.

1.1.2. The foundation of this manual is AF intent to continue operations in contested environments (e.g. anti-access, area denial). Successful implementation is contingent upon adopting a risk management approach to operate independently for an unknown duration. Subject Matter Experts (SMEs) from across the installation assist commanders to develop and implement courses of action. Key SMEs reside in Emergency Management (EM), Intelligence, Bioenvironmental Engineering (BE), Security Forces (SFs), Explosive Ordnance Disposal (EOD), and Fire and Emergency Services. All functional communities play a role in ensuring Airmen have the Ability to Survive and Operate in non-permissive environments. It is the Installation Emergency Manager's responsibility to brief commanders at their location on guidance provided in this manual.

1.1.3. Commanders, supervisors, specialized teams, and Airmen use this manual to implement courses of action based on a current threat analysis and their mission. Users must be proficient within their AF specialty and understand basic CBRN defense concepts of operations. A comprehensive installation CBRN defense training and exercise program will provide the basis for CBRN defense knowledge and task training.

1.1.4. Procedures in this manual are fully executable in today's AF structure with existing CBRN defense response equipment and material. The existing resources and equipment are to be re-aligned within the commander’s areas of responsibility. Commanders will commit all levels of resources to include manpower for specialized team support, Emergency Operation Center (EOC)/Unit Control Center (UCC) representatives, specialized supplies and equipment to execute the revised CBRN concepts of operations. (T-3).

1.2. Doctrine, Policy, and Guidance:

1.2.1. This manual implements guidance for organizing and employing Aerospace Forces at the tactical level across a full range of military operations. It connects joint service and AF doctrine requirements for CBRN defense. Commanders will use this guidance to execute assigned missions as part of an air component of a joint or multinational force. Commanders, supervisors, specialized teams, and Disaster Response Force elements will use this manual to develop deliberate plans and conduct operations in what may be highly contested, non-permissive CBRN environments.

1.2.2. AF and joint doctrine requires commanders to prepare their forces for employment across the full range of military operations. This doctrine outlines AF operations in support of a joint service task force or coalition operations. Joint doctrine publications include Joint Publication 3-01, *Countering Air and Missile Threats*, Joint Publication 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear Environments*, and Joint Publication 3-40, *Countering Weapons of Mass Destruction,* Joint Publication 3-27, *Strategy for Homeland Defense and Defense Support of Civil Authorities, February 2013;* Joint Publication 3-28, *Defense Support of Civil Authorities, 31 July 2013; and* Joint Publication 3-41, *Chemical, Biological, Radiological, and Nuclear Response, 21 June 2012.*

1.2.3. This manual applies to the entire total force military Airmen and civilian personnel. AF detached, forward operating area units and personnel assigned to duties outside of AF jurisdiction will also comply with CBRN defense policies, plans, and orders of the host or the supported organization.

1.2.4. Major Commands (MAJCOMs) and units will develop supplemental guidance to integrate theater, MAJCOM, and host-nation procedures. (T-2). Supplemental guidance must be as restrictive as possible, and not contradict, higher headquarters publications. Commanders of forces operating in a joint command will follow the directives and procedures of the unified commander. Commanders of forces in a multinational alliance or coalition should follow multinational doctrine and procedures ratified by the United States. For doctrine and procedures not ratified by the United States, commanders evaluate and then follow the multinational command's doctrine and procedures only after careful consideration of operational risks involved.

1.3. Mission. The AF will fly, fight, and win in air, space and cyberspace with forces prepared to operate in CBRN environments. To maximize military projection of airpower during and after a CBRN attack, operations balance force survivability with mission continuation. Commanders protect forces throughout all phases of operations. Organize, train, and equip all Airmen to execute the mission. CBRN defense exercise competencies are provided in **Table 1.1** and expanded upon in **Attachment 4**.

1.4. Joint Intelligence Preparation of the Operating Environment:

1.4.1. The AF and joint forces should be prepared to conduct prompt, sustained, and decisive military operations in CBRN environments. An enemy's use of WMD or CBRN weapons or any intentional or unintentional release of CBRN hazardous material can create effects that disrupt or delay operations to achieve US and multinational objectives. The planning, preparation and sustainment of operations in a CBRN environment are outlined in Joint Publication (JP) 3-11 and adopted by Joint and AF planners during the Joint Intelligence Preparation of the Operational Environment.

1.4.1.1. Commanders and staffs will consider potential adversary CBRN capabilities when developing strategy, plans, policy, operations, and doctrine. Understanding the CBRN environment includes an analysis of the operational environment as outlined in JP 3-11. Once the operational environment is analyzed, it is important to determine the type and amount of resources needed to support capabilities for CBRN response activities as outlined in DODI 6055.17, DoD Emergency Management Program and JP 3-41, Chemical, Biological, Radiological, and Nuclear Response. This can include factors such as priority, level of response capability, and the hazards, threats, and vulnerabilities identified during risk management activities. (T-1).

1.4.1.2. Any analysis of the operational environment that is factored into strategy, plans, policy, operations, and doctrine shall also be incorporated into all risk assessments including the criticality assessment, all-hazards threat assessment; and vulnerability assessment. Information should include specific potential state and non-state actor capabilities (conventional and CBRN capabilities), units and equipment (order of battle), CBRN materials, delivery systems, asymmetric capabilities (special operations forces); potential effects, vulnerabilities; and adversarial intent. (T-1). Commanders will also identify intelligence priorities and informational gaps presenting those collection requirements to the intelligence staff in order to gain a better understanding to mitigate threats and hazards. (T-1).

1.4.1.3. All installations and theaters will be postured to respond to all-hazards (see **Attachment 1** for definition); however for nuclear-specific missions or threats, installations and personnel must be able to effectively respond to, detect, deploy countermeasures, mitigate, and operationally recover from nuclear incidents or attacks from an adversary.

1.4.2. At the operational level, the analysis of the Operating Environment includes issues such as sociocultural factors, the location of adversary's political and economic support structures, military support units, force generation capabilities, potential third-nation or third-party involvement, logistic and economic infrastructure, political treaties, press coverage, adversary information activities, and the potential to affect the information environment. Typically the Combatant Command J2 function publishes the evaluation of adversary CBRN capabilities, strengths, and weaknesses to other service component headquarters (i.e., HQ PACAF, HQ USAFE, etc.). The intelligence estimate is normally used for sharing this type of evaluation. However, intelligence products from other official governmental agencies (Defense Intelligence Agency, Defense Threat Reduction Agency) may provide relevant threat information to assist with preparing the operational environment and can be requested through the installation intelligence organization. Air Operations Centers (AOC) and AFFOR staffs use the Combatant Command J2 intelligence estimate to assist with the development of air component requirements within an operational plan.

1.4.3. Tactical level intelligence elements will provide initial threat assessments and information on the enemy order of battle and military doctrine. They will also analyze attack reports from other locations to identify enemy behaviors and predict future actions against the installation. The installation All-Hazards Threat Assessment (AHTA) provides the installation a mechanism for identifying relevant CBRN threat information. Installations will follow the procedures outlined in DoDI 6055.17, Air Force Tactics, Techniques, and Procedures (AFTTP) 3-2.46, *Multi-Service Tactics, Techniques, and Procedures (MTTPs) for Chemical, Biological, Radiological, and Nuclear Passive Defense*, when developing the AHTA, Criticality Assessment, and Vulnerability Assessments. (T-1).

1.4.4. Commanders must review each tasked operational and/or contingency plan to assess and evaluate likely courses of action regarding an adversary's CBRN capability and intent to use. Commanders will organize, train, and equip Airmen to survive and operate in a CBRN environment based on the evaluation of the CBRN threats identified in each operational and or contingency plan and developing subsequent OT&E requirements. (T-1).

1.5. Operational Areas of Concern: The AF conducts operations in both mature theaters of operation and austere regions. Installation CBRN defense TTPs must be flexible and adaptable to varied basing realities. Forces located in or deployed to mature theaters primarily operating from existing main or assembled operating bases. Main operating bases normally have an established support, manpower, and facility infrastructure. Collocated or forward operating bases may have an established support and facility infrastructure, but do not normally have assigned manpower. Forces deployed to austere regions or to recently re-occupied areas may find installations without pre-existing support and facility infrastructure. In addition, hostile action or civil unrest may damage or destroy the installation infrastructure before the arrival of United States forces. See **Table 1.1** for the **Overview of CBRN** Exercise Competencies.

Table 1.1. Overview of CBRN Exercise Competencies.

Countering WMD Line of Effort	Associated Major Competency
Proliferation Prevention. Actions taken to prevent or limit the spread of WMD.	Understanding the AF's role in interdiction operations.
Counterforce. The ability to defeat the full suite of CBRN capabilities before they can be used.	Understanding the risk assessment and management processes for CBRN targets.
Active Defense. Attempts to intercept CBRN weapons enroute to their targets.	Understand the levels of command and control for operational warning and reporting.
Passive Defense. Measures to maximize the ability to survive and operate in CBRN environments.	Understand issues, constraints, and guidance for installation operations in a CBRN environment.
CBRN Response. Activities to reduce the impact from a CBRN incident.	Understand and demonstrate how to protect the force from CBRN effects.

1.5.1. Units assigned to locations where CBRN threats exist will develop contingency plans and conduct training and exercises for both the home station and deployment location (if applicable) threat and mission. All other units will plan, train, and conduct exercises for contingency operations at their deployment location(s). Develop plans, training, contingency response checklists, and exercises based upon a realistic threat and assessment of resources that will be available in a contingency. Deliberate plans that rely upon in-place resources, such as the Installation Notification and Warning System (INWS) or fixed-site collective protection facilities, may not be executable at austere locations. Commanders will train and exercise forces to develop alternate methods or work-around procedures should critical resources be destroyed or if host-nation or mutual-aid resources are unavailable. (T-2).

1.5.2. All units should prepare and plan for operations in highly contested, non-permissive, CBRN contaminated environments. (T-2). Existing manpower and equipment force modules must be reviewed to determine their adaptability for flexible operations in austere locations. For guidance on conducting CBRN planning and execution refer to the list of references in the back of this publication.

1.5.3. While MTTPs greatly aid in standardization, the publications are not prescriptive. The following examples in **Table 1.2**. highlights some of the key areas where the AF has consciously decided to take a different path than what is outlined in the respective MTTPs. Air Force personnel will follow the guidance contained within this Manual where there are discrepancies from MTTPs. Note: The examples provided in **Table 1.2** originated from ATP 3-11.32, MTTPs for CBRN Passive Defense. Additional disconnects exist in ATP 3-11.32 and other MTTPs. See **Table 1.2** for some examples of disconnects with AF policy and MTTPs.

Table 1.2. Disconnects Between AF and MTTPs.

Subject	Language in MTTP	AF Position
General Statement on Use of Contaminated Equipment and Personnel	"Contamination avoidance practices should include strict enforcement of checkpoints to prevent contaminated personnel or equipment from entering uncontaminated zones unless it is necessary for life-saving medical evacuation."	While it is desirable to keep contaminated personnel and equipment out of uncontaminated areas, this is not always possible during Major Combat Operations (MCO) activities. Recognizing this need, the Air Force developed and uses the chemically contaminated object rule (See Attachment 5) for handling contaminated equipment. Contaminated personnel may accompany the equipment as part of the mission operation, or contaminated personnel may have to traverse an uncontaminated zone in order to get to their rest and relief area – be it in a collective protection facility or at an open-air toxic-free area (TFA).
Airborne Aircraft Contamination	"If the height of the top of any inversion layer is lower than 800 meters, this should be indicated in the CBRN Chemical Downwind Report by the letter A appearing in the coded significant weather phenomena. If the height of the top is lower than 400 meters, letter B is used, if lower than 200 meters, letter C. These letters signify the lowest safe altitudes for aircraft to avoid airborne contamination."	Operationally relevant chemical warfare (CW) contamination does not reach hundreds of meters in height above AF installations attacked with missiles except in very rare cases. Those unusual scenarios primarily affect "open door" helicopters as opposed to fixed wing aircraft. Further, aircrew members wear the appropriate Individual Protective Equipment (IPE) when CW hazards exist on the installation. As a result, the AF does not issue CBRN flight warnings to aircrew members with the intent of having the aircrew modify their existing flight profiles.

Radioactive Decay	"For nuclear fallout after a nuclear detonation (many different radionuclides, each with different half- lives), the seven-ten rule applies."	AF EM and Bioenvironmental Engineering can provide precise estimates of radiation exposure due to nuclear detonation and fallout using the actual decay rate. One tool for estimating exposures is the 7:10 Rule, which means for every 7- fold increase in time after detonation, there is a 10- fold decrease in the exposure rate. In other words, when the amount of time is multiplied by 7, the exposure rate is divided by 10. For example, let's say that 3 hours after detonation the exposure rate is 500 R/hr. After 21 hours, the exposure rate will be 1/10 as much, or 50 R/hr.
Decontamination	"Detailed equipment decontamination (DED), detailed troop decontamination (DTD) and detailed aircraft decontamination (DAD) are conducted as part of a reconstitution effort during breaks in combat operations…..The DED, DTD, and DAD restore items so that they can be used without protective equipment." "When a CBRN incident occurs, the joint force quickly responds to and initially mitigates the effects of contamination. The joint force performs only those actions required to allow continuation of the mission and to save lives. To recover, the commander decides whether decontamination is required to restore combat power and, if so, what level of decontamination is required (the levels of decontamination are immediate, operational,	In an MCO environment the AF does not support CW decontamination of areas, vehicles, equipment, and aircraft other than spot decontamination." Historical and technical test reports show that Mission Oriented Protective Posture (MOPP) reduction cannot take place; militarily-significant CW vapors continue to off- gas from contaminated surfaces after decontamination activities have been completed. The AF does not have area/facility, vehicle, aircraft, or munitions decontamination teams for chemically-contaminated items in MCO environments. Users accomplish spot

	thorough, and clearance)."	decontamination as necessary through the use of M295 kits in order to decontaminate areas of vehicles, equipment, and aircraft that will be continually touched.
Note: Specific areas below exemplify the variations of decontamination types and the degree of deviations the AF has from sister services in these areas.		
Vehicle Wash Down	"Vehicle wash down should be performed within one hour of contamination for equipment that is not painted with Chemical Agent Resistant Coating (CARC); within six hours of contamination for CARC painted equipment; and when the mission does not permit a thorough decontamination. "The vehicle wash-down crew may use power driven decontamination equipment to spray 100 to 150 gallons of hot, soapy water on each vehicle to wash off the gross contamination."	Testing has shown the specified decontamination technique is not effective in regard to AF goals and objectives. See paragraph 3.4.2 for more information on the Air Force approach to resource decontamination.

Operational Aircraft Decontamination	"Commanders conduct Operational decontamination to minimize contact hazards, accelerate the weathering process, and limit cross contamination of mission-critical resources. Performing aircraft wash down within 1 to 6 hours of contamination speeds the weathering process and may allow the aircraft to be operated and maintained in reduced aircrew IPE or MOPP levels. Aircraft operational decontamination is accomplished by decontaminating surfaces (exterior and interior) that must be touched during aircraft servicing and operations." "The site should have sufficient fresh water to wet the entire exterior of the aircraft. For planning purposes, the following recommendations are provided: F-18, 300 gallons; and C-130, 800 gallons."	Testing has shown the specified decontamination technique is not effective in regard to Air Force goals and objectives. See paragraph 3.4.2 for more information on the Air Force approach to resource decontamination.
Area Decontamination	"Even though a particular part of a building is not intended for occupation, it may still need to be decontaminated to prevent the contamination from spreading." "Streets and sidewalks also absorb liquid agents and then give off toxic vapors when heated by the sun. These surfaces may need decontaminating several times to reduce hazards." "If possible, the contaminated area should be marked and evacuated until cleared."	Testing has shown the specified decontamination technique is not effective in regard to Air Force goals and objectives. See paragraph 3.4.2 for more information on the Air Force approach to resource decontamination.
Chemical De-masking Procedures	MTTP outlines "Selective De-masking technique that requires selected individuals to go through cycles of removing their mask, donning their mask after specific	The selective de-masking process does not fall within the Air Force's range of acceptable risk.

	time periods, and then being monitored for agent symptoms. Entire population de-masks if selected personnel did not exhibit symptoms during the process.	
Contaminated Waste	"Separate waste by type (solid versus combustible versus noncombustible)."	Air Force does not generate liquid contaminated waste (e.g., runoff from decontamination operations) as part of CW-related MCO activities. As such, the Air Force consolidates all Chemical Warfare contaminated waste in its contaminated waste collection points and centralized Chemical Warfare waste disposal area.
Replacement of Vapor Exposed Joint Service Lightweight Integrated Suit Technology (JSLIST) Ensembles	"Use a chemical detector, if available, to ensure that vapor levels in the area are below detector threshold sensitivity levels. However, if a reading of zero cannot be obtained, report to one of the installation's CCAs or MOPP gear exchange points for suit exchange prior to reducing MOPP level 4."	The MTTP technique of basing JSLIST replacement on whether or not a detector reading of zero can be obtained is not valid. Testing has shown that the relevant factor is how much agent the ensemble has been exposed to. See the "re-use of vapor exposed JSLIST ensembles" segment of this guide.
Use of Burning as a Decontamination or Contaminated Waste Disposal Technique	"Fuel may be used to burn grass or short undergrowth. Burning also works on dirt surfaces. Soak the area with diesel fuel, kerosene, or fuel oil and ignite remotely. Do not use gasoline; it burns too quickly. Burning causes vapor hazards downwind, and protective measures have to be used by downwind units. Area commanders should warn these units of the vapor hazards."	Neither the Air Force nor DoD have a method for determining how far downwind the vapor hazards from a burning operation will extend. As a result, adequate warning to friendly forces and non-combatants cannot be provided – especially with the historical "wind shifts" that occur over time. Consequently, the Air Force does not use burning as a contaminated waste disposal technique.
Donning Masks Upon Indication of Biological Warfare Attack	"In the preparation phase, a biological trigger event has occurred which caused the unit to assume protection. These trigger events range from an intelligence warning based on adversary	Air Force procedures do not automatically direct the donning of protective masks because an intelligence warning of an impending attack has occurred, as there is no way of knowing

	capabilities and activity; a warning from a biological detector; or other environmental indications of a biological hazard (for example, personnel exhibiting symptoms, dead animals with no apparent trauma, and so forth)."	how long this posture would have to be maintained (and the Air Force biological detection protocols will provide the requisite protection). The Air Force does not automatically direct the donning of protective masks after indications of an attack are seen (dead animals, people exhibiting symptoms, etc.). This is because the incubation period of Biological Warfare (BW) agents means that the hazard has likely already dissipated.

1.6. Standards. The AF standards for mission sustainment and mission capability restoration following chemical or biological attacks are summarized below. Although specific standards are not established for mission restoration following conventional weapons attacks, commanders should use CBRN defense standards as a guide to restore the mission. AFI 10-2501 outlines the peacetime response enabling standards and proficiency requirements. It includes response to terrorist attacks with weapons of mass destruction.

1.6.1. Any assigned, attached, or geographically separated Air Force unit conducting combat operations or in direct or indirect support of combat operations, must be able to:

1.6.1.1. Resume their primary mission as soon as possible after the end of a chemical or biological attack or the discovery that a covert attack has occurred.

1.6.1.2. Support operational sustainment, in accordance with Installation Emergency Management Plan (IEMP) 10-2, for up to 96 hours.

1.6.1.3. Support operational sustainment by reducing contamination-related casualties to the lowest possible level.

1.6.2. Any AF unit conducting force projection operations in support of expeditionary forces must be able to resume their primary mission capability within 6 hours after a chemical or biological attack or the discovery that a covert attack has occurred.

1.7. Operational Assumptions:

1.7.1. There are many decisions Commanders and senior leaders will have to make during Major Combat Operations activities involving CBRN materials. Most of these decisions are hazard specific e.g., the item applies to Chemical Warfare but is not applicable to Biological Warfare or Radiological Warfare scenarios.

1.7.1.1. Timing the release of people from shelters after enemy missile attacks.

1.7.1.2. Utilization of Mission Oriented Protective Posture (MOPP) options.

1.7.1.3. Implementation of Split-MOPP.

1.7.1.4. Use of “simplified” versus “advanced” version of the Chemically Contaminated Object Rule.

1.7.1.5. Determination of aircraft CW contamination status.

1.7.1.6. Accomplishment of area, vehicle, and aircraft decontamination.

1.7.1.7. Re-use of protective ensembles.

1.7.1.6. Timing of de-masking decisions.

1.7.2. Mission priorities may require commanders to make decisions on protective postures and recovery actions based on incomplete information. A high priority mission may require acceptance of an increased casualty risk for some, or all, of the installation population. Commanders should consult with their staff SMEs and consider both friendly and hostile force capabilities. Factors to consider include the commander’s confidence in the intelligence assessment and the importance of the mission to the current and overall operational or contingency plan. Also, consider attack-warning timelines, alarm signals, force training, equipment levels, collective protection, and the ability to communicate desired actions to all installation forces. For hostile forces, consider their intent, probable order of battle, attrition (if any) due to counterforce operations, theater situation, and past behaviors.

1.7.3. CBRN threats require the use of protective measures that could degrade the mission. Commanders must balance mission-degrading defensive measures against sortie generation, airlift throughput, and mission continuation. The threat of CBRN attack drives the determination of the appropriate alarm condition and MOPP level (see **paragraph 5.3**.).

1.7.4. For nuclear operations, installations will function at different points on the operational spectrum (e.g. once nuclear weapons are used and fallout arrives). Commanders will adjust the “acceptable risk” for radiological doses based on mission requirements.

1.7.5. Additional funding, by itself, does not enhance AF capabilities to fly, fight, and win in CBRN environments. The Air Force must have broad operational concepts to effectively use the resources and manpower available. Commanders will tailor their response protocols in the IEMP 10-2 to counter the CBRN threats for their specific installation and to meet specific unit missions or objectives. (T-1).

1.7.6. The currently fielded chemical and biological agent detectors do not detect every potential agent in all forms (solid, liquid, or gaseous state) at expected concentrations. These detectors will detect field concentration of likely chemical warfare agents under most conditions. If the agent concentration is below the detector's threshold level (lower limit of the detector sensitivity), the detector will not indicate the agent present. Consequently, detector operators can only determine that, if present, the agent concentration is below the instruments level of detection sensitivity. Installation EM and Bioenvironmental specialists can provide specific information on CBRN detector capabilities, limitations, and risk assessment.

1.7.7. Civil aircraft that are under DoD contract and the Civil Reserve Air Fleet (CRAF) may conduct flights into CBRN areas assessed as "Low" threat as determined by the Air Mobility Command Threat Working Group with input from the FAA. They will not conduct operations on installations or airbases that are under attack or contaminated at the time of flight arrival. Depending upon the type of agent and scope of exposure, the crew may require medical evaluations, treatment, or prophylaxis prior to departure. Air Mobility Command provides CRAF and contract airlift crews with CBRN defense training and issues a ground crew chemical ensemble before entry into these areas. If a CRAF aircraft or contract crew is caught on the ground during a CBRN or WMD attack, the crew will be evacuated by first available means and their aircraft grounded.

1.7.8. The airlift cargo owner is tasked to decontaminate cargo before and after on-loading or off-loading. This is especially important for cargo movements from forward operating bases.

1.7.9. For airlift operations, only critical retrograde cargo will be moved from a contaminated to an uncontaminated installation. Critical requirements are pre-designated in theater operational plans.

1.7.10. The DoD must coordinate with applicable civilian authorities, and will only issue guidance on contaminated aircraft movement after obtaining approval from the President of the United States and United States Secretary of Defense. Carriers are issued War-Risk-Insurance and any claims for hull loss and/or damage to include contamination will be processed through United States Transportation Command and the Federal Aviation Administration.

1.8. Leadership Challenges and Responsibilities:

1.8.1. **Challenges.** Leadership at all levels remains an essential element to effectively conduct and sustain operations in a highly contested, non-permissive environment. Probably the greatest challenge faced by leaders and supervisors is continuing mission operations, despite the short and long-term impact of wartime operations upon themselves and their subordinates. The physical and psychological effects of CBRN weapons upon personnel and unit operations will range from limited to severe.

1.8.2. A leader's knowledge of an airman's abilities has always been a key component of successful leadership and becomes even more important under CBRN conditions. Leaders must anticipate that some people will have difficulty performing operations, such as operating in protective equipment. The cause may be a lack of training (i.e. failure to complete task qualification training), fatigue, poor health, or poor adjustment to the local climate. Stress and physical conditions will magnify existing problems for some individuals and create new ones for others. Operationally stressful training situations will provide an opportunity to both identify and correct individual problems and to train leaders to recognize and resolve common problems. Leaders and co-workers must watch for problems, take action to correct the situation within their ability, or notify the Unit Control Center (UCC), unit commander, or medical staff immediately.

1.8.2.1. If personnel within a unit become CBRN casualties, other unit members may experience significant stress-related problems. Some, even though they were not exposed, may believe they have CBRN agent symptoms too. Leaders must be aware of this potential problem and request assistance from the Emergency Operations Center (EOC) or medical personnel, if this situation occurs.

1.8.2.2. Several techniques are available to extend Airman, team, and unit performance under CBRN conditions. Develop standard operating procedures and training leaders and workers to perform tasks and missions under different alarm conditions (**paragraph 4.7**.) and MOPP levels. Train all personnel on the procedures for day and night operations. Units will train supervisors to use crew rotations, work and rest cycles, sleep discipline, and to enforce hydration standards. (T-2). Align Crisis Action Team (CAT), EOC, and UCC activities to support contamination footprint identification and isolation. In addition, focus CAT, EOC, and UCC activities on management of forces under different protective postures throughout the installation, climatic conditions, and threat scenarios.

1.8.3. **Responsibilities.** See AFI 10-2501, *Air Force Emergency Program*, for specific Air Staff, MAJCOM, installation, and functional area responsibilities for CBRN defense.

1.8.3.1. CBRN Task Qualification Training (TQT). TQT prepares individuals and teams to perform mission essential tasks in CBRN threat environments. Unit supervisors and trainers will conduct CBRN task qualification training for the target audiences IAW each functional Air Force Specialty (AFS) Career Field Education and Training Plan (CFETP). (T-1). Common core tasks are contained in AFTTP 3-2.42, Multi-service Doctrine for CBRN Operations, this manual, and provided in the CBRN Defense training course.

1.8.3.1.1. AF Career Field Managers (CFM) and Functional Area Managers (FAM). Each CFM, through the MAJCOM FAMs (e.g. Air Force Installation and Mission Support Center (AFIMSC) and retained MAJCOM Program Managers (e.g. C-MAJCOMs)) will provide expert guidance for their AFS. They are the critical link responsible for integrating CBRN defense operational concepts into AF and MAJCOM functional area programs. The FAMs will use the concepts and TTPs within this manual to further develop their functional area-specific CBRN guidance and TTPs. The FAMs will also include CBRN guidance and TTPs into the next revision of their functional publications, CFETPs, job guides, and formal schools. MAJCOM FAMs will identify critical tasks that must be performed in CBRN environments in CFETPs. This guidance must be in sufficient detail to enable supervisors to identify the minimum individual and unit training tasks required to conduct operations in CBRN environments. (T-1).

1.8.3.1.2. Installation Functional SMEs. Installation functional SMEs will incorporate AF and MAJCOM guidance into unit-level publications, training or job guides, checklists, and standard operating procedures. Functional SMEs assist first-line supervisors to tailor unit specific CBRN defense TQT requirements based on core TQT standards established by CFMs for their respective Air Force specialty and also assist commanders to develop standard unit response and recovery procedures for likely CBRN attack scenarios.

1.8.3.2. **Installation Area of Responsibility:**

1.8.3.2.1. The Joint Rear Area Coordinator (JRAC) is responsible for coordinating security for all rear area forces including air bases. The JRAC may assign the in-place or deployed Air Force commander an area of responsibility that extends beyond the boundaries of the installation perimeter boundary. The installation commander normally will delegate responsibility for security within the base area of responsibility to the Defense Forces Commander. Responsibility for CBRN detection and marking in the area outside of the base perimeter may or may not be the responsibility of the installation. Specific requirements are determined by host-nation support agreements, local sensitivities, the capability of other services, and coordination with the JRAC.

1.8.3.2.2. Security Forces patrols that operate outside the installation perimeter and within the installation area of responsibility must have the ability to detect and report CBRN contamination. This may require additional training on specialized CBRN detection instruments. Another method is for specialists from EM to accompany Security Forces patrols to detect and mark CBRN contamination and unexploded ordnance (UXO) in the area of responsibility. Conversely, Security Forces patrols may need to escort EM teams tasked to evaluate the extent of contamination within unsecured areas of the installation perimeter or outside the installation boundaries. Security Forces patrols outside the installation perimeter should assist in maintaining the security of automatic and manual chemical and biological agent detectors. Security Forces may not be able to immediately dedicate patrols specifically to these secondary tasks, especially if actively engaged in their primary tasks for installation defense. EM specialists tasked to provide CBRN defense support for Security Forces operations will be postured for immediate response, armed, equipped with personal body armor, and trained to perform their assigned tasks. The Base Defense Operations Center (BDOC), the Communications Squadron, and EOC must closely coordinate operational planning and communications requirements. Installations will identify requirements and TTPs for off-base CBRN reconnaissance operations within the IEMP 10-2 and the Base Support Plan, Part II, Chapter 11. (T-2).

1.9. Organization:

1.9.1. The CBRN defense operational concept is to use the existing MAJCOM, Component-Numbered Air Force (C-NAF), and installation command and control relationships and structures to execute CBRN defense operations. This structure provides a natural mix of forces that includes senior leaders, functional area specialists, and augmentation. It maintains control of a wide range of installation activities and enables the commander to respond effectively to all threats and maintain mission focus. Adjustments may be necessary to support joint, theater, and host-nation missions, but should not require the creation of a new or separate organization or structure.

1.9.2. Commanders will organize their forces and develop a command and control structure IAW the Air Force Incident Management System (AFIMS) to meet operational requirements under the most likely threat conditions. (T-1). Note: Consider how Command and Control (C2) relationships and structures may be degraded when operating in a multi-domain C2 environment. Joint and Combined Operations. Most future conflicts will include Air Force participation in a Joint or coalition campaign. Units operating from overseas bases are also subject to host-nation agreements and requirements. Joint doctrine requires Air Force units to integrate operational and support activities within the framework of the Joint organizations and host-nation agreements.

1.10. Host Nation Support:

1.10.1. The availability of host-nation support may enable Air Force units to reduce support and transportation requirements by securing agreements with host-nations. These agreements may include forces, civilian manpower, supplies, equipment, and facilities designated for installation use. MAJCOM, NAF, and installation planners should develop support agreements to complement Air Force CBRN capabilities and reduce the need for pre-positioned or mobility material. Any new agreements must fulfill existing regulatory requirements. Contact the Wing Judge Advocate for further guidance on new agreements and for interpretation of any existing agreement, including but not limited to, any Status of Forces Agreement or Defense Contract Agency agreement.

1.10.2. Host-nation agreements should include all of the CBRN support Air Force units receive from or provide to host-nation forces. Examples include exclusive or shared use of CBRN attack warning and reporting systems, medical treatment, CBRN detection, decontamination, and access to facility hardening equipment and supplies.

1.10.3. The Joint Forces Commander (JFC) normally establishes a single office to serve as the executive agent to manage and coordinate host-nation support. Installation or Air Component Command representatives use this office, according to JFC directions and guidelines, to resolve conflicts when seeking host-nation support.

1.10.4. Provide CBRN training and equip host-nation forces with CBRN protective equipment as required by host-nation agreements, Joint Forces, theater, or MAJCOM directives.

1.11. Noncombatant Protection:

1.11.1. United States Family Members and Contract Personnel. Provide CBRN training and equipment to family members as required by DOS, DoD, Joint Forces, theater, or MAJCOM directives. Provide CBRN training and equipment to contractors as required by contract agreement, DoD Joint Forces, theater, or MAJCOM directives.

1.11.2. Non-Combatant Evacuation Order Operations. Treat all United States citizens equally during noncombatant evacuation. Other nations may request evacuation support from the DOS. Upon DOS approval, Other Country Nationals from countries who have been authorized assistance will be included.

1.11.3. Enemy Prisoners of War. Security Forces, in coordination with Supply and EM, develop personnel protection plans and issue available CBRN defense clothing and equipment items to the extent possible to EPWs, retained personnel, civilian internees, and other detainees in Air Force custody. Make all reasonable attempts to transport these personnel to non-threat areas to minimize risk and limit demands for individual protective equipment. MAJCOMs may authorize units to procure and maintain additional personal protective equipment components for this requirement. Security Forces and EM must coordinate use of protective equipment, decontamination items, and containment facility protection. EPWs and retained personnel are allowed to retain personal effects such as the helmet, canteen, protective mask, and chemical protective garment. Train these personnel to recognize the installation attack warning signals and take protective actions. Provide each civilian internee camp with adequate shelter to ensure protection against the hazards of war.

1.12. CBRN Defense Force Structure:

1.12.1. CBRN defense actions require a force structure that includes both primary duty and base augmentation forces. Primary duty CBRN defense forces are located within the Civil Engineer Squadron EM Flight. The medical portion of the CBRN defense mission is performed by several medical specialties. They include Bioenvironmental Engineering, Public Health, Medical Laboratory, and direct patient care providers. These multifunctional forces develop plans, provide CBRN technical expertise, and manage specialized teams. See **Table A3.1**. for summation of CBRN defense pre-, trans-, and post-attack tasks for these forces.

1.12.2. In-place and deployed units provide augmentation manpower for unit post-attack reconnaissance teams, unit control centers, shelter management teams, contamination control teams, and contamination control area teams. The installation, MAJCOM, theater, or Air Force planning agent determines actual requirements after considering the CBRN threat and missions for each in-place and deployed location. Assignment to these specialized teams during peacetime to gain reoccurring proficiency training on expected wartime tasks will not be considered an additional duty and prioritized according to the CBRN threat. (T-2).

1.13. Training and Exercises:

1.13.1. The Air Force provides CBRN defense, emergency response, and specialized team training at the individual Airman, team, supervisor, and senior leader levels. Training begins with individual skills provided by the EM Flight during CBRN Defense training. TQT, conducted by first-line supervisors, builds upon these skills. The next level expands to incorporate increasingly larger and more complex team, unit, and installation-level training and exercises. At each level, the first priority is to perform mission essential tasks in the CBRN threat environment expected at the home station or deployment location. The next priority is to perform those tasks in the expected CBRN threat environment at all other potential deployment locations. Imposing CBRN conditions upon already heavy training schedules adds complexity and increases the degree of difficulty and total training time. However, the advantages are that trained Airmen, teams, units, and leaders can integrate multiple mission scenarios and cope with complex and stressful situations while learning how to survive and operate in CBRN environments.

1.13.2. Develop plans and implement training and procedures based upon a realistic estimation of the enemy's ability to attack the installation and personnel. Attack scenarios, especially for installation-level CBRN exercises and Readiness Assessments, should closely resemble actual enemy tactics, number of attacks, and times of likely attack. For example, if local exercises contain excessive numbers of simulated attacks during times convenient for evaluation but unrealistic for the threat, supervisors cannot perfect the integration and flow of combat turn or airlift operations in a hostile environment.

1.13.3. Installation CBRN exercises and Readiness Assessments will integrate the CBRN Basic Standards of Proficiency listed in AFTTP 3-2.42 and **Attachment 4** of this instruction and be conducted IAW this instruction and at a frequency IAW AFI 90-201, Air Force Inspection System. (T-1).

1.14. CBRN Defense:

1.14.1. CBRN Operational Concept. The Air Force operational concept for CBRN defense is to organize, train, and equip the force to make risk-based decisions and gain operational advantage. Air Force units will retain the ability to operate under all conditions, but will focus their primary efforts on conducting combat operations under the CBRN conditions expected in highly contested, non-permissive environments. Although Air Force CBRN training and guidance addresses TTPs to reduce the effects of CBRN weapons used against airbases, defense operations rely upon risk-based decision making, individual and collective protection equipment, and integrated individual, unit, and installation actions.

1.14.1.1. The threat of CBRN agent use and presence of CBRN contamination following attacks will increase logistic requirements and divert manpower and resources from other base recovery and mission support operations. Single attacks and factors such as the type of agent and environmental conditions, may require wearing protective equipment for several minutes to hours. Multiple attacks, the use of newly developed chemical or biological agents, and unfavorable weather conditions may extend wear times or require repeated donning and doffing over extended periods.

1.14.1.2. Commanders determine what actions are executable based upon pre- and post-attack threat assessment, availability of resources, and mission needs. Airmen and leaders develop plans and execute attack response actions to limit contamination. They perform immediate and operational decontamination and conduct rapid post-attack reconnaissance to detect, identify, and/or isolate contaminated resources and areas. Contamination avoidance planning includes the effective use of barriers, such as tarps or plastic sheeting, and improved use of shelters and overhead cover enhance post-attack use of uncontaminated assets. Pre-planned actions should be performed when attack warning is received to reduce vulnerability and avoid contamination of personnel and critical equipment.

1.14.1.3. Personnel should use uncontaminated assets to the extent possible in the post-attack environment. The UCC directs unit personnel to accomplish mission essential tasks and stop non-mission essential tasks. The UCCs monitor the contamination status of people, equipment, and areas. UCCs also instruct unit personnel to minimize movement, especially between contaminated and uncontaminated zones. Individuals or teams do not enter or exit contaminated areas or move contaminated equipment into uncontaminated areas without UCC or EOC approval. Personnel go to contamination control areas or reduce MOPP when directed by their unit or the EOC.

1.14.2. The installation commander assesses risk and directs protective measures for all forces within the installation area of responsibility. Unit commanders use information from their UCC and unit post attack reconnaissance (PAR) teams for initial hazard assessment. Within the EOC, EM and medical personnel evaluate conditions (e.g., type of hazards present in sectors or zones, weather conditions) and develop the appropriate recommendation. This recommendation is presented to the installation commander and, if approved, authorization is provided to unit commanders.

1.14.3. Unit commanders should indeed contribute to hazard definition. However, soliciting unit commander requests for MOPP or protective measure reduction is contrary to the installation commander model. Installation commanders make universal protective measures decisions and should not be tasked with assessing units by exception or individual requests.

1.15. Theater Basing Options:

1.15.1. Techniques such as adaptive basing, dispersal, and redundancy, are theater or MAJCOM options. For example, increasing the distance between the installation and CBRN threat can reduce or eliminate the CBRN threat. Commanders can reduce CBRN defense manpower and resource requirements and the need for extensive protective measures by moving forces outside the optimal ranges of threat weapons systems. Other options include relocating or dispersing high-risk, high-value assets among several bases and deploying redundant assets. Another tactic is to increase counterforce and installation defense activities to reduce threats during planned airlift or sortie generation periods. Based on mission priorities, consider also delaying force deployment to allow counterforce measures time to reduce or eliminate the threat of attack. These measures apply equally well to the threat of CBRN or conventional attack.

1.15.2. Adaptive Basing. The primary reason for adaptive basing is to protect critical systems from damage, destruction, contamination, or disruption of operations. The first priority should include weapons systems, command and control, and CBRN support functions that would experience high degradation from CBRN weapons effects or protective actions. By employing this tactic for those weapons systems that can be moved, commanders can reduce support requirements at threat bases and enhance the availability of critical assets for priority or time-sensitive missions.

1.15.3. Relocation and Dispersal. Relocation and dispersal sites offer an operational alternative if enemy attacks prevent or restrict operations at primary bases. Relocation plans should be developed prior to attack and include both personnel and aircraft options. Consider reciprocal agreements to provide temporary support at other Air Force or coalition forces within the region. Within most theaters of operation, dispersal sites will not support full-scale operations. However, dispersal remains a viable option if circumstances prevent operations at primary bases. Feasibility issues include the time required to conduct operations, availability of cross-servicing facilities, communication connectivity, and the availability and type of munitions. Also, consider the significant logistical issues involved with moving or pre-positioning people, equipment, and consumables to support dispersal site operations and security.

1.15.4. Redundancy. An alternative to dispersal sites is to create redundancy by assigning several installations to support the same or similar missions. Consider this option, for example, when missile defense systems do not provide coverage for all operating locations. Redundancy can allow an attacked base to concentrate on recovering from damage or contamination while its assigned aircraft operate from another, pre-planned location. Planning should address the necessary equipment, supplies, munitions, security, and personnel. Supporting bases should have sufficient space to handle the additional aircraft and support requirements. Airlift may be necessary to transfer resources between bases where distance or security prevents surface movement.

1.15.5. Delayed Deployment. Under some circumstances, the Air Operations Center (AOC) may be able to evaluate the pattern of attacks and delay the airlift flow or adjust arrival times to coincide with periods of reduced threat. These adjustments may also provide additional time for counterforce elements and the base defense forces to reduce or eliminate threats. When forces must flow regardless of the threat, identify periods where enemy activity or their ability to conduct attacks is low. For example, missile attacks or special operations force activities may decrease during daylight due to the increased effectiveness of counterforce operations and base defense forces. In this situation, consider increasing the airlift flow during daylight hours and reducing flow during hours of darkness.

1.16. Medical Operations:

1.16.1. Introduction. For the purposes of this manual, the term medical treatment facility (MTF) includes both fixed site MTFs and deployed medical facilities such as expeditionary medical support. Comprehensive prevention, countermeasures, and medical surveillance programs are required to minimize mission degradation from CBRN agent use. Communication between line and medical personnel (i.e. bioenvironmental engineering, public health, etc.) is critical in assessing environmental or other CBRN exposure risks.

1.16.1.1. CBRN weapons effects include blast, heat, shrapnel, chemical, radiological, biological toxin-related illnesses, and biological warfare agent pathogen infections.

1.16.1.2. Passive defense measures may reduce, but are not expected to eliminate, injuries that result from CBRN attacks.

1.16.2. Responsibilities and Support:

1.16.2.1. Medical duties involve providing or supporting medical care, casualty prevention, and preventative medicine.

1.16.2.2. Medical surveillance programs include disease incidence tracking and epidemiological assessment to aid in the recognition of covertly delivered biological or chemical agents. Disease countermeasures include personal protective and hygiene measures (i.e. the use of bed nets and other disease vector countermeasures), the protection of food and water, chemoprophylaxis, and chemical agent antidotes.

1.16.2.3. Medical duties include protecting the medical facility and patients who are under the control of the medical system.

1.16.2.4. Bioenvironmental Engineering (BE) will perform Health Risk Assessments that inform the combatant and the installation commander comprehensive risk assessment decisions needed to prevent short and long term personal health effects.

1.16.2.5. Primary BE duties involve: Collect site-specific data to characterize exposure pathways and levels to CBRN contaminants.

1.16.2.5.1. Conduct Chemical Warfare Agent Water Surveillance.

1.16.2.5.2. Perform CBRN Health Risk Assessments focused on critical missions as determined by combatant and installation commanders (e.g. air crew/pilot staging area, command and control, etc.).

1.16.2.5.3. Provide input to and interpret results from risk modeling tools to provide predictive health risk assessments for supposed and quantified CBRN exposures.

1.16.2.5.4. Determine protective measures in CBRN operating environments. Provide relevant threat control recommendations to the commander with respect to real-time and future operations.

1.16.2.5.5. Consult with Shelter Management Teams to determine the adequacy of collective protection for controlling health threats and perform health risk assessments to determine when to release personnel from collectively protected facilities.

1.16.2.5.6. Advise senior leadership and affected communities on health risks associated with operations and missions in a given CBRN environment.

1.16.2.5.7. Collaborate with EM to detect, identify, and quantify CBRN and other agents to determine significance of risk, appropriate control measures, and community risk.

1.16.2.5.8. Perform Hazard Quantification (quantify to characterize and treat). For quantify-to-characterize and treat, BE obtains qualitative and/or quantitative exposure measurements to characterize contamination in order to properly protect and treat exposed personnel. For quantify-to-clear, BE obtains qualitative and/or quantitative measurements to characterize CBRN agents and/or toxic industrial chemicals/materials data for platforms/materials data for platforms and materiel extent of contamination, pre/post period.

1.16.2.6. Intelligence Support. The medical commander and staff have a need-to-know and must be provided operationally and tactically CBRN/WMD-related intelligence and adversarial threat assessments.

1.16.2.7. The medical commander, through the medical intelligence officer provides medical surveillance system information to the CAT, EOC, and other staff agencies. The data from medical surveillance systems may be the first indication of CBRN attack.

1.16.2.8. Base Operating Support. Medical units will require base operating support as detailed in concepts of operation, the installation IEMP 10-2, and the base support plan.

1.16.3. **Casualty Management and Patient Treatment:**

1.16.3.1. Medical Treatment:

1.16.3.1.1. Treatment, beyond self-aid and buddy care (SABC), is the responsibility of medical personnel. Casualties become medical patients when they enter the five level deployed medical treatment system that efficiently manages casualty flow from the site of injury, to an MTF, and to the next echelon of care.

1.16.3.1.2. Medical personnel conduct the casualty care operations required to save life or limb but within the scope of acceptable risk to the patient and medical personnel.

1.16.3.1.3. Medical personnel will not unnecessarily compromise collective protection toxic free areas or place medical personnel or their patients at unnecessary risk. MTFs are high-value, low-density assets.

1.16.3.1.4. Most clinical care cannot be provided in contaminated environments. Commanders must recognize that MTFs will operate at much reduced efficiency in environments with transient chemical vapors, biological contamination, or radiological contamination and planning must include alternate medical facility identification. Medical commanders must identify critical clinical resources that will be protected in the event of CBRN attack to minimize mission degradation when assets are transferred to an alternate facility.

1.16.3.2. A CBRN casualty is a person who enters the medical system for any CBRN-related health issue, who displays symptoms of CBRN agent exposure, or has received one or more injections of the Antidote Treatment Nerve Agent Auto injector or other chemoprophylaxis.

1.16.3.3. Once a casualty enters the medical system and becomes a patient, the decision to return to duty, including flight status, or to remain under medical treatment, rests with the responsible medical official.

1.16.3.4. The medical facility will notify the unit to pick up patients who are being returned to duty. Units will ensure a serviceable JSLIST, over boots, gloves, and M-50 protective mask is provided for the patient (if required).

1.16.4. **Medical CBRN Countermeasures:**

1.16.4.1. Commanders should ensure their personnel in or subject to deployment to locations where CBRN threats exist receive treatment, based on advice from medical authorities. Consider the medical threat, attack probability, logistics stockpiles, and other available protective measures. Pre-exposure prophylactic administration of antibiotics is generally not advisable due to unknown efficacy, potential adverse reactions, costs, and possible waste of critical resources. Current DoD policy is that any off- label use of medical countermeasures is subject to the Food and Drug Administration investigational new drug policy. Medical commanders must know and understand current DoD, theater, joint task force, and Air Force policy regarding these countermeasures prior to advising any off-label use. However, they should use their medical judgment as the tactical situation dictates.

1.16.4.2. Commanders, supervisors, and medical personnel should emphasize good sanitation and hygiene measures. They should protect food and water from contamination, maintain personal cleanliness, and properly dispose of waste. Food and water sources are good targets for covert contamination with chemical or biological agents. This contamination can occur very early in the supply line and risks are greatest when foods are procured locally in foreign countries. Commanders must establish secure and reliable sources of food and must monitor the safety and security of the processes of food procurement, food delivery, food preparation, and food service to ensure the safety of food and water used for warfighter feeding. (T-1). These measures are some of the most important and least costly protective measures against both naturally occurring diseases and biological and chemical attacks. A food and water vulnerability assessment must be conducted as part of the installation AHTA by medical, security forces, services, civil engineering, and EM personnel. (T-1).

1.16.5. **Transportation of Casualties:**

1.16.5.1. Unit commanders, supervisors, and individuals are responsible for moving casualties to a designated casualty collection point or an MTF. Consider designating unit vehicles and drivers to support casualty movement.

1.16.5.2. Patient transportation planners should factor delays and shutdowns caused by severe weather conditions, ground force attacks, attack damage, or CBRN contamination into planning factors.

1.16.5.3. Large units should designate one or more unit casualty holding points. Areas should provide overhead cover and protect casualties from the elements.

1.16.5.4. In some cases patient retrieval teams may be tasked to pick up casualties. Patient retrieval operations must be a coordinated effort and include the EOC, UCCs, and medical staff components.

1.16.6. Disposition of Protective Equipment, Personal Weapons, Ammunition, and Munitions. Use the following guidelines for handling casualties equipped with the ground crew chemical ensemble, field gear, and body armor and those armed with personal weapons, ammunition, and munitions. Where possible, remove these items from casualties in a manner that enables their return to operational use. Coordinate specific actions, training, and procedures for constructing holding areas and handling these items with the security forces, emergency management, and explosive ordnance disposal personnel.

1.16.6.1. Patients will retain their M-50 protective mask with filter, spectacle inserts, and antidotes until they arrive at a medical treatment facility. Patients that are most likely to be returned to duty should retain all of their serviceable protective equipment (helmet, chemical-biological warfare defense equipment, antidotes, and canteen with water).

1.16.6.2. Armed personnel who become casualties should be relieved of their weapons, ammunition, and munitions by personnel from their own unit prior to arrival at the casualty or mortuary collection point if it is safe to do so. Unit members should return these items to the unit armory or appropriate storage area. This action quickly returns valuable resources to the unit and reduces the potential for disruption at the collection points. If it is not safe to remove weapons, ammunition and munitions, notify the EOC to obtain EOD support in order to safe any hazards.

1.16.6.3. Before the start of processing and after receiving proper training from security forces and EOD personnel, medical personnel will search casualties and remove weapons, ammunition, and munitions. For United States weapons, remove the ammunition, safe the weapon, and store the weapon and ammunition in a holding area. Advise the owning unit to retrieve their weapon(s) and ammunition Request security forces to retrieve weapon(s) and ammunition, if the unit ownership cannot be determined. Treat all munitions (such as grenades, mines, fuses, flares, and bulk explosive) and all non-United States weapons and ammunition as unexploded ordnance. Place them within the unexploded ordnance holding area and notify EOD personnel or the EOC.

1.16.7. Protective Measures within Medical Treatment Areas. The Air Force installation commander may delegate the authority to determine MOPP levels and other protective measures within medical areas or sectors to the medical commander. To implement this action, the medical facility must have the capability to provide CBRN detection and identification capabilities similar to that provided by installation CBRN Reconnaissance Teams. This authority, if exercised, must be personally authorized by the installation commander. The medical staff must also coordinate with the CBRN Control Center within the EOC construct to ensure medical areas are not within the downwind vapor plume of an agent deposition (droplet fall) area. Medical personnel will conduct detection, monitoring, and contamination assessment within these designated areas.

1.16.8. Medical Personnel Billeting. Whenever possible, provide billeting for medical personnel within the medical area or MTF. Use billeting space for the medical CBRN teams, key providers, and for patient overflow.

1.16.9. Stress. Airmen may experience significant stress-related problems. Some individuals or groups may believe they have CBRN agent symptoms even when they have not been exposed. The medical system must be prepared to deal with this, and provide education and field support to base units. This may include sending medical personnel to areas where significant numbers of people believe they are experiencing CBRN symptoms, even though exposure to CBRN agents was unlikely. The purpose is to alleviate people’s fears and quickly restore mission focus.

1.16.10. Unit First-Aid Supplies and Equipment. All units/work centers should maintain first-aid supplies, litters, and emergency supplies appropriate for the unit/work center size and mission. Add additional supplies when required to protect casualties from environmental conditions (i.e., blankets, potable water, ponchos, or snow covers). Where available, use existing unit protective shelter first aid kits and equipment to meet initial needs. The basis of issue is one kit and six litters for each 100 personnel. Contact the home station or deployed medical forces representative to determine specific requirements and types of supplies and equipment. Units are responsible for resourcing and maintaining the serviceability of these supplies.

Chapter 2

INSTALLATION CBRN THREATS

Section 2A—Threat Assessment

2.1. Background:

2.1.1. Commanders assess the most likely threats at home station and their deployed locations; then tailor their forces to conduct operations to counter them. This chapter provides information on likely installation threats and discusses how potential adversaries might employ these Weapons of Mass Destruction (WMD). For some threats, it provides information to assist in determining the enemy order of battle.

2.1.2. Installations are targets of many different types of weapons systems. Analyze specific installation threats to apply this information under wartime conditions. Defensive planners should understand unique capabilities, characteristics, attack profiles, and weaknesses of these weapons to develop countermeasures and defensive plans. This chapter discusses those commonalities and provides a framework to evaluate and mitigate threats to installations.

2.1.3. State and non-state actors exploit vulnerabilities across the land, air, maritime, space, and cyberspace domains. Adversaries constantly evolve their methods to threaten the United States, our citizens, partners, and installations worldwide. The danger from hostile state and non-state actors who are trying to acquire and employ CBRN weapons is increasing.

2.1.4. The overall threat from weapons of mass destruction will continually evolve and expand amongst our adversaries, in particular, the threat posed by biological and chemical warfare agents. The threat model with regard to traditional Chemical Warfare, Fourth Generation, and Pharmaceutical Based Agents is actively evolving. Countering these threats with official programs of record is a deliberate process, with several checks and balances along the way. The Air Force is working within the Chemical – Biological Defense Enterprise to improve upon recent rapid acquisition successes. When Chemical – Biological Defense Enterprise programs of record lag behind emerging threats and hazards Major Command commanders have options within their disposal. It is acceptable to invest in material and non-material solutions as bridge capabilities to address existing gaps. Consider collaborating across the government and industry who develop best practices and innovative capabilities based on war-fighter demand signals, the evolving threat picture, and current requirements.

2.2. Operational Environment. Air Force (AF) people and weapons systems are vulnerable to Chemical Biological Radiological Nuclear (CBRN) threats worldwide. This potential for attack requires the AF to adopt deliberate, pre-planned courses of action to counter general CBRN threats. It also requires the ability to adjust actions to counter specific threats identified through intelligence analysis or post-attack reconnaissance information.

2.2.1. The Asymmetric Threat. Adversaries understand the strength of the United States military. Consequently, our adversaries are more likely to try asymmetric methods of attack as a means to counter our strengths. Some states may see asymmetric strategies as a means to avoid direct engagements with dominant United States conventional forces and a way to "level the playing field" while operating below the threshold of war (e.g. gray zone operations). Conversely, they may resort to the use of CBRN weapons as well as conventional weapons or explosives. Threat forces include special operations forces, or other forces using small unit tactics. Employment of weapons and tactics that can inflict a large number of casualties or are intended to cause panic and confusion in order to disrupt to operations.

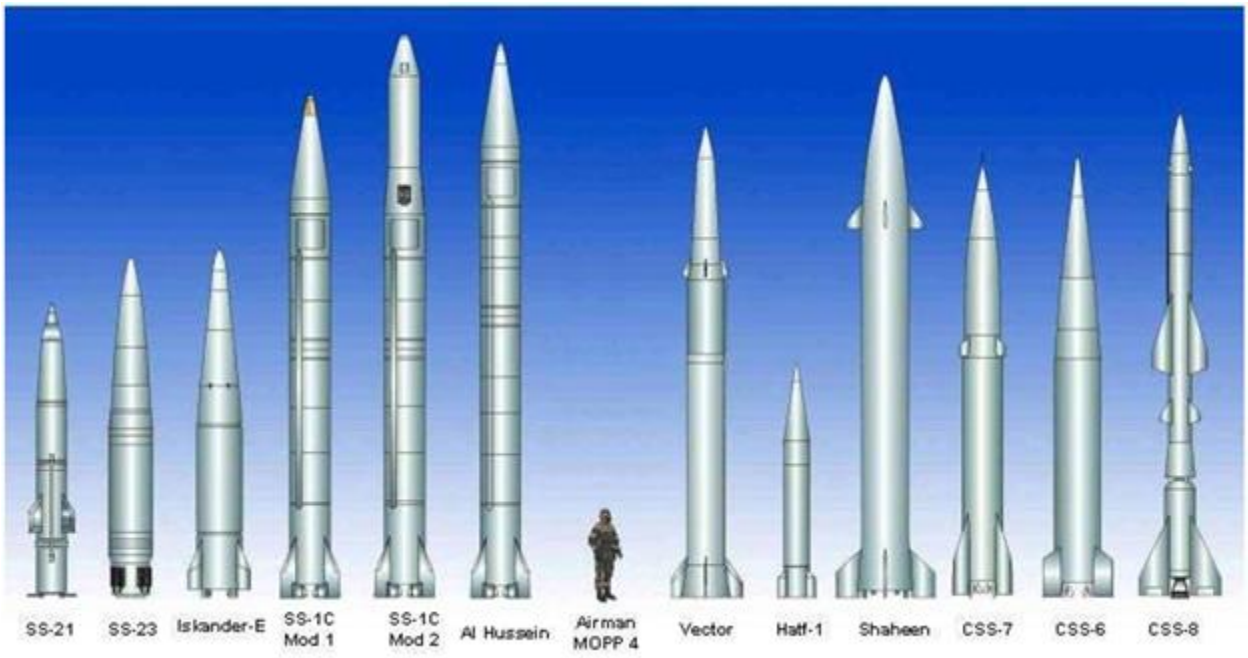
2.2.2. Countering Weapons of Mass Destruction (CWMD) Operations. CWMD operations include those activities taken to detect, deter, disrupt, deny, or destroy an adversary's CBRN capabilities and to minimize the effects of an enemy CBRN attack on operations. The four elements of the program (**Table 2.1**.) are proliferation prevention, counterforce, active defense, and passive defense. Strategic enablers exist to support each element. The integration of these concepts into air, space, and cyberspace operations enables United States forces to operate despite confrontation with an adversary employing CBRN weapons. Counterforce operations and active defense thin the threat, lessen the number of attacks that friendly forces have to absorb, and reduce the burden on passive defense measures.

2.2.3. Installation Threat Overview. Installation threats may include attacks by air (including Unmanned Aerial Systems), ground, missile, and special operations forces (SOF). Depending upon the theater of operations and installation location, enemy forces could employ CBRN weapons against multiple locations, single bases, or as part of a covert SOF attack. For the near future, the theater ballistic missile (TBM) remains the dominant CBRN weapon delivery system against an installation during wartime. Examples of typical TBM systems can be found in **Figure 2.1**. SOF ground forces also may conduct random installation attacks with standoff weapons against targets of opportunity such as aircraft and centers of gravity. These forces may also use standoff weapons or saboteurs to target specific parts of the installation, such as command and control systems; critical utility nodes; petroleum, oil, and lubricants (POL) storage and distribution systems; and large sources of toxic industrial materials on or near the base. Ground forces normally are limited to small arms and conventional explosives, but could employ small quantities of chemical or biological weapons. See **Table 2.1** for the **Elements of Air Force AF CWMD Operations.**

Table 2.1. Elements of AF CWMD Operations.

Program Area	Scope
Proliferation Prevention	Denying attempts by would-be proliferates to acquire or expand their chemical or biological capabilities.
Counterforce Operations	Destroy or degrade an adversary's offensive capability before it can be used against friendly forces.
Active Defense	Actions to destroy enemy weapons and delivery vehicles while enroute to their targets.
Passive Defense	Contamination avoidance, protection, and contamination control.

Figure 2.1. Typical Theater Ballistic Missile Systems.



2.2.3.1. Conventional Threats:

2.2.3.2. Theater missile attacks with high-explosive warheads are the primary conventional threat to installations. Large-scale installation attacks by aircraft armed with conventional weapons are unlikely, unless air dominance is lost. If attacking aircraft reach the installation, they would most likely attack large, high visibility targets such as airfield surfaces, troop concentrations or tent cities, tactical and cargo aircraft in open areas, POL storage tanks, and visible command and control structures.

2.2.3.3. Mass artillery or rocket attacks on an installation are unlikely unless the ground situation changes and the installation comes within range of conventional artillery or multiple launch rocket forces. Installation operations cannot be conducted within the effective range of significant amounts of enemy artillery or multiple launch rocket systems.

2.2.3.4. CBRN Threats. The evolving threat environment throughout the world indicates an increased need for vigilance and emphasis on CBRN defense. Many of the countries engaged in offensive CBRN programs combine their efforts with theater missile, cruise missile, and Unmanned Aircraft Systems (UAS) programs. There are recent reports of newly engineered and altered forms of biological agents and new chemical agents. The possibility exists that new agents could be developed to challenge the effectiveness of current detectors, protective equipment, or medical countermeasures.

2.2.3.5. Nuclear Threat. The proliferation of nuclear weapons and technology is expected to continue. Inspections and intelligence might not always predict technical advances toward nuclear weapons development. Tactical nuclear warheads and the ability to respond to and recover from nuclear fallout are a growing concern for installations.

2.2.3.6. Biological Threat. The Defense Intelligence Agency estimates that multiple nation states have biological warfare (BW) programs. Some have achieved weaponization, and others could attain that status very soon. A number of other countries have the infrastructure, technical expertise, and the degree of secrecy needed to create a BW program.

2.2.3.7. Chemical Threat. Over 20 nations are assessed to have begun chemical warfare (CW) programs. While a small number are believed to have abandoned their active programs, many remain committed to CW agent production and the weaponization of a variety of agents. There are specific concerns with so-called “Fourth Generation Agents” developed more recently than V-series agents.

2.2.3.8. Toxic Industrial Material Threats. There is a growing concern that the wide availability of many Toxic Industrial Materials (TIMs) makes them potential tools for asymmetric attacks against installations. Hostile forces could target storage sites, such as industrial plants or treatment facilities located on or near an installation. Depending on the type and quantity of TIMs, a deliberate release could present a short or long term hazard at the release site and for those within the downwind chemical plume.

2.2.3.9. The Joint Intelligence Preparation of the Operating Environment conducted by the Combatant Command J2 and MAJCOM staff will provide more accurate information on the specific CBRN threats to include delivery platforms.

2.3. Installation Threat Assessments:

2.3.1. Baseline CBRN Threat Assessment. Commanders are required to develop or annually update baseline CBRN hazard threat assessment for their home station location and for deployment locations. (T-2). This assessment, is developed as one part of the installations Integrated Risk Management Process (IRMP), which is comprised of four required annual assessments; Criticality, Hazard, Vulnerability, and Capability. Within the IRMP the Installation Commanders are required to develop an installation level All-Hazards Threat Assessment (AHTA), which is used for deliberate and execution planning, exercise scenario development and evaluations, and installation Vulnerability Assessments. As a minimum,

commanders must use the information in the most current version of the Defense Intelligence Agency, CBRN Warfare Capstone Threat Assessment, available at **www.disa.smil.mil**. The AHTA must also incorporate current intelligence and force protection information from theater, MAJCOM, and NAFs. It also includes input from the local intelligence organization, the AF Office of Special Investigations (OSI), Security Forces, Civil Engineers, and Medical organizations. This assessment should be conducted IAW AFI 10-2501, AF Emergency Management Program.

Section 2B—CBRN Weapons Effects and Employment Strategies

2.4. Installation Attacks:

2.4.1. The primary CBRN weapons employment means against OCONUS installations are assessed to be TBMs. Other delivery methods include attacks from fixed and rotary wing aircraft, artillery, land or sea launched cruise missiles, and remotely piloted vehicles.

2.4.2. This section includes a brief description of threat weapons and characteristics. It provides likely installation attack scenarios and suggests countermeasures and defensive actions. It does not address all potential threat weapons. Always consult with the local intelligence unit or agency and air defense unit for base-specific information on ground, air, and missile threats. Request detailed information on warhead and fuse types, attack scenarios, and installation defensive system capabilities.

2.5. Theater Ballistic Missile (TBM) Systems

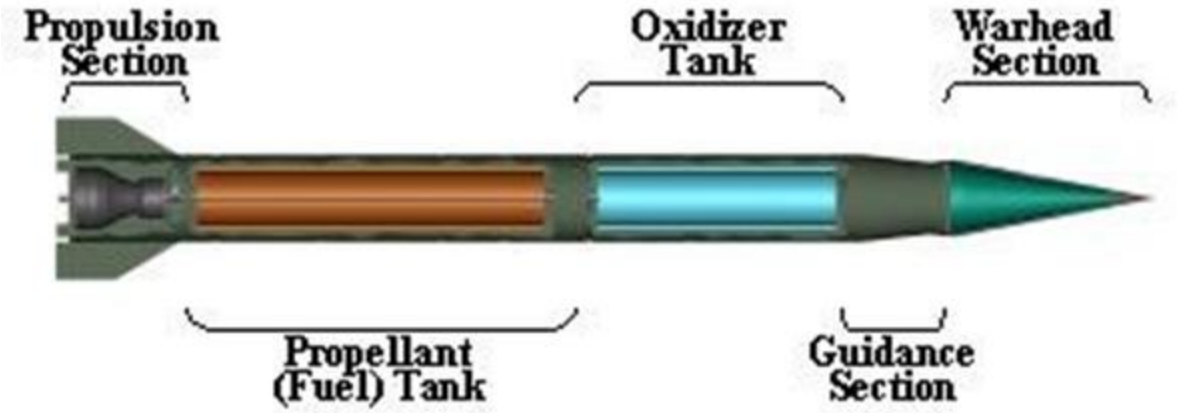
2.5.1. **Description:**

2.5.1.1. Many overseas installations and planned deployment locations are within the effective range of one or more TBM systems (**Figure 2.1**.) deployed by our potential adversaries. TBMs have unique characteristics that must be considered when planning defensive actions. These unique traits, coupled with the difficulty in targeting and destroying TBMs prior to and after launch, require installations to develop threat-specific responses to effectively counter the threat and minimize mission degradations.

2.5.1.2. Potential adversaries are currently capable of attacking and contaminating entire airbases with TBMs equipped with liquid chemical agent filled warheads. Most medium and long-range TBMs are relatively inaccurate, and this inaccuracy increases with the range to the target. Accordingly, foreign strike planners use such techniques as firing additional systems or using bomblet or sub-munition load stop compensate for this deficiency. Agent coverage is further affected by variables such as the weather, height of burst, and method of agent dissemination. TBMs equipped with a biological agent war head may be able to affect somewhat larger areas. The immediate hazard from most biological agents is from inhaling the agent as the cloud passes over the installation. The amount of the biological agent that settles during the cloud’s passage does not present significant operational contact hazards for extended periods. Re-suspension hazards are possible but do not pose as great an operational risk as compared to risks during the initial cloud passage and agent settling. Personnel must be aware of the potential for creating re-suspension hazards by actions such as removing contamination avoidance covers from assets during post attack operations. Personnel should use methods that do not create inhalation hazards and wear the appropriate protective equipment.

2.5.2. Weapon Characteristics. TBMs are surface-to-surface missiles that currently are used primarily as area attack weapons, though as more advanced TBMs with better guidance and control systems enter service, they may become capable of precision attack. The improved guidance, control, and enhanced accuracy provides TBMs with the capability and characteristics required to deliver a CBRN warhead to a target that is not within the range or ability of other weapons systems, such as manned aircraft or artillery, to successfully attack. **Figure 2.2**. shows the major components of a single-stage, non-separating warhead TBM, which constitutes most of the current TBM threat. These missiles are launched on an initial steering vector, but once launched, they continue toward their pre-programmed target on an established trajectory. When the appropriate distance to a target has been covered, the fuel supply to the engine is cut off and the missile continues on a ballistic (unguided) trajectory to the target. TBM ranges extend from about 50 miles to greater than 2000 miles. Depending on the range to target, the missile can reach a terminal velocity of approximately 2100 to 3600 miles per hour (Mach 3 to Mach 5) by the time the warhead explodes and the remaining missile components impact the ground. Older TBM warheads and missile bodies remain as a single unit until the warhead functions. New and longer-range missiles have warheads designed to separate from the missile body inflight. This separation allows the warhead to slow down to a terminal velocity of about 750 miles per hour (Mach 1). Lower terminal velocities will generally provide a more effective means to deliver wider range of chemical or biological agents.

Figure 2.2. Typical Theater Ballistic Missile - Major Components.

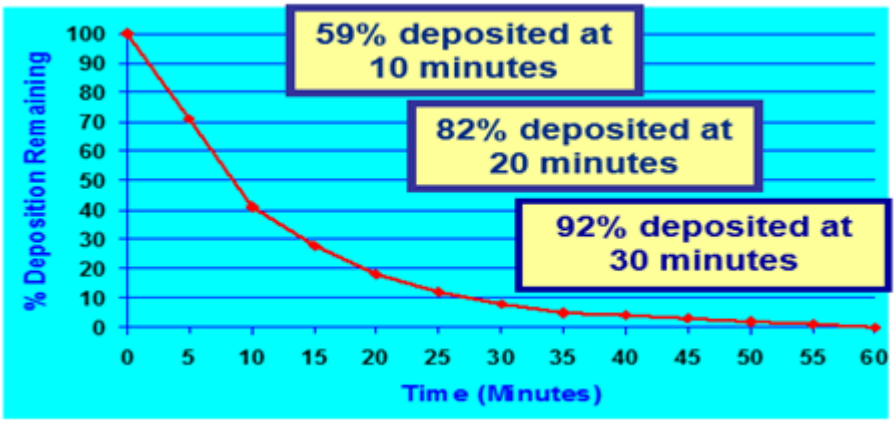


2.5.3. Weapon Effects. The primary threat from a TBM is the warhead. TBM warheads are fused (designed to explode or function) to optimize the effect of the warhead fill. Warheads may be fused for air, ground, or sub-surface bursts. The warheads may contain a conventional explosive, nuclear weapon, or a chemical or biological agent fill. Multiple-missile attacks may include more than one type of warhead. Use post-attack reconnaissance to determine what happened in an attack and direct protective actions accordingly.

2.5.3.1. Ground Burst Warheads. TBMs with conventional warheads are designed to explode upon or shortly after impact with the ground. The very high missile speed and a 600-to-1,000 pound conventional warhead combine to produce a devastating explosion at the point of impact. Significant damage will occur to buildings and utilities within the immediate area and a large impact crater is likely. Ground burst warheads with chemical and biological agents create the greatest hazard within the immediate area surrounding the impact point. Most of the agent effectiveness will be lost from the force of warhead impact.

2.5.3.2. Airburst Warheads. Airburst warheads provide the most effective area coverage and dispersion pattern for chemical and biological agents. Larger agent droplets or solid particles will generally fall more quickly, while smaller droplets and particles will fall further downwind and at a slower rate. Similarly, the vapor released as liquid agents evaporate will move from the point of release toward the ground and in a downwind direction. An airburst warhead with a biological agent fill produces significantly greater downwind hazard than a chemical warhead. If an agent, such as VX, is released at an optimal burst height of about 250 meters (about 800 feet) above ground level, the agent falls to the ground over the next 60 minutes in the downwind direction of the prevailing wind. The average size of the VX liquid droplets that reach the ground from such an attack are expected to be about 200 to 250 microns, or about the thickness of four sheets of paper. **Figure 2.3**. shows the estimated deposition timeline for liquid VX droplets released in an airburst. One of the simplest and most effective countermeasures to avoid contamination from airburst weapons is to remain under overhead cover (and in protective equipment) until after the liquid agent or solid particle fallout reaches the ground. Specific chemical agent deposition, or droplet fall times, vary based on the agent type, burst height, weather conditions, and the missile speed at detonation. The main reason for keeping personnel under overhead cover is the longer personnel remain under cover, the less personnel will require decontamination and will result in less resources required to recover from attack and restore mission operations.

Figure 2.3. Estimated VX Liquid Agent Deposition Time Following a SCUD Airburst Warhead Detonation 250 Meters (820 feet) Above Ground Level.



2.5.3.3. Sub Munition Warheads. TBMs may also be equipped with warheads filled with chemical or biological agent sub munitions. Sub munition warheads are filled with multiple small bomblets that are released at altitude to disperse over a wide area. This configuration can deliver a wider range of agents to the target but reduces the total amount of agent carried. Sub munitions may also be used to deliver agents that are not robust enough to survive release from a ground burst or supersonic airburst. Although an airburst may disperse the individual sub munitions over a large portion of an installation, any liquid or solid agent contamination will be limited to the immediate impact area of each bomblet. For further information on chemical and biological agent sub munitions, consult current intelligence assessments.

2.5.4. **Secondary Threats:**

2.5.4.1. Several significant secondary threats also exist during and after TBM attacks. Many TBMs, such as the SCUD and SCUD variants, have warheads that are not designed to separate from the missile body. These missiles often remain as one unit until the warhead functions or it impacts the ground, although stresses encountered during descent can cause SCUD variants modified for extend range to break up prior to impact. When an airburst warhead functions (or if the missile is hit with an anti-ballistic missile), the missile components (body, fuel tanks, guidance and propulsion sections) continue on a ballistic trajectory and impact within the targeted area. Missile components from a separating warhead TBM will follow a different trajectory and will not normally impact the targeted installation.

2.5.4.2. In addition to potential explosive, chemical or biological hazards, the missile may impact abuilding or create a crater. Other hazard may be present from the remaining missile fuel and oxidizer or from the facility or structure the missile hit (e.g., fuel, power lines, and munitions). Personnel in Mission Oriented Protective Posture (MOPP) 4 are protected from potential chemical and biological hazards, but are not fully protected from the unused or unburned missile oxidizers and fuel hazards. Depending on the quantity remaining, the residual propellants present a potential toxic chemical hazard to emergency response forces, rescue workers and utility and pavement repair crews. These substances may also cause M8 paper to falsely indicate the presence of chemical agents or mask the presence of the actual agent. Emergency response forces should follow procedures within the Emergency Response Guidebook when missile propellant hazards are suspected or found. Consult current intelligence assessments to determine the most likely hazards from threat missile systems and develop response procedures accordingly.

2.5.4.3. Security forces, maintenance personnel, post-attack reconnaissance teams, and others who work outdoors, are most likely to discover craters caused by the impact of a TBM missile body or warhead. Personnel should treat these craters as hazardous until assessed by Emergency Management personnel for CBRN hazards and/or cleared by EOD personnel of explosive hazards. Be aware that vapors from missile propellants may be present and hazardous. Unless required to rescue injured personnel, do not come closer than 100 feet from the crater edge or visible debris. If the situation warrants, in a safe manner approach suspicious areas, craters, and missile debris from the upwind side. M8 paper can then be used to check for CBRN contamination on non-porous surfaces (bare metal and glass) and also check the pre-positioned M8 paper sites within the immediate area. These actions will greatly assist the Civil Engineer EOD and Emergency Management

personnel analyze the situation and begin hazard reduction. 2.5.4.4. Employment Strategies. Patriot or Terminal High Altitude Area Defense (THAAD) located within or near the installation also present indirect hazards to installation forces. Personnel within the immediate area of these missile defense batteries, such as security forces or repair crews, may receive little or no warning of a missile launch. A sudden launch may throw debris that could injure unprotected personnel. Hazards also may exist from falling components of the Patriot/THAAD missiles that either impact the enemy missile or self-destruct over the installation. Supervisors shall ensure that safety measures are in-place for all maintainers and/or security forces personnel. Units and/or functions with missions in proximity of Patriot/THAAD operations need to understand and take actions to ensure procedures are in place to mitigate, reduce the likelihood of personnel injuries from the Patriot/THAAD systems. TBM attacks are most effective when large numbers of missiles are launched and programmed to arrive at a single target area within a short period. Depending on the number of missiles launched, an attack of this type could saturate missile defenses and allow one or more missiles to enter the installation area. Another tactic is to launch smaller numbers of missiles spaced several hours apart. Although missile defenses will likely destroy these missiles, this tactic forces the installation to implement mission-degrading defensive actions and disrupts operations. In addition, some damage may occur from falling missile components. However, accuracies are improving as threat nations continually strive to develop or acquire improved guidance systems and longer range weapons with larger warheads. See **Table 2.2 for the Potential SCUD Missile Impacts by Raid Size (Notional Estimate)** under several potential attack scenarios and current accuracy assumptions.

Table 2.2. Potential SCUD Missile Impacts by Raid Size (Notional Estimate).

Missiles Inbound*	Possible Warheads		Possible Missile Body Impacts**
	Limited Patriot Defense	No Patriot Defense	
3	0-1	1	2
6	1	2-3	4-6
12	2	4-5	8-10
18	5	6-7	12-14

*****Assumes one attack with 50-50 mix of chemical and conventional warheads, against a target with a 1000-meter (3280 foot) radius, using a time-on-target employment strategy.
******Assumes non-separating warhead missile (such as SCUD variants) with or without Patriot defenses.

2.5.5. **Defensive Actions and Countermeasures:**

2.5.5.1. TBMs are not smart weapons and do not seek and identify specific targets on the installation. Permanent and expedient hardening methods are effective ways to increase physical protection for people, critical facilities, and infrastructure. Train personnel to pre-plan actions and conduct "last second" contamination avoidance and protective actions. When attack warning is received, safely terminate current operations (such as fueling, munitions loading, and medical care) and take reasonable actions to protect people and material. Actions may include moving equipment, vehicles and aircraft under cover, and closing windows, doors, canopies, and hatches.

2.5.5.2. Missile warning systems are different within each theater of operations. The installation may receive missile launch warning from the Theater Air Control Center or other ballistic missile defense command and control node. Actual warning timelines are a combination of events that begin with the missile launch, and end with the impact on or near the installation. Quick actions are required by each link in the warning chain to maximize pre-attack actions at the targeted installation. Delays in warning or slow response by key staff may limit or eliminate the ability to accomplish mitigating actions. Preplanning for these scenarios and quick decisions by the staff may allow the installation to launch sorties that would otherwise be delayed or lost.

2.5.5.3. Installation staffs must analyze their warning system and develop likely timelines for each warning event from missile launch to impact. (T-2). **Table 2.2**. shows a method to identify the warning timelines from three different launch sites capable of targeting the installation. An actual analysis would include the actual or expected time for each event in the warning chain. These events may show that a window of opportunity exists for the commander to direct last minute actions to continue missions or protect highly vulnerable resources. **See Table 2.3 for the TBM Warning Time Assessments for Installation Attacks**.

Table 2.3. TBM Warning Time Assessments for Installation Attacks.

Launch Location	Time (In Minutes) to Complete Action								
	Missile Launch	Theater Detect	Theater Warns	CAT* Receives	CAT Decision	Alarm Red and Blue	Total Time	Flight Time	Difference
Site 1	0	:30	1:00	:30	1:00	:30	3:30	4:30	+1:00
Site 2	0	:30	1:00	:30	1:00	:30	3:30	4:45	+1:15
Site 3	0	:30	1:00	:30	1:00	:30	3:30	6:10	+2:40
Note: Use actual TBM threat information, distances, and warning transmission times to develop a warning time assessment for a specific location. * CAT – Assumes Army Missile Defense personnel are collocated with the CAT.									

2.5.5.4. Protective actions for missile attacks are not always as simple as declaring Alarm Red or Blue (Korean Peninsula). The operations and support staff must use the warning timelines to develop and practice missile launch responses for likely day and night mission and support scenarios. Depending on the estimated time to impact, the commander may direct some operations to continue (such as tactical and cargo aircraft launch-to-survive) or safely terminate (fueling, aircraft taxi, munitions loading). Pre- planned actions may include direction through functional area channels to implement "last second" contamination avoidance and protective actions regardless of Alarm Red/Blue declaration. Pre-planned actions and coordinated execution can limit the inherent risk to personnel and reduce attack damage and contamination.

2.6. Aircraft Threats.

2.6.1. Description. A successful enemy air attack against an installation depends upon the enemy order of battle and their ability to penetrate air defenses and target the base. Weapons may include gravity bombs, rockets, precision-guided munitions, or aircraft cannon. Consult with the supporting intelligence office to determine enemy capabilities and weapons systems.

2.6.2. Employment Strategies. The type of aircraft and the ordnance delivery profile will dictate the specific aircraft attack profile. By flying at higher altitudes, attacking pilots can detect targets at greater ranges, but attacking aircraft then become more vulnerable to air defense systems. To reduce that vulnerability, we can anticipate that enemy aircraft will attack using low-level maneuvers. A low-level approach significantly reduces the time available for the pilot to recognize and engage the target. Consult with the supporting intelligence office to determine employment strategies. Commanders will consider the need for installation camouflage, concealment, and deception measures during the development of the Base Support Plan, Part II. (T-2).

2.6.3. **Countermeasures and Defensive Actions:**

2.6.3.1. Theater warning systems should detect and warn the installation of enemy fighter and bomber aircraft activity and track their flight profiles. However, it may be more difficult to track helicopters, light aircraft, or remotely piloted vehicles. If no prior warning of aircraft attack is received, use the missile attack procedures to warn and protect the installation.

2.6.3.2. The aircraft attack warning process is similar to the missile warning process, with the exception that warning times may permit the commander to implement pre-planned, Alarm Yellow actions. **Table 2.4**. highlights several examples of aircraft warning time assessments for installation attacks for three likely installation attack egress routes. The actual analysis includes the actual or expected time for each event in the warning chain. These events show how long the installation can take advantage of Alarm Yellow actions and establish an approximate time for declaration of Alarm Red or Blue. Alarm Yellow actions should be pre-planned and time-phased to achieve the highest defensive posture possible shortly before Alarm Red or Blue is declared.

Table 2.4. Example of Aircraft Warning Time Assessment for Installation Attack.

Attack Ingress Route	Time (In Minutes) to Complete Action								
	Cross Threshold	Theater Detect	Theater Warns	CAT Receives	CAT Decision	Alarm Red and Blue	Total Time	Flight Time	Difference
1	0	:30	1:00	:30	1:00	:30	3:30	19.00	+15:30
2	0	:30	1:00	:30	1:00	:30	3:30	23:00	+19:30
3	0	:30	1:00	:30	1:00	:30	3:30	27.00	+23:30
Note: Use actual aircraft threat information, distances, and warning transmission times to develop a warning time assessment for a specific location.									

2.6.3.2.1. Leaders should identify a distance around the installation that is the threshold of concern for enemy aircraft. Determine the threshold distance by analyzing real-time warning provided by the theater and installation warning systems. Consider the speed of the enemy aircraft, speed and range of standoff munitions, likely attack profile and ingress routes, status of pre-attack task completion, and the time required to achieve higher alarm conditions or protective postures. If enemy aircraft cross the threshold, declare Alarm Yellow, notify the base populace of the situation, and direct actions to reduce mission degradation. The commander makes the decision of when to warn the base populace. Actions taken in Alarm Yellow should prepare the base for attack and minimize the need for "last second" actions.

2.6.3.2.2. As soon as the enemy aircraft depart the immediate area, be prepared to declare Alarm Black and begin post-attack recovery actions. Maintain vigilance over the departing aircraft until they cross the aircraft attack threshold. If the aircraft were observed using spray tanks, assume a chemical or biological attack, and consider leaving personnel (other than specialized reconnaissance teams) under cover for approximately 15 minutes in order to allow for the liquid chemical agent deposition, or droplet fall phase. If bombs or missiles were used, unexploded ordnance or contamination may be present. Agents delivered by aircraft bombs will settle to the ground within a few minutes and recovery actions may be accelerated.

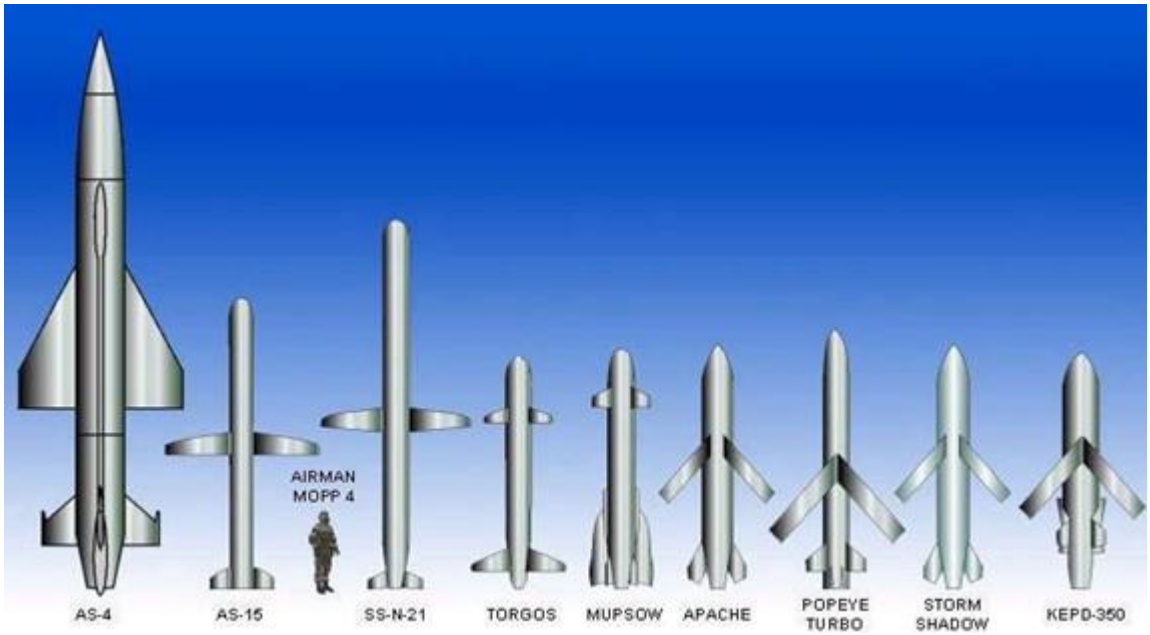
2.7. Cruise Missiles and UAS Threats:

2.7.1. Description. Cruise missiles (**Figure 2.4**.) and UAS are pilotless air vehicles that use propulsion and aerodynamic lift during all or nearly all of their flight. The primary purpose of a cruise missile is to place ordnance on a target. UAS can be employed in numerous missions with various payloads. Consult with the supporting intelligence agency for specific information on cruise missile and UAS types, payloads, flight profiles, and countermeasures.

2.7.2. Cruise Missile Threats. Depending upon the type, cruise missiles may be equipped with CBRN or conventional payloads. These missiles are designed to follow a remotely controlled or programmed course that roughly parallels the earth’s surface. They are attractive for use as a biological warfare agent delivery platform because they do not expose pilots or aircraft to the agent hazards; and they have a level flight profile that enhances the efficiency of spray dissemination.

2.7.3. UAS Threats. UAS have not been noted as delivery systems for chemical warfare agents, although much speculation has taken place. To date, most UAS have had insufficient payload capabilities to make them useful military platforms for delivery of chemical agents. Unless launched in conspicuously large numbers (large enough to become detectable), the best results expected from current UAS designs delivering chemical agents would be for harassment, or, if launched in small numbers, for a covert attack. With recent improvements in the range, size, and payload capacity, modern UAS may become candidates for militarily useful delivery of chemical agents. These vehicles are attractive for use as a biological agent delivery platform because there is no risk of aircrew or aircraft exposure and the level flight profile enhances the efficiency of spray dissemination. In addition, sub-munition dispensers are feasible for large-payload capacity UAS.

Figure 2.4. Typical Land Attack Cruise Missile Systems.



Chapter 3

COUNTER-WEAPONS OF MASS DESTRUCTION (C-WMD) PASSIVE DEFENSE PROGRAM

3.1. CWMD Operations and Chemical, Biological, Radiological and Nuclear (CBRN) Defense:

3.1.1. Air Force (AF) Counter-Proliferation Program includes activities to detect, deter, disrupt, deny, or destroy an adversary's chemical, biological, radiological, and nuclear (CBRN) capabilities and to minimize the effects of attacks. The primary program elements include proliferation prevention, counterforce, active defense, and passive defense. In addition to these primary elements, two crosscutting elements apply within each of the four primary elements. They are command, control, computers, communication, intelligence, surveillance, and reconnaissance (C4ISR) and C-WMD. This manual covers CBRN defense operations under the passive defense area of the AF Counter- Proliferation Program.

3.1.2. CBRN passive defense measures improve the capability of personnel to survive and sustain operations in CBRN environments (e.g. Ability to Survive and Operate). The major elements are contamination avoidance, protection, and contamination control. These elements and their subcomponents are an integral part of the Joint and AF CBRN Passive Defense Program.

3.2. Contamination Avoidance:

3.2.1. Introduction. Contamination avoidance includes all actions taken to minimize the impact of CBRN contamination on operations. Successful avoidance measures will significantly reduce and often prevent personnel, equipment, vehicles, aircrafts and cargo contamination. Operational advantage is gained by reducing protective measures which, lessen requirements for personnel and equipment decontamination. Measures include limiting contamination entry into facilities, detection and identification, prediction, marking, dispersal, relocation and rerouting, and sampling. Review specific contamination avoidance actions, ensure they do not conflict with functional area subject matter expert requirements. If conflicts arise, contact the responsible functional area subject matter expert.

3.2.2. Cover and Limit Entry. A crucial part of contamination avoidance is preventing asset contamination. Develop low cost standard operating procedures to put equipment not in use under overhead cover. Cover outside equipment with at least two layers of barrier material to prevent contamination. Use water repellant plastic sheets, canvas, tarpaulins, etc. as locally produced CBRN protective covers. Remove, safely discard, and replace the top layer if contamination occurs. When removing contaminated barrier material, remove and fold the material in a manner to encapsulate the contaminated surface. Place the covers in containers or plastic bags and neatly stack to simplify waste removal. Note: Place aircraft, vehicles, aerospace ground equipment, munitions, and bulk supplies into shelters or under overhead cover. Close facility windows, turn off (or close outside air intake) ventilation systems at time

of attack, and implement single-entry procedures. Pre-plan specific actions when attack threats increase. Include these actions, for example, within alarm condition checklists. Personnel can accomplish easy, last second actions to protect critical equipment once the attack warning is given. Actions include placing tools, weapons, and equipment under cover, closing aircraft canopies, building, vehicle windows, and equipment access panels.

3.2.3. Detection and Identification. CBRN agent detection and identification provide commanders the information needed to determine protective postures and to tailor protective actions to specific agent threats. Early detection provides more time to implement protective measures. Accurate agent identification enables selection of the most effective protective actions (including medical treatment) and limits mission degradation. Protective actions include medical treatment, and limits mission degradation that results from taking unnecessary actions. CBRN detection and identification includes the use of point detection methods, risk assessment, and all available medical and non-medical intelligence assets. Major Command (MAJCOM) commanders can utilize staff subject matter experts to identify and compare detection and identification capability gaps when and/or if official Chemical – Biological Defense Enterprise programs of record lag behind emerging threats and hazards. MAJCOM commanders may minimize risk and bridge capability gaps by investing in emerging material and non- material solutions through direct partnerships with government and industry who develop innovative best practices. Bridge solutions based on emerging regional threats provides a pragmatic and decentralized approach to improving detection and identification. They also inform higher headquarters enterprise priorities, synchronization, and other efforts.

3.2.4. Detection for Protection and Warning. Standoff detection provides warning in sufficient time to implement protective measures before exposure to agent contamination occurs. For attacks upwind, detection must occur at sufficient upwind distances to provide a reasonable amount of time for detection, processing, and information transmission. Detection of the leading edge of the cloud is preferable, since it can give more warning time. Warning of an upwind attack may come from upwind detectors placed outside the installation or from other units monitoring the area upwind. There are currently a multitude of technological challenges to the AF Detection for Protection and Warning strategy. MAJCOM commanders may minimize risk and bridge capability gaps by investing in emerging material and non-material solutions through direct partnerships with government and industry who develop innovative best practices. Bridge solutions based on emerging regional threats provide a pragmatic and decentralized approach to improving detection and identification. They also inform higher headquarters enterprise priorities, synchronization, and other efforts.

3.2.5. Detection for Treatment. Detection for treatment focuses on identification of biological agent type dispersed in an attack for earliest possible treatment. Agent discrimination is extremely important as some aspects of treatment are agent-specific. Agent sampling and analysis continue to be the primary means of accomplishing this detection role. Sampling is a local action, while analysis can occur locally or at designated medical laboratories, depending on capabilities. Medical personnel collect and submit clinical samples from patients and perform environmental sampling and detection.

3.2.5.1. Detection for Verification. Detection for verification provides critical information to the President of the United States and United States Secretary of Defense to support decisions concerning the need for tailored response in a timely manner. Specific procedures for sampling and transporting samples to a laboratory may vary depending upon the installation location and host-nation requirements. Follow theater and MAJCOM direction for the overall process and responsibilities for the collection and evacuation of samples for analysis. Reference U.S. Army forensic laboratories and technical escort, which is a potential source in verification of confirmation testing

3.2.5.2. Detection for Reduction. Detection for reduction means detecting to identify when contamination reaches levels that enable removal of the protective mask and suit. Note. Given existing detection technology, this capability may not provide reliable information Use various types of surfaces when conducting agent detection. For example, some chemical warfare agents will remain much longer on glass and in shaded areas than on items such as painted surfaces, concrete, and asphalt. This comparison provides valuable insight to commanders when considering appropriate actions.

3.2.5.3. Detection for Surface Contamination. Detection for surface contamination is the ability to detect deposited contamination on surfaces. The results determine the need for immediate or operational decontamination and appropriate protective equipment. They may support the need for alternate routes to avoid contaminated terrain if personnel cannot wait the short time period for agent absorption. Results may also adjust protective measures for people handling contaminated material.

3.2.6. Prediction. CBRN contamination hazard prediction allows commanders to determine the probable effect of contamination on current and future operations. Emergency Management specialists combine manual and automated methods to predict the location, movement, and persistency of contamination. These methods use post-attack detector data, physical observations, and automated predictions to identify known contamination and likely hazard areas. Prediction tools and specialist expertise enable a rapid assessment of mission impact and a means to quickly communicate contamination information to higher headquarters, joint service, and coalition forces.

3.2.7. Marking. Notify others of required precautions by marking confirmed contamination. Marking can significantly reduce the spread of contaminants by identifying areas, vehicles, aircraft, equipment, or material to avoid or decontaminate (if possible). Mark CBRN contamination immediately upon discovery. This action warns others of the hazard and avoids the need for a secondary site visit. Provide the location and type of contamination or observation to the unit control center if mission requirements prevent expedient marking. Consider expedient methods to mark first, then ensure further assessment or survey by explosive ordnance disposal and emergency management personnel. Use (when possible) deliberate North Atlantic Treaty Organization standard marking methods. Installation Readiness & Emergency Management Flights must clarify how CBRN Mission Oriented Protective Posture Zone marking procedures are different in the Installation Emergency Management 10-2 Plan and other locally developed checklists. (T-3).

3.2.8. Sampling. Sampling includes field collection procedures that facilitate laboratory analysis and verification of CBRN attacks. Sampling is a post-attack action that validates an attack and confirms adherence to appropriate protective measures. CBRN reconnaissance teams must be organized, trained, and equipped to properly collect, package, and transport samples to higher echelon laboratories for follow-on analysis. (T-2).

3.2.9. Relocation, Re-route and Dispersal. Other methods to decrease the spread of contamination and to preserve resources are to relocate, re-route or disperse personnel and assets prior to an attack and reevaluate after an attack. Reduce probability of contamination by moving resources to uncontaminated areas, taking routes that limit exposure to contamination, and dispersing resources.

3.3. Protection:

3.3.1. Protection provides survival and sustainment measures for operation in a CBRN environment when contamination cannot be avoided. It includes the physical measures taken to protect people and resources from the effects of CBRN weapons. Protection is provided by individual protective equipment and collective protection. Commanders use a combination of individual and collective protection to optimize performance of mission essential forces.

3.3.2. Some protection measures are threat-specific. Other measures provide broader protection against multiple threats. Theater and Joint Task Force requirements may establish additional requirements beyond AF minimum standards. Individual protection includes ground and aircrew individual protective equipment and other specialized equipment. Collective Protection provides toxic free areas. Collective Protection configurations are incorporated into hardened or unhardened facilities, added to field expedient shelters, or employed as stand-alone systems.

3.3.3. Physical protection combined with threat-based protective actions and procedures to minimize mission degradation provide the most effective defense against CBRN weapons effects. Determine specific protection measures by the expected threat, unit mission, and type of resource needing protection. Other factors also affect the ability to employ the optimum protective measure. They include the availability of equipment, material, manpower, and time to achieve the desired result. For example, the most cost-effective methods to protect facilities or structures are to include it as part of new construction or through expedient modifications prior to the start of hostilities. The next choice is to pre-plan the action, stockpile or contract for resources at or near the required locations, and add manpower and resource needs to the base or joint support plan. However, neither method is fully effective if the facility occupants do not: follow established procedures, maintain system serviceability or operate the system properly.

3.4. Contamination Control. Contamination control is a combination of standard disease prevention measures and traditional CBRN contamination avoidance and decontamination measures. This includes procedures for avoiding, reducing, removing, weathering, or neutralizing the hazards resulting from the contamination. Effective decontamination operations help sustain or enhance the flow of operations by preventing or minimizing performance degradation, casualties, or loss of material. Ineffective decontamination wastes manpower and material better spent on other, more productive missions.

3.4.1. Disease Prevention. Pre- and post-exposure medical interventions help prevent most biological warfare agent effects. Communication between commanders and medical personnel is critical in assessing potential and actual exposure risks. Information from post attack reconnaissance, sampling, and agent identification is likewise critical to the success of medical operations.

3.4.2. **Decontamination.**

3.4.2.1. Purpose. Decontamination operations help sustain military operations in CBRN environments by minimizing mission performance degradation, casualties, and loss of resources. They include individual, team, and unit actions to reduce, remove, weather, or neutralize (render harmless) the primary hazards resulting from CBRN contamination. The immediate decontamination priority is exposed skin, followed by the protective mask, over garment, personal weapon, and other individual equipment. Decontamination actions beyond the immediate and operational level are manpower, time, and resource intensive processes. Decontamination efforts should be limited to actions that are necessary to permit mission accomplishment. A more cost-effective approach is to devote resources to developing and executing an aggressive pre-attack contamination avoidance and cover plan. Successful actions reduce or eliminate most common installation contamination hazards and significantly reduce the requirement for decontamination at all levels.

3.4.2.2. Installation decontamination operations will be conducted IAW AFTTP 3-2.56, Multi-Service TTPs for CBRN Contamination Avoidance. (T-1).

3.4.2.3. Contamination Control Teams:

3.4.2.3.1. Immediate and operational levels of decontamination do not normally require activation of the Unit contamination control team (CCT). Vehicle, equipment, munitions, and aircraft crew chiefs lead and oversee immediate and operational decontamination on their assigned assets. Personnel use the Reactive Skin Decontamination Lotion (RSDL) and M295 decontamination kits or other expedient methods to perform operational levels of decontamination. Activate CCTs if thorough decontamination is required. Consider using this team to resupply unit members with expendable assets (M8 and M9 paper, RSDL and M295 decontamination kits, plastics covers and bags, bleach solution) and sustain unit contamination control and immediate and operational decontamination activities. Also, consider using the team to establish/maintain the unit contaminated waste collection points and local zone transition points.

3.4.2.3.2. Units conduct thorough decontamination planning by identifying command and control relationships, team requirements, equipment requirements, decontamination assets, and contaminated waste collection points. Develop team checklists to guide activities. Focus these plans and checklists on unit tasks such as critical cargo movement and post-conflict decontamination operations. Commanders will identify decontamination requirements in the Installation Emergency Management Plan 10-2, Base Support Plan, and/or CBRN Defense Plan. (T-2). Decontamination information in this manual supplements, does not replace other references (such as specific guides for nuclear weapon accidents, terrorist WMD, or hazardous material emergency response).

Chapter 4

CBRN COMMAND, CONTROL AND ATTACK WARNING

Section 4A—Command and Control

4.1. Installation Command and Control (C2) Organization. C2 is critical to a wing's ability to survive and operate and allows commanders to synchronize and integrate force activities. C2 ties together all the wing's operational functions, support function and applies to all levels and positions of command. C2 enhances the commander's ability to make sound and timely decisions and successfully executes them. Unity of effort in complex operations is achieved by decentralizing execution of overarching plans or via mission command. Unity of command is strengthened through adherence to the following C2 tenets: defined authorities, roles, and relationships; mission command, information management, and knowledge sharing; communication, timely decision making, coordination mechanisms, battle rhythm discipline, responsive, dependable, and interoperable support systems; situational awareness, and mutual trust. This C2 structure is designed to conduct and sustain operations while simultaneously responding to events or incidents that impede air, space or cyberspace operations using the following entities.

4.1.1. Crisis Action Team (CAT). Led by the installation commander, the CAT serves as the top echelon of installation Chemical, Biological, Radiological and Nuclear (CBRN) defense operations. The primary focus of the CAT is flight operations, installation security, and support to other forces on the installation. The CAT includes senior officers from operations, maintenance, mission support, medical group, and members from joint and/or combined organizations (e.g. ballistic missile defense, partner nations). Members of the wing special staff or senior officers representing major tenant units or host-nation forces may also be present. The CAT supports the installation commander by assessing the situation, determining mission priorities and defensive actions, and directing subordinate units. Effective response requires a team effort since most CBRN defense countermeasures and response actions have far-reaching impact on mission accomplishment and sustainment. The direction provided by the installation commander and staff integrates actions of all functions. This integration requires direct input and feedback from other command and control centers such as the base defense operations center, air defense element, and host-nation or coalition forces command posts. Commanders will use Joint Publication Annex 3-30, Command and Control, and Air Force (AF) Manual (AFMAN) 10-2502, Air Force Incident Management System, for designing their C2 structures to support CBRN operations. (T-2).

4.1.2. Emergency Operations Center (EOC):

4.1.2.1. The EOC gathers information, directs, and monitors execution of the installation CBRN defense survivability, recovery, and sustainment operations. The EOC collects, analyzes, prioritizes, displays, and reports information on the status of the base. It recommends courses of action and executes pre-planned and CAT-directed actions. The EOC concentrates resources and expertise at the right place and right time to implement the commander's direction. (T-2).

4.1.2.2. Design the EOC in accordance with Unified Facility Criteria 4-141-04, Emergency Operations Center Planning and Design. (T-0). The EOC operates in accordance with AFMAN 10-2502. (T-2).

4.1.3. Unit Control Center (UCC):

4.1.3.1. UCCs prioritize squadron operational activities and allocation of available resources. Additional functions of UCCs is communicating between the EOC, other UCCs, and unit personnel. Staff the UCCs with functional representatives needed to execute C2 actions. The C2 node for a squadron implements CBRN defense functions and deploys forces in response to incidents or events affecting a wing's mission. (T-2).

4.1.3.2. UCCs have plans, checklists and status boards to accurately account for and track status of resources (personnel, equipment, and material), collect damage assessment information, identify work requirements, prioritize recovery actions, manage contamination control, recovery efforts and provide timely and accurate information to the EOC. The UCC must be tailorable to fit the requirements of each unique location and mission. (T-2).

4.1.3.3. UCC will maintain communications capability, rosters, communications out plan, etc. to ensure communications with their unit and the EOC. The unit should be able to contact all personnel to direct actions. Specifically, contact personnel on work detail which may be outside the reach of base warning and notification systems. (T-2).

4.1.3.4. At a minimum, the following UCCs and/or functional C2 centers will be established: Operations Control Center, Maintenance Operations Center, Base Defense Operations Center, Air Terminal Operations Center, Civil Engineer Damage Control Center, Force Support Control Center, Medical Control Center, Transportation Control Center, Emergency Communications Center, and CBRN Control Center. (T-2).

4.2. CAT and EOC Operations:

4.2.1. CAT, EOC, and UCC enabling tasks are outlined in **Table 4.1**. CAT, EOC, and UCC Enabling Tasks. These elements conduct operations under the concept of centralized control and distributed execution. Centralized control allows the organization to focus limited resources on priorities that lead to overall base mission success. Once tasks and priorities are established, the CAT or EOC delegates action accomplishment to subordinate commanders or specialized teams. This process achieves span of control and fosters initiative, situational responsiveness, and tactical flexibility during multi-domain operations. It enables the CAT and EOC to monitor the status of multiple operations and reduce information and task overload. It also allows members to focus on primary missions and be responsive to changing tactical and operational situations. Units should conduct integrated exercises and drills during both peacetime training and CBRN defense operations.

Table 4.1. CAT, EOC, and UCC Enabling Tasks.

Crisis Action Team (CAT)	
Priority	**Tasks**
1	Preserve life
2	Prevent further loss of combat power
3	Maintain or restore base integrity and security
4	Maintain or restore command and control over ground and airborne forces
5	Maintain or restore primary mission capability
6	Provide support to joint service, coalition and host-nation forces
7	Direct installation alarm conditions and Mission Oriented Protective Posture (MOPP) levels
8	Provide warning to joint service, coalition and host-nation forces
Emergency Operations Center (EOC)	
Priority	**Tasks**
1	Recommend alarm condition and MOPP levels for commander approval.
2	Direct forces and monitor status of CBRN pre-, trans-, and post-attack actions.
3	Collect, analyze, prioritize, display, record, and report information.
4	Develop courses of action to survive attacks and restore operations.
5	Coordinate actions with joint service, coalition, and host-nation forces
6	Develop plans and support major accident and natural disaster response.
7	Support non-combatant evacuation order operations.
8	Operate the CBRN Control Center and CBRN warning and reporting system.
9	Coordinate installation contamination avoidance, dispersal, and blackout operations.
10	Coordinate installation hardening and camouflage, concealment, and deception actions.

Unit Control Center (UCC)	
Priority	**Tasks**
1	Maintain accountability and status on assigned unit personnel and resources.
2	Provide attack warning and MOPP condition changes to unit personnel.
3	Maintain status of zone or sector alarm conditions and MOPP levels.
4	Direct forces and monitor status of CBRN pre-, trans-, and post-attack actions.
5	Collect, analyze, prioritize, display, record, and report information.
6	Develop and initiate courses of action to survive attacks and restore operations.
7	Assign, equip, and direct unit PAR and specialized teams (if assigned).
8	Support non-combatant evacuation order operations.
9	Implement unit contamination avoidance, dispersal, and blackout actions.
10	Implement unit, hardening, and camouflage, concealment, and deception actions.

4.2.2. Design operations to allow individuals and functions flexibility to shift decisively from one incident or objective to another. Representatives must process and integrate real-time information to produce coherent courses of action or modifications to existing ones. (T-3).

4.2.3. Post-attack recovery decisions focus installation resources on lifesaving, preventing further loss of combat power, maintaining or restoring base integrity and security, restoring command and control, primary mission restoration, and support to other forces. Devote minimum resources necessary for secondary missions or those that do not support larger operational or strategic objectives. This requires the CAT and EOC to maintain a full operational view, clearly communicate installation commander's objectives and priorities to subordinate levels.

4.2.4. EOC Director and each Emergency Support Function (ESF) maintains situational awareness on status of key operations in their areas of responsibility. Each also maintains a permanent record or log of actions. This log of actions provides continuity between shift changes and assists in the preparation of daily situation reports. Provide alternate EOC periodic updates to prepare for assumption of operations in case the primary EOC is damaged or destroyed.

4.2.5. Consider several factors when developing courses of action in the stressful and constantly changing CAT or EOC environment. Consider the impact new orders may have upon operations previously directed or in progress. Also, consider the real-time ability to notify all affected units, teams, and personnel. These issues are critical when using progressive notification requiring each successive link to notify the next link in the chain. For example, changes in alarm condition or Mission Oriented Protective Posture (MOPP) level may result in conflicting information flowing at the same time within the same communication chain.

4.2.6. Effective upward and downward information flow is the foundation of successful operations. If information does not make it to the intended receiver, the primary or supporting mission could fail. Upward information flow begins with an individual, crew, or team, and moves upward to the UCC, the EOC, and CAT. Command Post incorporates information from the CAT and EOC and forwards essential elements to joint force, theater, and Major Command Centers in accordance with AFMAN 10- 206, Operational Reporting. (T-1). The CAT and EOC keep the UCCs informed. The UCCs, in turn, notify their unit personnel. Installations are required to include detailed communication flow, process, standards, and responsibilities in their Installation Emergency Management Plan 10-2 and/or another suitable installation level plan (i.e. Installation Communications Plan or C2 Plan). (T-3).

4.2.7. Checklists ensure critical steps are not missed and support continuity of operations over shift changes. Develop and use checklists at each command and control level to support general installation requirements and functional area responsibilities. Organize the checklists to enable users to rapidly identify actions under each alarm condition.

4.3. CBRN Control Center:

4.3.1. The CBRN Control Center operates within the EOC construct with manning provided by the local Readiness and Emergency Management Flight. The physical location of the CBRN Control Center varies based on location specific requirements and desires. Source additional subject matter expertise from other specialties or joint partners when available and desired. Primary purpose of the cell is to advise the installation commander and staff on CBRN hazards, countermeasures, and protective actions and manage CBRN specialized team operations. The CBRN Control Center plots and maintains the status of CBRN hazards on the installation, within off-base areas of operational concern, and at potential recovery installations. The ESF-5, through the CBRN Control Center, directs the CBRN reconnaissance teams and collects information from ESF representatives. The CBRN Control Center manages the base shelter management, contamination control area, and contamination control teams. Another key function is to support installation responsibilities for theater CBRN warning and reporting and to coordinate operations with United States joint service, coalition, and host-nation forces. Consequently, the CBRN Control Center may include host-nation CBRN defense specialists and provide reciprocal manning at the host-nation CBRN Control Center. MAJCOMs, NAFs, and installations will organize, train, equip, and operate CBRN CCs in accordance with Allied Tactical Publication (ATP) 45, Warning and Reporting and Hazard Prediction of CBRN Incidents, AFMAN 10- 206, Operational Reporting, Air Force Tactics Techniques and Procedures (AFTTP) 3-2.56. Multi- Service TTPs for CBRN Warning and Reporting Hazard Prediction Procedures, and AFTTP 3-2.70, Multi-Service TTPs for CBRN Aspects of Command and Control. (T-2).

4.3.2. **CBRN Warning and Reporting Information System (CBRN-IS):**

4.3.2.1. System Description. The CBRN Control Center is the installation link with the theater CBRN- IS. CBRN Control Center personnel use standard plotting tools to plot known and suspected CBRN contamination and predict future hazards in accordance with ATP-45. Following a CBRN event, the CBRN Control Center incorporates information from unit and base post-attack reconnaissance (PAR) reports, analyzes data, and develops standard hazard and warning templates and computer models. The CBRN Control Center also reports CBRN events to joint and combined forces units as required in accordance with ATP-45 and Major Command or Numbered AF guidance. These tools allow commanders and staffs to better understand and articulate protection needed against likely hazards for specific locations. This understanding provides improved force protection with fewer encumbrances from constant, and largely unnecessary, high states of individual protection for personnel. Trained Emergency Management specialists use CBRN-IS to verify information generated by any CBRN hazard model with available field detectors before reducing protection levels. (T-1).

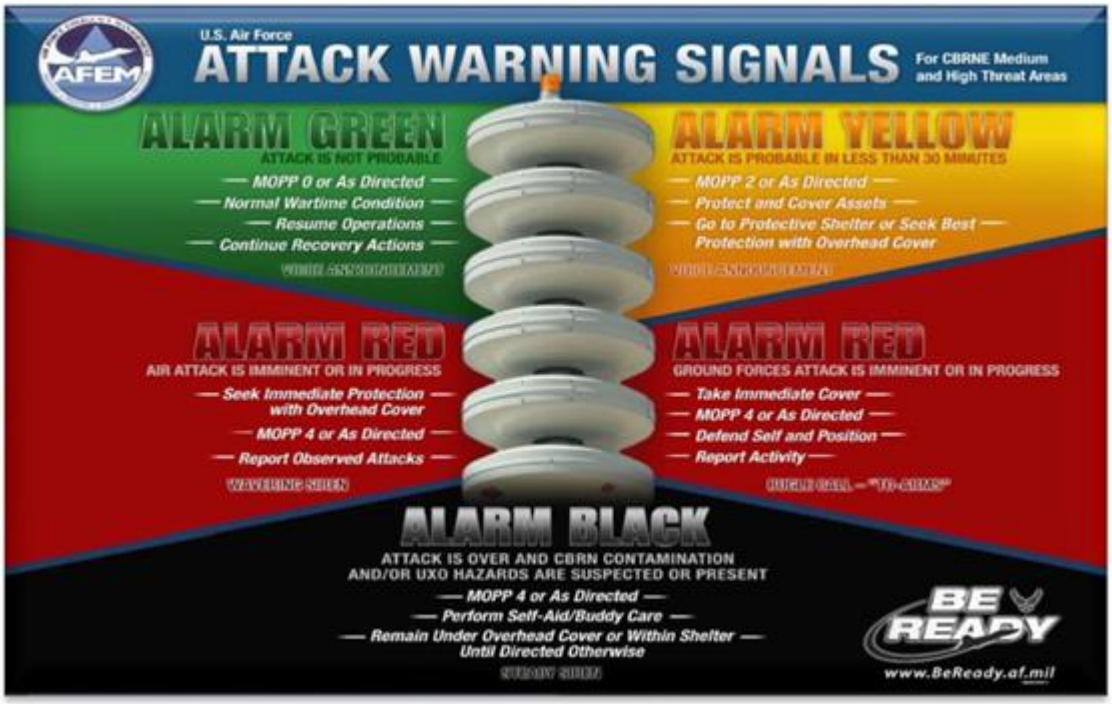
4.3.2.2. Joint Warning and Reporting System (JWARN) and Joint Effects Model (JEM). AF CBRN CCs use JWARN and JEM software integrated into CBRN-IS as standard warning, reporting and modeling programs. (T-1). It provides the installation with a comprehensive analysis and response capability to minimize the effects of CBRN attacks, accidents, environmental hazards, or hazards from toxic industrial materials. JWARN includes software components that enable CBRN warning, reporting, and battlefield management. It will provide additional data processing, production of plans and reports, and access to specific CBRN information to improve the efficiency of Emergency Management specialists.

4.3.3. Hazard Duration Analysis. CBRN Control Centers use the most current AF Hazard Duration Tables developed by AF/A10S in conjunction with other data available (i.e. sample and detector results) for estimating the likely chemical hazards associated with adversary use of chemical warfare agents. (T-1).

4.4. Continuity of Operations. Develop procedures and checklists to maintain unit integrity and continuity of operations for the CAT, EOC, and unit control centers. Where available, establish alternate control centers, or equivalent C2 functions. Include manning and redundant communications systems in planning to maintain unit cohesion and mission continuity. Alternate C2 elements and systems provide ability to continue operations during failure or damage to the primary element or system. Update status boards and event logs to duplicate information available in the primary function. Locate the alternate function a reasonable distance from the primary to avoid damage or destruction of both functions from a single event. Consider using the alternate function as the off-shift bed down location for primary UCC personnel.

4.4.1. **Attack Warning Signals:** Commanders use AF standardized warning signals to posture installations for attacks, warn of attacks in progress, initiate post-attack recovery actions, and return the base to a normal CBRN defense state of readiness. The effective use of a rapid, multi-capability installation warning system is crucial to force protection and mission operations. Without it, installation actions can become slow and disjointed. Combined missile and ground force attacks can add confusion to attack warning execution. **Figure 4.1**. displays the AF “Be Ready” training aid, USAF Attack Warning Signals for CBRN Threat Areas.

Figure 4.1. AF "Be Ready" Training Aid – USAF Attack Warning Signals.



4.4.2. Warning signals communicate commander's intentions, direct personnel and units to take pre- planned defense actions, or notify personnel to take cover. Signals to initiate pre-planned actions, such as air base defense or post attack reconnaissance, may be specific to functional areas. Other actions, such as assuming pre-designated MOPP conditions or seeking protective cover, may apply to the base population. Warning signals provide air, missile, artillery, and ground attack warnings. They can also warn if a covert attack with a chemical weapon is discovered.

4.4.3. Warning signals are difficult to communicate to personnel within high noise areas, at night, and during bad weather. Develop alternative methods to warn personnel located inside hardened aircraft or personnel shelters, at end-of-runway checkpoints, or performing tasks in high noise areas. Methods may include use of warning guards, flashing or high intensity lights, vehicle or air horns, or hand signals. Aircrew members who receive warning while inside the aircraft should execute their pre- planned actions and alert passengers and ground support personnel.

4.5. Alarm Conditions. Alarm conditions initiate or limit individual and installation wide movement and actions. Commanders declare alarm conditions to initiate passive defense actions. Unless local or theater requirements dictate otherwise, bases where CBRN threats exist use the AF training aid for attack warning signals and alarm conditions obtained through the installation "Be Ready Program" (see **Figure 4.2**.). Alarm Conditions can be declared for the entire installation or for one or more defense sectors or zones. Alarm conditions, combined with supplemental instructions through the chain of command, are the most effective way to establish the defensive posture of an installation. When CBRN threats are present, the commander further directs MOPP levels and options to provide the minimum level of individual protection for the current mission

and situation. MOPP levels let individuals know what to wear for minimum protection against CBRN hazards.

4.5.1. Mission Essential Tasks. Commanders may direct mission-essential tasks or functions to continue during any alarm condition. Develop standing operating procedures to rapidly identify critical missions and develop courses of action that minimize risk.

4.5.2. Warning Systems. Use warning signals that are compatible with host-nation, local, or theater systems. The base warning system must provide effective coverage for all installation areas. Display warning signal visual aids in all work centers and common use areas (such as billeting, post office, latrines, dining facilities, and recreation areas). Provide local warning signal and protective action information, such as a handout, to all permanent party and transient personnel upon arrival. Transient personnel include aircrew, passengers, noncombatants, and all other personnel not assigned to the installation.

4.5.3. **AF Standard Alarm Conditions for Areas Where a CBRN Threat Exist:**

4.5.3.1. Alarm Green - Attack Is Not Probable. Alarm Green is the normal condition of readiness because there is no active threat of attack at the present time.

4.5.3.2. Alarm Yellow - Attack Is Probable In Less Than 30 Minutes. This condition indicates attack against the installation or identified location is expected in near term. Surveillance measures indicate that an aircraft or missile attack is imminent or an enemy ground force is present and a direct threat to the installation. Evaluate current and near term operational requirements, decide what missions to continue or terminate, and direct forces to take actions. The CAT, EOC, and UCCs should implement pre-planned Alarm Yellow actions to protect personnel and material and mitigate the effects of CBRN attack. Develop standard actions to execute within 20 to 25 minutes or less of Alarm Yellow declaration. Individuals who are not performing mission essential tasks or functions report to their assigned shelter or seek the best available cover. Direct additional actions based upon the current situation or missions. Assume MOPP 2 or as directed by the Installation Commander.

4.5.3.3. Alarm Red or Blue (Korean Peninsula). Knowledge of the specific type of attack allows personnel to respond with the most effective actions to counter the threat. The most effective installation response to a missile or air attack is not the most effective means to respond to a ground force attack. Therefore, two conditions of Alarm Red or Blue are used to warn the installation. One condition warns of an air or missile attack while the other is used to provide ground attack warning. Individuals and units should assume that a missile attack is imminent or in progress if sufficient information is not provided to determine the type of attack (air, ground, or missile). For example, an individual may hear only the words "Alarm Red or Blue" over a radio or public address system, see a red flag, or see other personnel taking cover. Without further information or direction, the individual should assume a missile attack is imminent and take protective actions.

4.5.3.3.1. Alarm Red or Blue - Attack by Air or Missile Is Imminent or In Progress. This condition indicates the installation, or identified location, is under missile or aircraft attack or an attack will begin within minutes. The CAT, EOC, UCCs, and each individual should implement pre-planned protective actions for missile and aircraft threats. Evaluate operational requirements, terminate current missions as safely as possible, and take cover. Where possible, direct aircraft to launch-to-survive or taxi into the nearest protective shelter. Direct additional actions based upon the current situation or missions. Report observed attacks. Assume MOPP 4 or as directed by the Installation Commander.

4.5.3.3.2. Alarm Red or Blue, Ground Attack - Attack by Ground Force Is Imminent or In Progress. This condition indicates the installation, or identified location, is under attack by a ground force or an attack will begin within minutes. The CAT, EOC, UCCs, and each individual should implement pre- planned protection actions for ground attack threats. All units evaluate operational requirements and terminate current missions as safely as possible. Direct personnel to assume assigned defensive positions or take cover. Use the S-A-L-U-T-E format in **Table 4.2** for the **Report Enemy Activity**. Support Security Forces operations where possible. Direct additional actions based upon the current situation or missions. Assume MOPP 4 or as directed by the Installation Commander. **Table 4.3**. S-A-L-U-T-E format is used to Report Enemy Ground Force Activity.

Table 4.2. Report Enemy Activity.

Report Area	Information to Report
Size	The number of persons and vehicles seen or the size of an object.
Activity	Description of enemy activity (assaulting, fleeing, observing).
Location	Where the enemy was sighted (grid coordinate or reference point).
Unit	Distinctive signs, symbols, or identification on people, vehicles, aircraft, or weapons (numbers, patches, or clothing type).
Time	Time the activity was observed.
Equipment	Equipment and vehicles associated with the activity.

4.5.3.4. Alarm Black - Attack Is Over, CBRN Contamination and Unexploded Ordnance Hazards are suspected or present. This condition indicates an attack is over and initiates base recovery. CBRN hazards (facility damage, UXO, CBRN contamination) are likely to be present and yet be marked or reported. Individuals remain under overhead cover until directed otherwise, perform self-aid and buddy care, and perform immediate decontamination (if contaminated). Base specialized and unit PAR teams begin surveys

when directed by the commander. All units evaluate operational requirements, determine actions required to resume sortie generation, and direct forces. The CAT, EOC, and UCCs implement pre-planned Alarm Black actions to recover primary mission capability. Direct additional actions based upon the current situation or missions. Assume MOPP 4 or as directed by the Installation Commander.

4.6. Warning Time Assessment. Analyze the installation attack warning process to identify limitations and failures and find opportunities to exploit capabilities and strengths. Warning times will vary by threat and the real-time ability of both theater and installation warning systems to disseminate warning information. Analyze the warning system performance for each primary threat (e.g. missile, aircraft, & ground) to the installation. Use the analysis to develop a chain-of-events timeline that identifies each primary and secondary warning event from initial event detection through notification to the lowest level. These timelines enable the CAT or EOC to develop and practice pre-planned scenarios and quickly adjust strategies to react to attack situations. For example, installations may receive little (several minutes) or no warning of missile or artillery attacks. However, aircraft, cruise missile, and remotely piloted vehicle attack warning times (due to different flight profiles) may be long enough (tens of minutes) to allow extensive pre-planned actions. Regardless of the warning times, commanders and their staffs must quickly analyze the available attack information, evaluate the effect on current operations, and decide on the most effective courses of action within the time available.

4.6.1. Analyze and determine how long it takes to notify the installation population under each alarm condition and MOPP change. How long does it take to notify 90% of the airbase population once the commander directs an alarm condition or MOPP level change? Identify locations where warning signals are difficult to hear or see and take actions to provide supplemental notification for personnel in these areas. Develop procedures to mitigate command, control, and communications difficulties in high noise or hard-to-contact areas such as aircraft shelters, end-of-runway checkpoint, and hardened personnel shelters. Consider also the effect of darkness or bad weather on notification times. See **Table 4.3**. for the Main Operating Base (Notional Example) Alarm Notification Times (Seconds from Declaration) and **Table 4.4**. Collocated or Bare Base (Notional Example) Alarm Notification Times (Seconds from Declaration) that provides a comparison of notional warning timelines for two installation types: **Table 4.3**. shows a main base with an established warning and reporting infrastructure, while **Table 4.4** shows how warning timelines may increase at a bare base that relies only upon deployed assets.

Table 4.3. Main Operating Base (Notional Example) Alarm Notification Times (Seconds from Declaration).

Alarm	Primary Methods	Alternate Methods	50% Warn	90% Warned	100% Warned
Green	Giant Voice	Radio, Phone, Cable Television, Common Operating Picture COP), AtHoc	30	90	120
Yellow	Giant Voice	Radio, Phone, Cable Television, COP, AtHoc	30	90	120
Red	Siren	Giant Voice, Radio, Phone, Cable Television, COP, AtHoc	15	15	45
Black	Siren	Giant Voice Radio, Phone, Cable Television, COP, AtHoc	15	15	45
Note: This example assumes a permanent installation siren system with base-wide, public address system, cable television network, and radio nets available. Determine actual times through installation exercises and evaluations.					

Table 4.4. Collocated or Bare Base (Notional Example) Alarm Notification Times (Seconds from Declaration).

Alarm	Primary Methods	Alternate Methods	50% Warned	90% Warned	100% Warned
Green	Radio, Phone	Runner	90	150	180
Yellow	Radio, Phone	Runner	90	150	180
Red	Siren	Radio, Phone, Runner	15	15	45
Black	Siren	Radio, Phone, Runner	15	15	45
Note: The example assumes an installation siren system, telephone network, and radio system package has been deployed or is available at the site. Determine actual times through installation exercises and evaluations.					

4.6.2. Evaluate in detail the attack warning and notification process, from theater down to unit and individual level. Determine the actual timelines for the existing warning and command and control systems. Develop a warning time projection for each threat weapon system. Determine if a "window of opportunity" exists to conduct "last minute" attack preparations or to launch aircraft sorties. Implement standing operating procedures to take advantage of any opportunities and reduce local warning delays. See **Table 4.5**. for the Tactical Ballistic Missile (TBM, SCUD Variant) – Threat Warning Times (**Notional Example**) (**Seconds from Launch**) that provides a notional example for an attack with a SCUD variant. Missile has a projected flight time, based upon distance from launch site and expected missile performance, of 450 seconds. In this example, the installation has about four minutes to take additional protective actions (missile flight time minus warning time). Although the available time is too short to implement general Alarm Yellow actions (based on voice notification times), there is time to direct specific actions within some functional areas and for individuals and teams to perform “last second” contamination avoidance actions. For example, the operations areas may focus on launching or delaying sorties and sending taxiing aircraft to shelters. Support and logistics areas have time to direct mobile units to move to cover and fuels and munitions forces to safely terminate operations. Personnel on the flight line can increase protection by using those extra minutes warning to place critical equipment under cover and close hanger and aircraft shelter doors.

Table 4.5. Tactical Ballistic Missile (TBM, SCUD Variant) – Threat Warning Times (Notional Example) (Seconds from Launch).

TBM Flight Time	Launch Detect	CAT Warned	Potential Preparation Time	Declare Alarm Red or Blue	Complete Alarm Red or Blue	Impact or Burst
Planned	60 mins	60 mins	240 mins	30 mins	60 mins	450 mins

4.6.3. Develop a "playbook" approach that outlines likely threat scenarios and standard actions for each primary mission profile. Include considerations for daytime and nighttime operations and key responses to alarm conditions. Train the CAT and EOC staffs to quickly adjust standard actions, when required, based upon actual circumstances and mission requirements. Planned timing of certain activities is situation dependent. For example, the decision to release all or part of the base populace from protective positions following an attack is based on a balance between mission task criticality and force protection issues.

4.6.4. Test the warning system periodically to verify system operation and warning timelines. Develop alternate notification for areas of the base where the warning systems are not available. Exercises and Readiness Assessments are a standard measure to test people, procedures, and systems. They identify gaps in pre-attack plans and preparation. Conduct limited exercises and immediate action drills to verify effectiveness of warning and notification systems down to the unit control center and work center levels and reinforce individual knowledge of protective actions in accordance with AFTTP 3-2.42. Schedule exercises during both day and night operations. Notify personnel in advance to avoid confusion over exercises versus actual attack notifications and ensure the exercise continues through to its natural point of ending.

4.7. Installation Sectors or Zones:

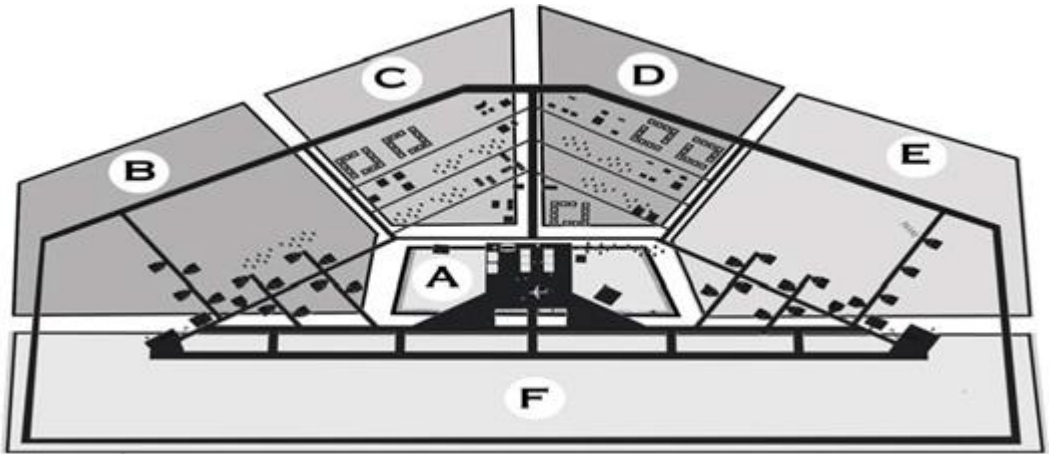
4.7.1. Concept. The objective of split MOPP operations is to place Airmen in the protective posture they require for the Chemical Warfare (CW) hazard at hand versus defaulting to a "one base, one MOPP" stance. This goal is achieved by placing chemical zones that have significant CW contact and/or vapor hazards in MOPP 4, with the other zones reverting to MOPP 2. Once a split-MOPP capability is established, the commander can rapidly implement defensive actions in areas where threats are present and reduce mission-degrading protective actions in other areas. The need for increased mission accomplishment capability must outweigh the potentially high-risk of split-MOPP implementation.

4.7.1.1. Some missiles may impact off base, but a CW payload may present a delayed hazard if the detonation point was upwind of the airbase.

4.7.2. **Operations:**

4.7.2.1. Prior to hostilities, the EOC must identify installation zones or sectors appropriate for the base geography and mission (**Figure 4.2**.). Consider factors such as work center disposition, physical features of the installation, and convenience for movement between sectors or zones. If possible, use the same sector or zone identifications used by the Security Forces to identify installation defense sectors. This simplifies preparation, training, and use by the base population and EOC staff. It also reduces map clutter and the potential for confusion if multiple terms and actions are used for the same areas. Once planners develop the sectors, the installation must conduct training to ensure UCCs and all personnel fully understand and are able to execute their responsibilities.

Figure 4.2. Installation Sector or Zone Identification (Notional Example).



4.7.2.2. Split-MOPP implementation is a sequential event. It requires a chain of events to occur that provides the commander with the opportunity to implement the tactic. It also requires the CAT and EOC to determine mission priorities and provide course-of-action recommendations to the commander.

4.7.2.3. When an attack warning is declared, all personnel assume the appropriate MOPP and take protective actions. Once the attack is over and Alarm Black is announced, the EOC should direct CBRN Reconnaissance Teams and other specialized teams to conduct CBRN reconnaissance and report their results. The EOC staff, in consultation with the CBRN Control Center and medical representatives, analyze the post-attack results, considers the sensitivity of available detectors, identifies the contamination footprint(s), downwind hazards, and determine what sectors or zones are affected. For TBM attacks with airburst warheads, the actual liquid contamination footprint may take up to 60 minutes to completely form. Therefore, the commander must know the means of chemical agent delivery before implementing split MOPP or directing personnel other than those performing mission essential tasks, to leave shelter or overhead cover.

4.7.2.4. Following the attack analysis and mission assessment, the EOC will provide each UCC with the commander's decision and installation hazard locations. Each UCC is responsible for controlling their forces and limiting movement between contaminated and non-contaminated sectors or zones during Alarm Black. Individuals are expected to remain in a shelter or under overhead cover until otherwise directed by their UCC or other authority. When contamination is present on the installation and movement is required, individuals do not move between sectors or zones without direction from their UCCs or approval from other authority.

4.7.2.5. Consider assigning zone or sector chiefs to establish transition points and control the movement of mission critical equipment and personnel between contaminated and uncontaminated areas. These transition points should have instructional signs that direct individual actions. Consider placing individual detection and decontamination assets (M8, M9 paper, RSDL, and M295 decontamination kits) at these areas and ready for immediate use. Commanders must plan to control movement of mission critical equipment and personnel between zones without pre-positioned detection and decontamination assets and signs due to their vulnerability from conventional munitions employed during the early stages of conflict. (T-2).

4.7.3. Primary Split-MOPP considerations. Factors are status of the chemical droplet fall phase, receipt of sufficient CW reconnaissance results, and knowledge of current and projected wind directions.

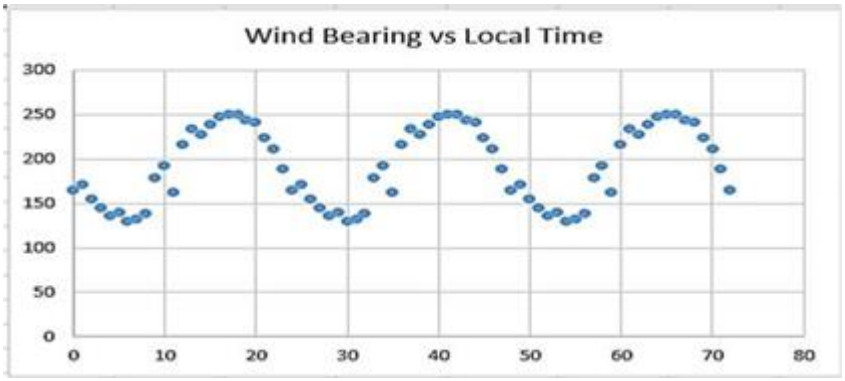
4.7.3.1. Premature split MOPP declarations prior to the chemical droplet fall phase completion is assumed risk. It is exceedingly dangerous to make split MOPP declarations of “MOPP 2” for areas that may yet receive CW contamination from missile impacts that occurred off the installation.

4.7.3.2. Not all CW reconnaissance results need to be received prior to a split MOPP declaration however, sufficient reports must be received and analyzed to provide a better picture of the type and estimated CW contamination presence on the installation.

4.7.3.3. The primary residual hazard after CW agent deposition and absorption has occurred will be from off gassing. CW agents in liquid form will interact with wind currents at surface level resulting in toxic vapors within and downwind of the contaminated area. Consider wind direction changes likely to occur in the near future as opposed to only thinking about the wind direction at the moment.

4.7.3.4. Commanders prepare to quickly change split MOPP declarations due to variances in wind direction and its impact on the hazard contours. **Figure 4.3** below shows some historical data extracted from Osan, air base, Korea in the spring timeframe. The numbers on the horizontal axis represent hours after attack.

Figure 4.3. Historical Wind Direction for Osan AB, Korea.



4.7.3.5. The Emergency Operations Center and UCCs must actively track the projected wind direction(s) in relation to split MOPP decisions on the installation. **Figure 4.4**. and **Figure 4.5**. provide an example split MOPP adjustment due to wind shift.

4.7.3.6. The level of nerve agent vapor exposure remaining in various locations may be below the detection threshold of the AF's primary CW detectors. This complicates defensive actions in the aftermath of nerve agent attacks. It is unlikely that direct readings of the hazard level will be obtainable simultaneously at multiple locations on the airbase.

4.7.3.7. Weather events can produce temporary spikes in vapor concentrations arising from sorbed CW agents (i.e. rapid increases in temperature, onset of rain). The probability of dangerous amounts of vapor transiting from contaminated areas into MOPP 2 zones will increase during these "vapor spike" periods.

4.7.3.8. The amount of time that has passed after the attack is perhaps the largest determining factor to consider when assessing whether or not wind shift could result in an unacceptable amount of people being adversely affected. The danger of wind shift will be negligible at time periods past the "times after attack" as shown in the **Figures 4.4**. and **4.5**.

4.7.3.9. Commanders should not keep the entire installation in MOPP 4 because of a concern that wind shift conditions could adversely affect a small percentage of people in what would normally be considered MOPP 2 zones. It is unlikely that the base populace could maintain this posture for the days specified under certain conditions, and the mission would be severely degraded. Rather, personnel should remain vigilant for the onset of early symptoms and take appropriate first aid buddy care actions. These actions will minimize the severity of the effects on the small percentage of the population that is affected.

Figure 4.4. Sample Split-MOPP Declaration after Initial Attack.

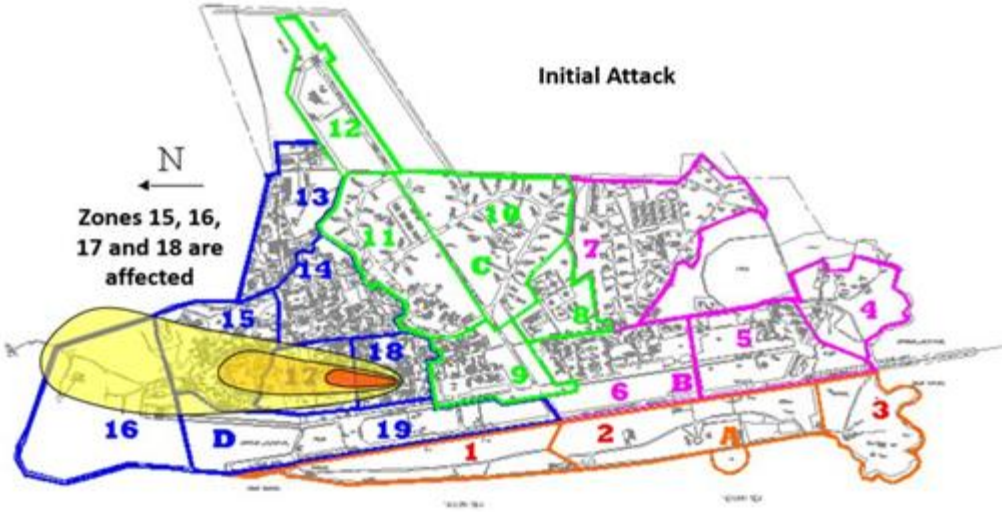


Figure 4.5. Sample Split-MOPP Adjustment Due to Wing Shift.

Chapter 5

CBRN PROTECTION

Section 5A—Individual Protection

5.1. Introduction:

5.1.1. Protection includes physical measures and Tactics Techniques Procedures (TTPs) used to protect people and resources from effects of Chemical, Biological, Radiological, and Nuclear (CBRN) weapons. Individual protection, collective protection, and hardening provide physical protection. Some measures, such as collective protection and hardening, are threat-specific. Other measures provide protection against multiple threats. This combination of physical protection measures and TTPs enable commanders to minimize mission degradation and provide the most effective defense against CBRN weapons effects.

5.1.2. Standard levels of individual protection and corresponding individual protective actions are core elements for survival and mission success. Individual protection levels are the Mission Oriented Protective Posture (MOPP). MOPP levels allow commanders to increase or decrease level of protection rapidly without providing a prolonged explanation. The commander determines the initial MOPP level, based on MOPP analysis, and adjusts MOPP levels as CBRN risks and mission priorities change. Individual protective actions are taken by personnel in response to alarm condition changes, discovery of unexploded explosive ordnance, CBRN contamination, or direct attack.

5.1.3. CBRN collective protection and conventional hardening measures further enhance survival, limit attack damage and contamination, and support mission sustainment. Threats, unit mission, and resources to protect drive specific measures. Key factors include the availability of equipment, materials, manpower, and the time needed to implement the desired measure.

5.2. Individual Protective Equipment (IPE):

5.2.1. Basis of Issue:

5.2.1.1. IPE for ground personnel includes the Ground crew Chemical Ensemble (GCE) and field gear. It provides individuals with the minimum personal clothing and equipment needed to protect them from most CBRN hazards. Commanders use IPE basis of issue and authorizations found in Air Force (AF) Instruction 10-2501, AF Emergency Management Program, for issuing IPE to personnel. (T-2).

5.2.1.2. The GCE includes the protective mask, filters, over garment, gloves, glove inserts, and over boots. Also included are a booklet of M8 paper, roll of M9 paper, RSDL (which is provided by the base medical function) and M295 decontamination kit.

5.2.1.3. Commanders and supervisors must plan for additional specialized equipment required by some functions to perform wartime missions.

5.3. Mission Oriented Protective Posture (MOPP):

5.3.1. Introduction:

5.3.1.1. MOPP levels for ground forces are protection options. These options allow commanders to balance protection requirements and performance degradation with mission requirements. Standard MOPP levels also allow commanders to rapidly communicate their decision to their forces.

5.3.1.2. MOPP training aid available through the installation "Be Ready Program", provides standard MOPP levels for AF personnel (**Figure 5.1**).

5.3.1.3. Use MOPP levels and alarm conditions to quickly increase or decrease individual protection against CBRN threats. MOPP levels and alarm conditions are used in conjunction with each other however, may not always be used together (i.e. Alarm Yellow does not automatically mean MOPP 2). Higher MOPP levels provide greater protection at the cost of increased performance degradation. MOPP 4, the highest level, provides full respiratory and contact protection against field concentrations of CBRN agents. However, it also causes performance degradation due to increased heat and mental stress, loss of visual and tactile acuity, and reduced hearing. When deciding to increase or reduce MOPP, or implement MOPP options, commanders must consider the specific threat, temperature, work rate, level of task difficulty, and mission requirements.

Figure 5.1. AF "Be Ready" Training Aid, Mission Oriented Protective Postures (MOPP).

5.3.1.4. Authority to Declare MOPP. The installation commander determines MOPP levels for the installation. Individuals normally receive MOPP direction from their chain of command, the installation notification and warning system (INWS) and crisis action team directives. (T-1). Commanders leverage Emergency Management (emergency support function-5 in Emergency Operations Center) and Bioenvironmental Engineering (emergency support function-8) to inform independent factors of MOPP level decisions.

5.4. Task Qualification in MOPP. CBRN task qualification training prepares individuals and teams to perform tasks in contaminated environments. Supervisors should focus efforts on tasks that are the most essential for mission accomplishment. They should develop alternate task timelines or workarounds to prevent mission delays. For MOPP operations review individual and unit tasks, sort them into categories, and target appropriate tasks for increased training emphasis. Include consideration for climatic conditions (current or deployment locations) and adjust requirements to reflect seasonal changes. Train leaders, especially first-line supervisors to recognize and adjust manpower, material, or task timelines to reflect lower or higher priorities. Use the following guidelines to identify and prioritize tasks:

5.4.1. Tasks accomplished in MOPP 3 or 4 and require little or no change in performance (routine and commonly practiced tasks). Most tasks fall into this category.

5.4.2. Tasks that cannot be delayed and performance is severely degraded in MOPP 4. Increase the emphasis on training and the development of manpower or material work-around. Train leaders and supervisors to recognize these situations and adjust normal task completion timelines to reflect MOPP-related delays.

5.4.3. Tasks ineffectively accomplished in MOPP 3 or 4, but can be delayed until the threat allows reduction to MOPP 2 or lower. Train leaders and supervisors to recognize these situations and adjust work requirements to reflect lower priorities.

5.4.4. Tasks that cannot be delayed and performance is severely degraded in MOPP 3 or 4. Training or work-around methods does not improve performance. Identify these as shortfalls or limiting factors and forward through the chain of command for resolution.

5.5. Forced Hydration. Dehydration is a severe problem when people work in moderate or high temperatures while wearing the GCE. Properly hydrated personnel not only perform better in MOPP, but also recover more quickly after strenuous activity. Ensure personnel drink water regularly before donning MOPP and while in MOPP. Installation Bioenvironmental Engineering and/or other medical support staff, in close coordination with Emergency Management and the Command Post, are responsible for associating and communicating force hydration standards into localized planning during elevated MOPP levels. (T-2).

5.6. Work-Rest Cycles. Commanders will follow the guidance in AFI 48-151, Thermal Injury Prevention Program, 7 April 2016 for work-rest cycles. (T-1).

5.7. MOPP Analysis and Management:

5.7.1. The projected threat environment at an installation will not always call for extended MOPP 4 conditions. During the pre-attack phase, Emergency Management and Bioenvironmental Engineering personnel can use intelligence information and current weather conditions to provide detailed information on protection requirements and predict agent persistence. After an attack, Emergency Management personnel in coordination with Bioenvironmental Engineering personnel will use the information collected from base and unit post attack reconnaissance (PAR) teams to identify the type of agents used, likely duration of exposure, and minimum protection requirements. The commander and staff can then determine what courses of action to employ. Emergency Management and Bioenvironmental Engineering personnel can further assist the commander to determine risk and assist units to employ response and recovery courses of action.

5.7.2. Most installations can execute their missions in contaminated environments if the base populace is well trained and leadership understands the threat environment. Mission essential tasks can be completed while wearing IPE or using approved MOPP options. Most senior leaders know they cannot expect the same work rates in MOPP 4 as achieved in MOPP 0. They must re-evaluate their ability to meet mission requirements and communicate changes to their forces. The short-range and long-range consequences to personnel may range from insignificant (cool or mild conditions) to catastrophic (hot and dry conditions) depending on task and climate.

5.7.3. High heat conditions may prevent mission execution due to IPE degradation. Use MOPP options to extend operations, but they are not the solution for every situation. When contamination is present,

5.7.4. MOPP reduction decisions are among the most difficult to make because of the many considerations that affect the final decision. Commanders must evaluate the situation from both the installation survivability and mission perspective. Factors include the criticality of the current missions, the installation contribution to theater war plan execution, detector capabilities, potential effects of personnel exposure, and the impact on the casualty care system. Courses of action should consider trade-offs between short-term or intermediate-term results and the intermediate- term and long-term effects on installation mission sustainment.

Section 5B—Collective Protection

5.8. Collective CBRN Protection.

Table 5.1. Classes of Collective Protection.

Classes and Characteristics	Available Solutions
Class I - Fully Integrated System	
Permanent modifications to structures or stand-alone collective protection systems.	Hardened and unhardened structures with integral systems, Survivable Collective Protection System, Interim Transportable Collective Protection System, Joint Transportable Collective Protection System, Chemically Protected EMEDS.
CBRN filter units fully integrated with existing heating, ventilating, and air conditioning (HVAC) systems.	
Air dampers control ventilation openings	
Permanent airlock and Contamination Control Area (CCA) integration.	
Class II – Partial Integration	
Permanent modifications and sealing measures.	Hardened and unhardened structures with partially integrated systems, KMU-450 Shelter Modification Kit.
Partial integration of HVAC filter units or alternate systems allow heating and cooling.	
Air dampers control ventilation openings.	
Permanent or partial airlock integration.	
Permanent or temporary CCA.	
Class III - Expedient	
Selected portions sealed by temporary measures such as plastic sheeting, barriers, and tape.	Expedient or retrofit modifications
Uses mobile or transportable filter units.	
HVAC integration may or may not be employed.	
Temporary Airlock and CCA.	
Class IV - Secondary Enclosure	
Structure unsuitable for expedient collective protection but suitable for housing internal enclosures or liner systems.	M20/M28 Liner System, Interim Transportable Collective Protection System, Joint Transportable Collective Protection System erected inside structures.
May allow use of existing HVAC.	
Temporary Airlock and CCA.	
Class V – Shelter In-Place	
Fully enclosed, unpressurized structure.	Applicable to most permanent installation structures when other methods are unavailable; applicable to some temporary structures with low air leakage rates.
Portions may be expediently sealed, such as with plastic sheeting and to delay entry of vapor or particulate material.	
Turn HVAC system off or place in recirculation mode.	

Decontaminate with the RSDL and M295 decontamination kit or 5% bleach solution prior to entry.	
Personnel move to higher floors in multi-storied structures.	
May enable temporary MOPP reduction or mask removal.	

5.8.1. Introduction. Collective CBRN protection is an important aspect of installation CBRN defense. Ideally, it provides a temperature-controlled, contamination-free environment to allow personnel relief from continuous wear of IPE. The basic concept for most facility collective protection solutions is to provide overpressure, filtration, and controlled entry and exit. Maintaining a higher internal air pressure than external pressure and filtering incoming air prevents contaminated external air from infiltrating the shelter. The result is a toxic-free area (TFA) where personnel can operate without protective equipment. One or more self-purging airlocks provide controlled entry and exit.

5.8.2. Purpose. Collective protection (COLPRO) supports two mission sustainment areas that quickly erode in a CBRN environment: personnel rest and relief (breaks and sleeping), and work relief (command and control, medical treatment, MOPP recovery time after maximum work effort). Each installation must assess collective protection requirements based upon the likely threats and mission requirements. Specific collective protection solutions may include a mixture of permanent, mobile or transportable, or expedient or temporary collective protection systems.

5.8.3. Types of Collective Protection:

5.8.3.1. Commanders should use transportable and expedient collective protection measures to augment existing capabilities. See **Table 5.1** for the descriptions of the five classes of collective protection. Commanders may use any combination of Classes I through IV collective protection to meet the requirement to protect the in-place and deployed base population. Use Class V shelters to enhance protection for personnel that do not have Classes I through IV collective protection.

5.8.3.2. Medical facilities must have collective protection to enable medical forces to conduct sustained operations in CBRN-contaminated environments. The medical commander and installation must plan for degradation of clinical operations and identify alternate medical treatment facilities if contamination renders primary facilities unusable.

5.8.4. Operating Collective Protection Systems. Assign and train unit shelter management teams to operate and maintain Classes I through IV collective protection systems. For Class V collective protection facilities, the teams must be able to configure the facility to provide maximum protection. The Base Civil Engineer is responsible for training unit teams on system operations, maintenance, contamination control area processing, facility configuration, and shelter management techniques and procedures. See **Table 5.2**. for general actions for collective protection shelter management operations.

Table 5.2. Collective Protection Operations - General Actions.

Alarm Green
Operationally check shelters with overpressure systems and upgrade configuration to ready status.
Set up CCA for operations and install serviceable filters as directed by EOC.
Shelters teams without collective protection seal the building, locate the building HVAC shutoff, and establish entry decontamination station.
Test standby power and check fuel levels.
Report shelter status to the UCC and CBRN Control Center.
Stock shelter with CCA supplies, IPE, detectors, and other assets required in IEMP 10-2.
Place shelter on standby if warning time is sufficient to place system in operation prior to attack.
Action to accomplish if the previous condition was Alarm Black.
Shelters without collective protection turn HVAC systems on, open doors and windows, and ventilate the structure for at least 30 minutes before personnel remove their masks.
Replenish supplies used in previous operations, refill fuel tanks, and replace filters when directed.
Operationally check shelters with overpressure systems.
Alarm Yellow
Activate collective protection system.
Control entry and exit.
Shelter teams without collective protection filtration systems shut off heating, ventilation, and air conditioning (HVAC) and close all doors, windows, and other vents or exterior openings.
Personnel not assigned essential tasks enter and remain in shelter until directed otherwise.
Report shelter status to the UCC and CBRN Control Center.
Alarm Red or Blue (Korean Peninsula)
Notify personnel and direct all to take cover if within unhardened structure.
Direct shelter occupants to assume the appropriate MOPP.
Allow personnel entry until the attack begins, then secure entry and exit.
Monitor system operation throughout the attack.
Alarm Black
Report shelter status to the UCC and CBRN Control Center and EOC.
Verify system operation and check available detectors.
Observe personnel for agent effects.
Direct personnel to unmask if system operation remains normal (shelters with filtration systems only).
Direct personnel to don the protective mask if agent effects are observed.
Direct PAR team to begin their survey when directed by the UCC.
Begin entry and exit operations to support mission requirements.

5.9. Collective Protection Planning Factors (COLPRO). Use the planning factors in **Table 5.2**. to identify collective protection requirements for fixed-site structures. The guidance in **Table 5.2**. intends to support but not replace the more technical/detailed information provided in the Unified Facilities Criteria 4-024-01, Security Engineering Procedures for Designing Airborne Chemical, Biological, and Radiological Protection for Buildings (10 June 2008). Use technical manuals or manufacturer guidelines for systems such as the Stand Alone Large (SAL), Structured Kit Improvement (SKI), and/or Tent Kit 2 (TK2).

5.9.1. There are four distinct categories of mission sets for determining COLPRO requirements:

5.9.1.1. Command and Control (C2). CAT, EOC, and BDOC.

5.9.1.2. Critical Mission Ops. Aircrew, Sq. Ops, AFE, Comm, Intel & Medical.

5.9.1.3. R&R for Standard Ops. Tent City residents.

5.9.1.4. R&R for Labor Intensive Ops. SF, MX, Fuels, Munitions & CE.

5.9.2. Use a planning factor of 32 square feet per person to determine total square footage COLPRO requirements.

5.9.3. Commanders will determine fixed-site and expeditionary COLPRO requirements and identify those requirements in the Base.

Table 5.3. Collective and Non-Collective Protection Shelter Operations – General Actions.

Component	Minimum Standard
Air Filtration	Military specification filter or commercial filters that meet MIL-PRF-32016; spare filters to enable operations for up to 96 hours under local threat and environmental conditions.
Ventilation	10 cubic feet per minute, per occupant.
Toxic Free Area (TFA)	Class I pressurization (which is 0.30 inch water gage/75 pascals minimum), 30-35 square feet floor space per occupant, recirculation filters desirable, pressure and airflow gauges visible to personnel in the TFA, audible and visual alarm to warn of low air pressure or system malfunction.
Contamination Control Area (CCA)	Overhead cover for removal, storage, decontamination, and disposal of IPE, expendable material to support the planned entry and exit rate, and CCA procedures.
Airlock	Allows movement with purging airflow between CCA and TFA, timer to indicate completion of purging cycle, pressure and airflow gauges visible to personnel in the TFA. Match airlock entry and exit rate to support planned processing over 24 hours.
Detection	Detector for monitoring the TFA.
Hardening	Location and AOR-specific.
Latrine Capability	One per 20 occupants.
IPE Storage in TFA	Two cubic feet per occupant desirable.
Food, Potable Water, and Expendable Material	Up to 96 hour supply per occupant, based on current environmental conditions.
Backup Electrical Power	Desirable
Protective Mask in TFA	At least one in possession of each occupant (may be personal mask or any other mask approved for AF use).
Food Storage	As required to support planned occupancy.

5.9.4. Units prepare shelters for operation by sealing cracks and holes, closing all doors and windows, locating HVAC shutoff (may be more than one) and preparing entry decontamination stations. The innermost rooms of a structure provide the best protection against contamination hazards.

5.9.5. When Alarm Yellow or Red is declared, turn the HVAC system off. This prevents the system from drawing contaminants into the building and increasing agent concentrations if a CBRN attack or hazardous materials release occurs.

5.9.6. If contamination is present on the installation, decontaminate personnel entering the structure to limit the entry of liquid or particulate contamination. If chemical detectors previously indicated vapor contamination inside the shelter, personnel must verify that no residual contamination remains before they remove their protective masks. Once contamination outside the facility has dissipated, turn the HVAC system on, open all doors and windows, and ventilate the facility to expedite removal of any remaining internal airborne contamination.

Section 5C—Hardening.

5.10. Introduction:

5.10.1. Use permanent and expedient hardening measures to strengthen buildings and utility systems or provide barriers to resist the destructive effects of weapons. Successful hardening measures will protect people and weapons systems from primary and secondary weapons effects. Incorporate permanent hardening into structures during initial construction or add later as a modification or retrofit. Expedient hardening, such as rapid erection of sandbag walls or building soil berms, is the primary hardening method for expeditionary forces.

5.10.2. Selection of specific hardening measures will depend upon the threat, facility construction, type of vehicle or equipment to protect, and available resources. Generally, including hardening requirements into new facility construction or initial force bed down during peacetime is the most cost effective method. Expedient hardening methods provide increased protection for expeditionary forces but require a significant commitment of manpower, specialized equipment, and material. At the lowest level, units and airmen construct expedient bunkers, earth berms, sandbag walls, fighting positions, and foxholes to protect people and resources.

5.10.3. Installation hardening is not a new concept. Throughout history, defenders of fixed positions have gone to great lengths to increase the survivability of vital assets. At most locations, the scope of initial hardening needs will far exceed our actual construction capability. Consequently, units must implement expedient hardening measures to protect unit resources from attacks. Commanders will integrate and evaluate expedient hardening tasks during installation Readiness Assessments (T-2).

5.10.4. The Civil Engineering Squadron, specifically a 3E3X1 (trainer must at least be a 5-skill level journeyman), is responsible for training on hardening procedures at the installation level. (T-3).

5.11. Hardened. A hardened structure allows the occupants, systems, and supporting infrastructure to continue to operate during and after attacks. The structures may include a Class I collective protection systems and typically are constructed below ground level and under rock or concrete cover. These structures provide substantial protection against direct attacks with current and projected chemical, biological, and conventional weapon threats for that location. They provide complete protection against direct and indirect small arms fire. They also provide protection against the collateral effects (blast, heat, fallout, radiation, electromagnetic pulse) of nuclear weapons. When combined with standard DoD force protection measures, hardened structures provide the highest level of facility protection for operations.

5.11.1. Semi-Hardened. Semi-hardened structures allow the occupants, systems, and supporting infrastructure to survive attacks and continue to operate immediately following attacks. They may be constructed at or below ground level and include Class II or better collective protection system. These structures provide protection against the collateral effects (blast, heat, broken glass shards, fragmentation, shock, and contamination) of attacks with current and projected chemical, biological, and conventional weapon threats for that location. They provide complete protection against direct and indirect small arms fire. They also provide limited protection against the collateral effects (blast, heat, fallout, radiation, electromagnetic pulse) of nuclear weapons. When combined with standard Department of Defense (DoD) force protection measures, these structures provide a high level of protection for operations.

5.11.1.1. Splinter Protected. Use splinter protection to protect structures, people, and resources. When combined with standard DoD force protection measures, these structures provide a moderate level of protection for operations. Splinter protection allows the occupants to survive attacks and limits damage to systems, supporting infrastructure, and resources. It limits the collateral effects (blast, heat, fragmentation, and shock) of conventional weapon attacks. It also provides limited protection against direct and indirect small arms fire and from collateral effects (blast, heat, fallout, radiation, electromagnetic pulse) of nuclear weapons. Splinter protected structures may include collective protection.

5.11.1.2. Siting Consideration. Evaluate the location and natural protection of the assets in their function. At a minimum, site these facilities or assets to enhance physical protection, facilitate defense, and reduce vulnerability to uncontrolled vehicle or pedestrian access. When combined with standard DoD force protection measures, there structures provide a limited level of protection for operations.

5.11.2. Execution. The most cost-effective method is to incorporate hardening into new facility construction. Modify or retrofit existing structures to meet minimum standards. Implement expedient hardening for expeditionary operations or when the host-nation does not provide hardened structures. Base protection actions on an analysis of the expected cost, degree of risk, and the expected benefits. Continually reassess these decisions and actions as the threat environment changes.

5.12. Special Hardening Considerations for CBRN Threats:

5.12.1. Bunker and defensive fighting position (DFP) construction complicates the use of standard protective actions in a contaminated environment. Many structures are below ground level and limit ventilation. As a result, chemical agent vapors are concentrated and remain hazardous for longer periods. In addition, the durable, non-porous construction materials used to construct most of these structures do not readily absorb liquid agents. Finally, personnel normally remain inside these structures for extended periods and contamination sources are relatively close the occupant's respiratory tract. Personnel working in these structures must adhere to strict contamination avoidance measures and keep the structure well-ventilated. Continue these precautions even after reduced outside MOPP levels. Use automatic and manual agent detectors to verify contamination levels within these structures and upon non-porous surfaces are at or below safe levels.

5.12.2. Unpainted concrete is the material of choice for bunker and DFP construction in CBRN environments. It provides suitable conventional protection and is one of the best materials for liquid chemical agent absorption. If using sandbags, use the older burlap bags in lieu of the newer plastic versions. Burlap absorbs liquid chemical agents at a faster rate than plastic sandbags. Construct bunkers and DFPs with a 2- to 3-foot overhang for observation ports and doors. Construct doors with a small L- shaped entryway. Both of these methods minimize the amount of agent contamination that enters the structure. Use a non-porous surface, such as AM-2 matting, to construct the floor and simplify decontamination. Avoid using non-porous camouflage netting unless the tactical situation requires netting. Liquid chemical agent hazards persist for longer periods on non-porous materials.

WARREN D. BERRY, Lt Gen, USAF
DCS/Logistics, Engineering & Force Protection

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 10-201, *Force Readiness Reporting*, 03 March 2016

AFI 10-244, *Reporting Status of Air and Space Expeditionary Forces*, 15 June 2012

AFI 10-403, *Deployment Planning, and Execution*, 20 September 2012, Incorporating Change 1, 23 February 2017

AFI 10-404, *Base Support and Expeditionary* (BAS&E) *Site Planning*, 27 August 2015

AFI 10-801, *Defense Support of Civil Authorities*, 23 December 2015

AFI 10-2501, Air Force Emergency Management Program, 19 April 2016

AFI 10-2519, *Public Health Emergencies and Incidents of Public Health Concern*, 26 June 2015

AFI 15-128, *Air Force Weather Roles and Responsibilities*, 07 February 2011

AFI 23-101, *Air Force Material Management*, 12 December 2016

AFI 25-101, *Air Force War Reserve Materiel* (WRM) *Policies, and Guidance*, 14 January 2015

AFI 25-201, *Intra-Service, Intra-Agency, and Inter-Agency Support Agreements Procedures*, 18 October 2013

AFI 31-101, *Integrated Defense* (FOUO), 05 July 2017

AFI 32-7086, *Hazardous Materials Management*, 04 February 2015 AFI 33-360, *Publications and Forms Management*, 01 December 2015 AFI 41-106, *Medical Readiness Program Management*, 09 June 2017

AFI 48-151, *Thermal Injury Prevention Program*, 07 April 2016

AFI 65-601, Volume 1, *Budget Guidance and Procedures*, 24 October 2018

AFI 90-201, *The Air Force Inspection System*, 20 November 2018

AFI 90-1601, *Air Force Lessons Learned Program*, 18 December 2013

AFMAN 10-206, *Operational Reporting* (OPREP), 18 June 2018

AFMAN 10-207, *Command Posts*, 11 April 2018

AFMAN 10-2608, *Disease Containment*, 13 November 2015

AFMAN 33-363, *Management of Records*, 01 March 2008, Incorporating Change 2, 09 June 2016

AFMAN 41-209, *Medical Logistics Support*, 04 January 2019

AFPAM 10-219, Volume 1, *Contingency and Disaster Planning*, 9 June 2008, Certified Current 17 September 2013

AFPAM 10-219, *Volume 2, Civil Engineer Contingency Response and Recovery Preparation*, 18 October 2018

AFPAM 10-219, Volume 3, *Civil Engineer Contingency Response and Recovery Procedures*, 07 May 2015

AFMAN 10-2502, *Air Force Incident Management System (AFIMS) Standard and Procedures,* 13 September 2018

AFMAN 10-2503, *Operations in a Chemical, Biological, Radiological, and Nuclear* (CBRN) *Environment*, 06 July 2011

AFMAN 15-129, Volume 1, *Air and Space Weather Operations - Characterization*, 6 December 2011, Incorporating Change 1, 21 March 2017

AFMAN 15-129, Volume 2, *Air and Space Weather Operations - Exploitation*, 07 December 2011

AFMAN 32-1007, *Readiness, and Emergency Management* (R&EM) *Flight Operations*, 20 April 2016

AFPD 10-2, *Readiness*, 06 November 2012

AFPD 10-25, *Emergency Management*, 28 April 2014

AFTTP 3-2.12, *Multi-Service Tactics, Techniques, and Procedures for Explosive Ordnance*, 01 July 2015

AFTTP 3-2.37_IP, *Multi-Service Tactics, Techniques, and Procedures for CBRN Consequence Management Operations*, 01 July 2015

AFTTP 3-2.42_IP, *Multi-Service Doctrine for Chemical, Biological, Radiological, and Nuclear Operations*, 01 July 2011

AFTTP 3-2.44, *Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Reconnaissance and Surveillance*, 01 Mar 2013

AFTTP 3-2.46, *Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Passive Defense*, 01 May 2016

AFTTP 3-2.55, *Chemical, Biological, Radiological, and Nuclear Threats and Hazards*, 01 Jun 2018

AFTTP 3-2.56, *Multi-Service Reference for Chemical, Biological, Radiological, and Nuclear Warning and Reporting and Hazard Prediction Procedures*, 01 December 2017

AFTTP 3-2.62, Multiservice Tactics, Techniques, and Procedures for Cordon and Search Operations, 01 August 2016

AFTTP 3-2.67, Multiservice Tactics, Techniques, and Procedures for Defense Support of Civil Authorities (DSCA), 13 October 2015

AFTTP(I) 3-2.69, Multiservice Tactics, Techniques, and Procedures for Treatment of Chemical Warfare Agent Casualties and Conventional Military Chemical Injuries, 2 August 2016 (FOUO)

AFTTP 3-2.70, Multiservice Tactics, Techniques, and Procedures for CBRN Planning, 24 September 2018

AFTTP 3-2.83, Multi-Service Tactics, Techniques, and Procedures for Installation Emergency Management, 1 April 2013

AFTTP 3-4, Airman's Manual, 11 January 2019

AFTTP 3-4.8, Operating in an Improvised Explosive Device Environment, 30 September 2015
AFTTP 3-42.2, Health Service Support Casualty Prevention for Expeditionary Operations,

20 April 2004

AFTTP 3-42.3, Health Service Support in Nuclear, Biological, and Chemical Environments, 26 August 2002

AFTTP 3-42.32, Home Station Medical Response to Chemical, Biological, Radiological, and Nuclear(CBRN) Incidents, 31 October 2013

CJCSM 3500.04F, Universal Joint Task Manual, 1 June 2011

DoDD 3025.18, Defense Support of Civil Authorities (DSCA), 19 April 2018

DoDD 3150.08, DoD Response to Nuclear and Radiological Incidents, 20 January 2010

DoDD 5160.05 E, Roles, and Responsibilities Associated with the Chemical and Biological Defense(CBD) Program (CBDP), 8 September 2017

DoDI 6055.17, DoD Emergency Management (EM) Program, 31 August 2018

DoDI -2000.16V1, DoD Antiterrorism (AT) Program Implementation, DoD AT Standards, Incorporating Change 1, 5 May 2017

DoDI -2000.16V2, DoD Antiterrorism (AT) Program Implementation, DoD Force Protection Condition (FPCON) System, 2 October 2006, Incorporating Change 1, 5 May 2017

DoDI 3150.10, DoD Response to U.S. Nuclear Weapon Incidents, 2 July 2010

DoDI 6055.17, DoD Emergency Management (EM) Program, 13 February 2017, Incorporating Change 1, 14 November 2017

DoDM 3150.08, Nuclear Weapons Accident Response Procedures (NARP), 22 August 2013

HAFMD 1-38, Deputy Chief of Staff, Logistics, Engineering and Force Protection, 01 April 2015

Homeland Security Presidential Directive (HSPD) 5, Management of Domestic Incidents, 28 February 2003

JP 3-68, Noncombatant Evacuation Operations, 18 November 2015, validated 14 November 2017

National Disaster Recovery Framework (NDRF), 2nd Edition, June 2016

National Incident Management System (NIMS), 3rd Edition, October 2017

National Response Framework (NRF), 3rd Edition, Jun 2016

Presidential Policy Directive (PPD) 8, National Preparedness, 30 March 2011

Unified Facility Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings, 12 December 2018

Unified Facility Criteria (UFC) 4-021-01, Design and O&M: Mass Notification Systems, 9 April 2008, Incorporating Change 1, 01 January 2010

Unified Facilities Criteria (UFC) 4-024-01, Security Engineering: Procedures for Designing Airborne Chemical, Biological, and Radiological Protection for Buildings, 10 June 2008

Unified Facilities Criteria (UFC) 4-141-04, Emergency Operation Center Planning and Design, 15 July 2008, Incorporating Change 1, 01 September 2008

42 United States Code (U.S.C). §11001et seq., Emergency Planning Community Right-to-Know Act (EPCRA) of 1986

USAF War and Mobilization Plan, WMP-1, CE Supplement, (Updated Annually)

Adopted Forms

Air Force Form 847, Recommendation for Change of Publication

Abbreviations and Acronyms

AFI—Air Force Instruction

AF—Air Force

AFMAN—Air Force Manual

AFPAM—Air Force Pamphlet

AFRIMS—Air Force Records Information Management System

AFTTP—Air Force Tactics, Techniques, and Procedures

AT—Antiterrorism

ATSO—Ability to Survive and Operate

CARC—Chemical Agent Resistant Coating

CBRN—Chemical, Biological, Radiological, and Nuclear

CBRNE—Chemical, Biological, Radiological, Nuclear, and High-yield Explosives

CCA—Contamination Control Area

CCOR—Chemically Contaminated Object Rule

CW—Chemical Warfare

C-WMD—Counter-Weapons of Mass Destruction

DAD—Detailed Aircraft Decontamination

DED—Detailed Equipment Decontamination

DTD—Detailed Troop Decontamination

DOD—Department of Defense

DODI—Department of Defense Instruction

DSCA—Defense Support of Civil Authorities

EOC—Emergency Operations Center

EOD—Explosive Ordnance Disposal

EPA—Environmental Protection Agency

FOUO—For Official Use Only

HAZMAT—Hazardous Materials

IAW—In Accordance With

IED—Improvised Explosive Device

IEMP—Installation Emergency Management Plan

IPE—Individual Protective Equipment

IRMP—Integrated Risk Management Process

JSLIST—Joint Service Lightweight Integrated Suit Technology

MAJCOM—Major Command

MCO—Major Combat Operations

MOPP—Mission Oriented Protective Posture

MTTP—Multi-Service Tactics, Techniques, and Procedures

OPR—Office of Primary Responsibility

OPREP—Operational Reporting

RDS—Records Disposition Schedule

SME—Subject Matter Experts

TFA—Toxic Free Area

UAS—Unmanned Aircraft Systems

UCC—Unit Control Center

UFC—Uniformed Facilities Criteria

U.S.—United States

WMD—Weapon of Mass Destruction

Terms

Active Defense—The employment of limited offensive action and counterattacks to deny a contested area or position to the enemy.

All-Hazards—"All-hazards" includes any toxic chemicals or materials, biological, radiological, and or nuclear threats, natural or manmade that warrants an all-hazards approach to characterize exposures or health risks.

All-Hazards Approach—A methodology to develop emergency management strategies for all different types of potential incidents. "All-hazards" include any incident, natural or manmade that warrants action to protect the life, property, health, and safety of military members, dependents, and civilians at risk, and minimize any disruptions of installation operations.

Air Defense—Defensive measures designed to destroy attacking enemy aircraft or aerodynamic missiles, or to nullify or reduce the effectiveness of such attack.

Airfield Damage Assessment Team—The airfield damage assessment team conducts airfield damage assessment to determine airfield operability and define a minimum operating strip for installation and coalition aircraft to maintain operational sortie generation capability. The airfield damage assessment team is normally comprised of EOD and Engineer Assistant team members.

Air Force Emergency Management Program—The single, integrated AF program implementing the mission, vision, strategic goals, and objectives along with the management framework of the AF EM Program to prevent, prepare for, respond to, recover from, and mitigate the direct and indirect consequences of an emergency or attack. The Office of the Civil Engineer, AF/A4C, manages the AF EM Program.

Air Force Incident Management System—An AF accepted methodology designed to incorporate the requirements of HSPD-5 and OSD guidance while preserving unique military requirements. Provides the AF with a single, comprehensive approach to incident management.

Air Force Specialty—A group of positions requiring common qualifications; each AFS has a title and code.

Air Mobility Command—The Air Force component command of the United States Transportation Command.

Air Operations Center—The senior agency of the Air Force component commander that provides command and control of Air Force air and space operations and coordinates with other components and Services.

Air Staff—Offices in HQ USAF below the Secretariat level (under and including the Chief of Staff, USAF).

Area of Responsibility—A defined area of land and/or sea in which responsibility is specifically assigned to the commander of the area for the development and maintenance of installations, control of movement, and the conduct of tactical operations involving troops under the commander's control along with parallel authority to exercise these functions.

Assigned Aircraft—Aircraft allocated to a unit by serial number on an assignment order according to aerospace vehicle distribution directives.

Avoidance—Actions to prevent contamination of mission-essential resources and personnel, whether directly from agent deposition or by transfer from contaminated surfaces.

Awareness—The continual process of collecting, analyzing and disseminating intelligence, information and knowledge to allow organizations and individuals to anticipate requirements and to react effectively.

Ballistic Missile—Any missile that does not rely upon aerodynamic surfaces to produce lift and consequently follows a ballistic trajectory when thrust is terminated.

Base Defense Operations Center—A command and control facility established by the base commander to serve as the focal point for base security and defense.

Base Operating Support—Directly assisting, maintaining, supplying, and distributing support of forces at the operating location.

Biological Agent—A microorganism (or a toxin derived from it) that causes disease in personnel, plants, or animals or causes the deterioration of material.

Biological Hazard—An organism, or substance derived from an organism, that poses a threat to human or animal health.

Career Field Education and Training Plan—CFETP is a comprehensive core- training document that identifies: life-cycle education and training requirements; training support resources, and minimum core task requirements for a specialty. The CFETP aims to give personnel a clear path and instill a sense of industry in career field training. It is the formal training contract between the AF Career Field Manager and AETC for formal accession and life- cycle skills training.

Career Field Manager—AF focal point for a designated career field within a functional community. Serves as the primary advocate for the career field, addressing issues and coordinating functional concerns across various staffs. Responsible for career field policy and guidance. Must be appointed by the FM and hold the rank of chief master sergeant for enlisted Airmen.

CBRN Defense—Measures taken to minimize or negate the vulnerabilities to, and/or effects of, a chemical, biological, radiological, or nuclear hazard or incident.

CBRN Environment—An operational environment that includes chemical, biological, radiological, and nuclear threats and hazards and their potential resulting effects.

CBRN Hazard—Chemical, biological, radiological, and nuclear elements that could create adverse effects due to an accidental or deliberate release and dissemination.

CBRN Reconnaissance Team—Tactical response team staffed by expert CBRN specialists (AFSC 3E9X1, Emergency Management) assigned to counter-CBRN response UTCs (4FPW); detects, identifies, quantifies, and collects CBRN material ensuring mission continuation and force survivability.

CBRN Weapon—A fully engineered assembly designed for employment to cause the release of a chemical or biological agent or radiological material onto a chosen target or to generate a nuclear detonation.

Chemical, Biological, Radiological, And Nuclear Environment—An operational environment that includes chemical, biological, radiological, and nuclear threats and hazards and their potential resulting effects.

Chemical Agent—A chemical substance which is intended for use in military operations to kill, seriously injure, or incapacitate personnel through its physiological effects. The term excludes riot control agents, herbicides, smoke, and flame.

Chemical Hazard—Any chemical manufactured, used, transported, or stored that can cause death or other harm through toxic properties of those materials, including chemical agents and chemical weapons prohibited under the Chemical Weapons Convention as well as toxic industrial chemicals.

Chemical Warfare—All aspects of military operations involving the employment of lethal and incapacitating munitions/agents and the warning and protective measures associated with such offensive operations. Since riot control agents and herbicides are not considered to be chemical warfare agents, those two items will be referred to separately or under the broader term "chemical." The term "chemical warfare weapons" may be used when it is desired to reflect both lethal and incapacitating munitions/agents of either chemical or biological origin.

Civil Authorities—Those elected and appointed officers and employees who constitute the government of the United States, the governments of the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, United States territories, and political subdivisions thereof.

Civilian Internee—A civilian who is interned during armed conflict, occupation, or other military operation for security reasons, for protection, or because he or she committed an offense against the detaining power.

Civil Reserve Air Fleet—A program in which the Department of Defense contracts for the services of specific aircraft, owned by a United States entity or citizen, during national emergencies and defense- oriented situations when expanded civil augmentation of military airlift activity is required.

Coalition—An ad hoc arrangement between two or more nations for common action.

Collection Point—A point designated for the assembly of personnel casualties, stragglers, disabled materiel, salvage, etc., for further movement to collecting stations or rear installations.

Collective Protection—Systems protecting those inside a building, room, shelter or tent against contamination through the combination of impermeable structural materials, air filtration equipment, air locks, and over-pressurization.

Combatant Command—A unified or specified command with a broad continuing mission under a single commander established and so designated by the President, through the Secretary of Defense and with the advice and assistance of the Chairman of the Joint Chiefs of Staff. See JP 1.

Combat Power—The total means of destructive and/or disruptive force that a military unit/formation can apply against the opponent at a given time.

Command & Control—The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.

Contamination—(1) The deposit, absorption or adsorption of radioactive material or of biological or chemical agents on or by structures, areas, personnel or objects. (2) (DOD only) Food or water made unfit for consumption by humans or animals because of the presence of environmental chemicals, radioactive elements, bacteria or organisms, the by-product of the growth of bacteria or organisms, the decomposing material (to include the food substance itself) or waste in the food or water.

Contamination Avoidance—Actions to prevent contamination of mission-essential resources and personnel, whether directly from agent deposition or by transfer from contaminated surfaces.

Contamination Control—A combination of preparatory and responsive measures designed to limit the vulnerability of forces to chemical, biological, radiological, nuclear, and toxic industrial hazards and to avoid, contain, control exposure to, and, where possible, neutralize them.

Contamination Control Area—An area in which contaminated IPE is removed; people, equipment, and supplies are decontaminated to allow processing between a toxic environment and a toxic free area; the last area an individual can safely don IPE before moving into a contaminated area.

Contingency—An emergency involving military forces, caused by natural disasters, terrorists, subversives or by required military operations. Due to the uncertainty of the situation, contingencies require plans, rapid response and special procedures to ensure the safety and readiness of personnel, installations and equipment.

Contingency Operation—A military operation that is either designated by the Secretary of Defense as a contingency operation or becomes a contingency operation as a matter of law (Title 10, United States Code, Section 101[a][13]).

Contingency Plan—A branch of a campaign plan that is planned based on hypothetical situations for designated threats, catastrophic events, and contingent missions outside of crisis conditions.

Continuing Mission—A mission where the aircraft and crew transits home station, either as an enroute stop or to remain overnight, then continues on with the same mission and on the same flight orders.

Contract Personnel—Any employee of a private enterprise operating under contract with the US Government.

Control Center—A unit command and control function. Control centers monitor unit resources and mission capability, and coordinate unit activities during disaster operations. Also called Unit Control Centers (UCCs).

Cordon—A physical barrier surrounding the incident scene where controls are established to preclude unauthorized entry.

Crisis Action Team—The Crisis Action Team directs actions supporting the installation's strategic mission. As the focal point for base-wide notification and operation, the Crisis Action Team receives and sends orders, information and requests pertinent to the assigned task.

Critical Requirement—An essential condition, resource, and means for a critical capability to be fully operational.

Cruise Missile—A guided and powered missile that flies at constant speed for the majority of its route and relies upon aerodynamic forces for lift.

Cyberspace Operations—The employment of cyberspace capabilities where the primary purpose is to achieve objectives or effects in or through cyberspace (JP 3-0). Cyberspace Operations are categorized as Offensive Cyberspace Operations (OCO), Defensive Cyberspace Operations (DCO), and DoD Information Networks (DoDIN) Operations (DoDIN Ops). (Described in JP 3-12).

Decontamination—The process of making any person, object or area safe by absorbing, destroying, neutralizing, making harmless, or removing chemical or biological agents, or by removing radioactive material clinging to or around it.

Defense Support Of Civil Authorities—Refers to DOD support, including Federal military forces, DOD civilians and DOD contractor personnel, and DOD agencies and components, for domestic emergencies and for designated law enforcement and other activities. (DOD) Support provided by US Federal military forces, Department of Defense civilians, Department of Defense contract personnel, Department of Defense component assets, and National Guard forces (when the Secretary of Defense, in coordination with the governors of the affected states, elects and requests to use those forces in Title 32, United States Code, status) in response to requests for assistance from civil authorities for domestic emergencies, law enforcement support, and other domestic activities, or from qualifying entities for special events. Also called DSCA. Also known as civil support. (DODD 3025.18).

Deployment—(1) The movement of forces within operational areas. (2) The relocation of forces and material to desired operational areas. Deployment encompasses all activities from origin or home station through destination, specifically including intra-continental U.S., inter-theater and intra-theater movement legs, staging and holding areas.

Detection—In CBRN environments, the act of locating CBRN hazards by use of CBRN detectors or monitoring or survey teams.

Disaster—Within the context of this AFMAN: a natural disaster, major incident, or enemy attack.

Disaster Response Force—The Air Force base level organization that responds to disasters or incidents, establishing command and control and supporting disaster operations.

Dispersal—Relocation of forces for the purpose of increasing survivability.

Distribution System—That complex of facilities, installations, methods, and procedures designed to receive, store, maintain, distribute, and control the flow of military materiel between the point of receipt into the military system and the point of issue to using activities and units.

Electromagnetic Pulse—The electromagnetic radiation from a nuclear explosion caused by Compton- recoil electrons and photoelectrons from photons scattered in the materials of the nuclear device or in a surrounding medium. The resulting electric and magnetic fields may couple with electrical/electronic systems to produce damaging current and voltage surges.

Emergency—Any of the occurrences listed in the definition of civil emergencies, or other catastrophe in any part of the U.S., which, in the determination of the President, requires Federal emergency assistance to supplement state and local efforts to save lives and protect property, public health, and safety, or to avert or lessen the threat of a disaster.

Emergency Decontamination—The physical process of immediately reducing contamination of individuals in potentially life-threatening situations with or without the formal establishment of a decontamination corridor. Note: The Environmental Protection Agency (EPA) does not require runoff control when a process is used to save lives or reduce injury.

Emergency Operations Center (EOC)—For the purposes of the Air Force Incident Management System, the EOC is the command and control support element that directs, monitors, and supports the installation's actions before, during, and after an incident. The EOC is activated and recalled as necessary by the installation commander. The EOC updates the Crisis Action Team with ongoing incident status updates and seeks support through the Crisis Action Team when on-scene requirements surpass the installation's inherent capability and the installation's cumulative capabilities acquired through mutual aid agreements. EOCs may also support mobile command systems and joint information activities. According to the National Response Framework, the EOC is defined as the physical location at which the coordination of information and resources to support attack response and incident management activities normally takes place. An EOC may be a temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction. EOCs may be organized by major functional disciplines such as fire, law enforcement, and medical services, by jurisdiction such as Federal, state, regional, county, city, tribal, or by some combination thereof.

Emergency Operations Plan—A formal written document that describes, in detail, how the installation will conduct operations in an emergency. This document describes how personnel and resources will be protected in major incident and natural disaster situations; details who is responsible for carrying out specific actions; identifies the personnel, equipment, facilities, supplies, and other resources available for use in the disaster; and outlines how all actions will be coordinated.

Emergency Responders—The response elements of a Disaster Response Force that deploy to the incident scene after the first responders to expand command and control and perform support functions. Emergency responders include follow-on elements such as Firefighters, Law Enforcement personnel, Security Personnel and Emergency Medical Technicians, as well as; Emergency Management personnel, EOD personnel, Physicians, Nurses, Medical Treatment Providers at medical treatment facilities, Readiness Officers, Public Health Officers, Bioenvironmental Engineering and Mortuary Affairs Personnel. Not all emergency responders are first responders, but all first responders are emergency responders. Emergency responders are not assigned as augmentees or to additional duties that will conflict with their emergency duties.

Emergency Response Forces—A group organized or available for a certain purpose with specialized vehicles to support the Air Force mission. Example would be Fire Department personnel and assigned fire truck or Security Forces personnel and assigned patrol vehicles.

Essential Task—A specified or implied task an organization must perform to accomplish the mission.

Evacuation—(1) The process of moving any person who is wounded, injured, or ill to and/or between medical treatment facilities. (2) The clearance of personnel, animals, or materiel from a given locality. (3) The controlled process of collecting, classifying, and shipping unserviceable or abandoned materiel, U.S. and foreign, to appropriate reclamation, maintenance, technical intelligence, or disposal facilities.

Executive Agent—A term used to indicate a delegation of authority by the Secretary of Defense or Deputy Secretary of Defense to a subordinate to act on behalf of the Secretary of Defense.

Expeditionary Force—An armed force organized to achieve a specific objective in a foreign country.

Expeditionary Operation—An expeditionary operation is a military operation conducted by an armed force to accomplish a specific objective in a foreign country. The missions of military expeditions may vary widely. Examples of missions of military expeditions include providing humanitarian assistance in times of disaster or disruption; establishing and keeping peace in a foreign country; protecting U.S. citizens or commerce abroad; retaliating for an act of aggression by a foreign political group and destroying an enemy government by defeating its armed forces in combat.

Explosive Hazard—Any material posing a potential threat that contains an explosive component such as unexploded explosive ordnance, booby traps, improvised explosive devices, captured enemy ammunition, and bulk explosives.

Explosive Ordnance—All munitions containing explosives, nuclear fission or fusion materials and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket and small arms ammunition; all mines, torpedoes and depth charges; demolition charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine and IEDs; and all similar or related items or components explosive in nature.

Explosive Ordnance Disposal—The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of UXO or other hazardous explosive devices, including damaged or deteriorating munitions and explosives.

Explosive Ordnance Disposal Personnel—Military personnel who have graduated from the Naval School, Explosive Ordnance Disposal; are assigned to a military unit with a Service-defined EOD mission; and meet Service and assigned unit requirements to perform EOD duties.

Facility—A real property entity consisting of one or more of the following: a building, a structure, a utility system, pavement, and underlying land.

Family Members—The spouse, child, or other person actually residing in the member's household who is dependent on the member for over half of his or her financial support.

First Responders—The Disaster Response Force element that deploys immediately to the disaster scene to provide initial command and control, to save lives and to suppress and control hazards. Firefighters, law enforcement and security personnel, key medical personnel provide the initial, immediate response to a CBRN incident. All first responders are emergency responders, but not all emergency responders are first responders. First responders are not assigned as augmentees or to additional duties that will conflict with their emergency duties.

Force Planning—In the context of joint planning, it is an element of plan development where the supported combatant command, in coordination with its supporting and subordinate commands determines force requirements to accomplish an assigned mission.

Force Projection—The ability to project the military instrument of national power from the U.S. or another theater, in response to requirements for military operations.

Force Protection—Preventive measures taken to mitigate hostile actions against Department of Defense personnel (to include family members), resources, facilities, and critical information.

Force Structure—The composition of Department of Defense organizations, both military and civilian, that comprise and support United States defense forces as specified by the 90 National Defense Authorization Acts of current and applicable previous years, and defines the organizational hierarchy through which leadership authorities are exercised.

Forward Operating Base—An airfield used to support tactical operations without establishing full support facilities.

Functional Area Manager—The principal advisor to a commander, functional director, or Deputy Chief of Staff on the management and oversight of all personnel and equipment within a specific functional area that supports operational planning and execution.

Hazardous Materials—Any material that poses a threat to human health and/or the environment. Typical HAZMATs are toxic, corrosive, ignitable, explosive or chemically reactive.

Health Threat—A composite of ongoing or potential enemy actions; adverse environmental, occupational, and geographic and meteorological conditions; endemic diseases; and employment of chemical, biological, radiological, and nuclear weapons (to include weapons of mass destruction) that have the potential to affect the short- or long-term health (including psychological impact) of personnel.

Height Of Burst—The vertical distance from the Earth's surface or target to the point of burst.

High Altitude—Conventionally, an altitude above 25,000 feet.

Home Station—An airfield where the aircrew usually operates from for day-to-day missions and aircraft maintenance is available. This includes deployed locations during a deployment.

Health Risk Assessment—A process used to identify and evaluate occupational and environmental health threats in populations or at locations over time. It results with estimates of the overall mission impact, recommended control options, and associated uncertainties. Further defined in AFMAN 10- 2503.

Host-nation—A nation that receives the forces or supplies of allied nations, coalition partners or North Atlantic Treaty Organizations to be located on, to operate in or to transit through its territory.

Host-nation Support—Civil and/or military assistance rendered by a nation to foreign forces within its territory during peacetime, crises or emergencies, or war based on agreements mutually concluded between nations.

Hostile Environment—Operational environment in which hostile forces have control as well as the intent and capability to effectively oppose or react to the operations a unit intends to conduct. (JP 3-0) (US DoD)

Identification—The determination of which CBRN material or pathogen is present.

Immediate Decontamination—Decontamination carried out by individuals immediately upon becoming contaminated. It is performed in an effort to minimize casualties, save lives, and limit the spread of contamination. Also called emergency decontamination.

Immediate Response—Any form of immediate action taken in the United States and territories to save lives, prevent human suffering, or mitigate great property damage in response to a request for assistance from a civil authority, under imminently serious conditions when time does not permit approval from a higher authority.

Improvised Explosive Device—A weapon that is fabricated or emplaced in an unconventional manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals designed to kill, destroy, incapacitate, harass, deny mobility, or distract.

Incident—An occurrence or event, natural or human caused, that requires an emergency response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, wildland and urban fires, floods, HAZMAT spills, nuclear incidents, aircraft incidents, earthquakes, hurricanes, tornadoes, tropical storms, war related disasters, public health and medical emergencies and other occurrences requiring an emergency response.

Incident Management—A national comprehensive approach to preventing, preparing for, responding to, and recovering from terrorist attacks, major disasters, and other emergencies.

Individual Protective Equipment—In chemical, biological, radiological, or nuclear operations, the personal clothing and equipment required to protect an individual from chemical, biological, and radiological hazards and some nuclear hazards.

Information Environment—The aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information.

Installation Commander—The individual responsible for all operations performed on an installation.

In Support of—Assisting or protecting another formation, unit, or organization while remaining under original control.

Integrated Defense—The integration of multidisciplinary active and passive, offensive and defensive capabilities, employed to mitigate potential risks and defeat adversary threat to Air Force operations.

Intelligence—The product resulting from the collection, processing, integration, analysis, evaluation, and interpretation of available information concerning foreign countries or areas. Information and knowledge about an adversary obtained through observation, investigation, analysis, or understanding.

Intelligence Estimate—The appraisal, expressed in writing or orally, of available intelligence relating to a specific situation or condition with a view to determining the courses of action open to the enemy or adversary and the order of probability of their adoption.

Intelligence Information—Intelligence information and related materials include the following information, whether written or in any other medium, classified pursuant to E.O. 13526 or any predecessor or successor Executive Order: 1) Foreign intelligence and counterintelligence defined in the National Security Act of 1947, as amended and in Executive Order 12333, 2) Information describing US foreign intelligence and counterintelligence activities, sources, methods, equipment, or methodology used for the acquisition, processing, or exploitation and the results of the exploitation; and any other data resulting from US intelligence collection efforts; and, 3) Information on Intelligence Community protective security programs (e.g., personnel, physical, technical, and information security).

Joint Doctrine—Fundamental principles that guide the employment of United States military forces in coordinated action toward a common objective and may include terms, tactics, techniques, and procedures.

Joint Force—A general term applied to a force composed of significant elements, assigned or attached, of two or more Military Departments operating under a single joint force commander.

Joint Intelligence—Intelligence produced by elements of more than one Service of the same nation.

Joint Publication—A compilation of agreed to fundamental principles, considerations, and guidance on a particular topic, approved by the Chairman of the Joint Chiefs of Staff that guides the employment of a joint force toward a common objective (CJCSI 5120.02).

Joint Task Force—A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a sub-unified commander, or an existing joint task force commander.

Judge Advocate—An officer of the Judge Advocate General's Corps of the Army, Air Force, or Navy, or officers of the Marine Corps or Coast Guard designated as a judge advocate.

Large Frame Aircraft—Any aircraft operating with multiple aircrew positions. These aircraft are typically used for airlift (passenger & cargo), aerial delivery, aerial refueling, airborne warning & control, aerial reconnaissance and long range strategic bombing. Some examples of LFAs would include but not be limited to C-5, C-17, C-130, C-21, E-3, MC-12, KC-10, KC-135, RC-135, RC-26 etc.. Aircraft types not typically associated with LFAs would be those more closely associated with the Fighter and RWA categories.

Main Operating Base—In special operations, a base established by a joint force special operations component commander or a subordinate special operations component commander in friendly territory to provide sustained command and control, administration, and logistical support to special operations activities in designated areas.

Medical Care—Inpatient, outpatient, dental care, and related professional services.

Medical Group—The base-level organization responsible for the coordination and delivery of health care services to eligible beneficiaries.

Medical Surveillance—The ongoing, systematic collection, analysis, and interpretation of data derived from instances of medical care or medical evaluation, and the reporting of population-based information for characterizing and countering threats to a population's health, well-being and performance.

Medical Treatment Facility—A facility established for the purpose of furnishing medical and/or dental care to eligible individuals.

Missile Defense—Defensive measures designed to destroy attacking enemy missiles, or to nullify or reduce the effectiveness of such attack.

Mission Essential Tasks—Tasks deemed essential to mission accomplishment and defined using the common language of the Universal Joint Task List (UJTL) in terms of tasks, conditions, and standards. Service and interagency task lists augment the UJTL to provide a comprehensive integrated menu of tasks, conditions, and standards which include measures of effectiveness and their associated criteria of performance that support all levels of DoD in executing the NMS across the full ROMO.

Mission Oriented Protective Posture (MOPP—)—A flexible system of protection against CBRN contamination. This posture requires personnel to wear only that protective clothing and equipment (MOPP gear) appropriate to the threat level, work rate imposed by the mission, temperature, and humidity.

Mitigation—Activities designed to reduce or eliminate risks to persons or property or to lessen the actual or potential effects or consequences of an incident. Mitigation measures may be implemented prior to, during or after an incident. Mitigation measures are often developed IAW lessons learned from prior incidents. Mitigation involves ongoing actions to reduce exposure to, probability of or potential loss from hazards. Measures may include zoning and building codes, floodplain buyouts and analysis of hazard-related data to determine where it is safe to build or locate temporary facilities. Mitigation can include efforts to educate governments, businesses and the public on measures they can take to reduce loss and injury.

Mission Oriented Protective Posture (MOPP) Gear—Military term for individual protective equipment including suit, boots, gloves, mask with hood, first aid treatments, and decontamination kits issued to military members.

Mutual Aid Agreement—Written agreement between agencies, organizations or jurisdictions that they will assist one another on request by furnishing personnel, equipment or expertise in a specified manner. Reciprocal assistance by local government and an installation for emergency services under a prearranged plan. Mutual aid is synonymous with "mutual assistance," "outside aid," "memorandums of understanding," “memorandums of agreement,” "letters of agreement," "cooperative assistant agreement," "intergovernmental compacts," or other similar agreements, written or verbal, that constitute an agreed reciprocal assistance plan for emergency services for sharing purposes. Mutual Aid Agreements between entities is an effective means to obtain resources and should be developed whenever possible. Mutual Aid Agreements should be in writing, be reviewed by legal counsel and be signed by a responsible official.

Natural Disaster—An emergency situation posing significant danger to life and property that result from a natural cause. (DOD). An emergency situation posing significant danger to life and property resulting from a natural cause. Also, see domestic. (JP 3-29).

Nerve Agent—A potentially lethal chemical agent that interferes with the transmission of nerve impulses.

Noncombatant Evacuation Operation—An operation whereby noncombatant evacuees are evacuated from a threatened area abroad, which includes areas facing actual or potential danger from natural or manmade disaster, civil unrest, imminent or actual terrorist activities, hostilities, and similar circumstances, that is carried out with the assistance of the Department of Defense.

Nuclear Environment—The environment created by nuclear weapon effects (air blast, thermal radiation, nuclear radiation, fallout, and EMP).

Nuclear Weapon—A complete assembly (i.e., implosion type, gun type, or thermonuclear type), that upon completion of the prescribed arming, fusing, and firing sequence, is capable of producing the intended nuclear reaction and release of energy.

Operational Area—An overarching term encompassing more descriptive terms (such as area of responsibility and joint operations area) for geographic areas in which military operations are conducted.

Operational Decontamination—Decontamination carried out by an individual and/or a unit, restricted to specific parts of operationally essential equipment, materiel and/or working areas, in order to minimize contact and transfer hazards and to sustain operations. This may include decontamination of the individual beyond the scope of immediate decontamination as well as decontamination of mission- essential spares and limited terrain decontamination.

Operational Plan—A detailed, written plan used to execute a military operation.

Operations Center—The facility or location on an installation, base, or facility used by the commander to command, control, and coordinate all operational activities.

Order of Battle—The identification, strength, command structure, and disposition of the personnel, units, and equipment of any military force.

Overseas Installation—A facility or group of facilities at a fixed geographical location under the control of a DoD component, and other facilities designated by a Unified Combatant Commander, base, camp, post, station, yard, center, or other activity under the jurisdiction of the Secretary of a Military Department that is located outside the U.S. and outside any territory, commonwealth, or possession of the U.S.

Passive Defense—Measures taken to reduce the probability of and to minimize the effects of damage caused by hostile action without the intention of taking the initiative.

Personal Effects—All privately owned moveable, personal property of an individual.

Personal Protective Equipment—The protective clothing and equipment provided to shield or isolate a person from the chemical, physical, and thermal hazards that can be encountered at a hazardous materials incident.

Planning Factor—A multiplier used in planning to estimate the amount and type of effort involved in a contemplated operation.

Precision-guided Munition—A guided weapon intended to destroy a point target and minimize collateral damage.

Preparedness—The range of deliberate, critical tasks and activities necessary to build, sustain, and improve the operational capability to prevent, protect against, respond to, and recover from domestic incidents. Preparedness is a continuous process involving efforts at all levels of government and between government and private-sector and nongovernmental organizations to identify threats, determine vulnerabilities, and identify required resources.

Prevention—Actions to avoid an incident or to intervene to stop an incident from occurring. Prevention involves actions to protect lives and property. It involves applying intelligence and other information to a range of activities that may include such countermeasures as deterrence operations; heightened inspections; improved surveillance and security operations; investigations to determine the full nature and source of the threat; public health and agricultural surveillance and testing processes; immunizations, isolation or quarantine; and, as appropriate, specific law enforcement operations aimed at deterring, preempting, interdicting or disrupting illegal activity and apprehending potential perpetrators and bringing them to justice.

Primary Mission—The wartime mission that is most resource demanding. The only exception is when a unit has a less resource demanding mission of higher priority, such as a specific OPLAN.

Program Manager—The individual responsible for, and has authority to, accomplish program objectives for development, production, and sustainment in order to meet the user's operational needs. Individual is also accountable for credible cost, schedule, and performance reporting to the Milestone Decision Authority (MDA).

Qualification Training—Actual hands-on task performance training designed to qualify an individual in a specific duty position. This portion of the dual channel OJT program occurs both during and after the upgrade training process. It is designed to provide the performance skills required to do the job.

Readiness—The ability of U.S. military forces to fight and meet the demands of the national military strategy. Readiness is the synthesis of two distinct but interrelated levels: (a) unit readiness - The ability to provide capabilities required by Combatant Commanders to execute their assigned missions. This is derived from the ability of each unit to deliver the outputs for which it was designed. (b) Joint readiness - Combatant Commander's ability to integrate and synchronize ready combat and support forces to execute his or her assigned missions.

Recovery—The development, coordination and execution of service and site restoration plans for impacted communities and the reconstitution of government operations and services through individual, private-sector, nongovernmental and public assistance programs that: identify needs and define resources; provide housing and promote restoration; address long-term care and treatment of affected persons; implement additional measures for community restoration; incorporate mitigation measures and techniques, as feasible; evaluate the incident to identify lessons learned; and develop initiatives to mitigate the effects of future incidents.

Recovery Operations—Operations conducted to search for, locate, identify, recover, and return isolated personnel, human remains, sensitive equipment, or items critical to national security.

Response—Activities that address the short-term, direct effects of an incident. Response includes immediate actions to save lives, protect property and meet basic human needs. Response also includes the execution of emergency operations plans and of incident mitigation activities designed to limit the loss of life, personal injury, property damage and other unfavorable outcomes. As indicated by the situation, response activities include: applying intelligence and other information to lessen the effects or consequences of an incident; increased security operations; continuing investigations into the nature and source of the threat; ongoing public health and agricultural surveillance and testing processes; immunizations, isolation or quarantine; and specific law enforcement operations aimed at preempting, interdicting or disrupting illegal activity and apprehending actual perpetrators and bringing them to justice.

Response Task Force—A DOD response force appropriately staffed, trained and equipped to coordinate actions necessary to control and recover from a radiological incident. The specific purpose of the response task force is to recover weapons and provide radiological incident assistance. Response task forces are organized and maintained by those Combatant Commanders whose Component Commands have custody of nuclear weapons or radioactive nuclear weapon components. Response task forces are not structured to respond to terrorist use of CBRN or radiological dirty bombs.

Detained Personnel—Detainees who fall into one of the following categories: a. Designated enemy medical personnel and medical staff administrators who are exclusively engaged in either the search for, collection, transport, or treatment of the wounded or sick, or the prevention of disease; b. Staff of National Red Cross and Red Crescent Societies and that of other volunteer aid societies, duly recognized and authorized by their governments to assist medical service personnel of their own armed forces, provided they are exclusively engaged in the search for, or the collection, transport or treatment of wounded or sick, or in the prevention of disease, and provided that the staff of such societies are subject to military laws and regulations; c. Chaplains attached to enemy armed forces.

Risk Assessment—The process of detecting hazards and their causes, and systematically assessing the associated risks.

Rules Of Engagement—Directives issued by competent military authority that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered.

Risk Management—The systematic process of identifying hazards, assessing risk, making control decisions, implementing control decisions and supervising/reviewing the activity for effectiveness. (Source: AFI 90-802; AFI 63-101/20-101; AFI 31-101; AFI 10-2501; AFI 32-2001; DoDI 6055.1).

Sampling—The process of collecting a representative amount of gas, liquid, solid or characteristics of one of these, soil, powder, etc. to analyze.

Security—(1) Measures taken by a military unit, activity, or installation to protect itself against all acts designed to impair its effectiveness. (2) A condition that results from the establishment and maintenance of protective measures that ensures a state of inviolability from hostile acts or influences. With respect to classified matter, it is the condition that prevents unauthorized persons from having access to official information that is safeguarded in the interests of national security.

Security Forces—Duly constituted military, paramilitary, police, and constabulary forces of a state.

Senior Leader—An Air Force service member in the rank of Chief Master Sergeant, Colonel, Brigadier General, Major General, Lieutenant General, General, or selected to serve in one of these ranks. A senior leader also includes members of Senior Executive Services (SES).

Severe Weather—Any weather condition that poses a hazard to property or life.

Shelters—Structures that protect personnel from exposure to chemical-biological contamination. As a minimum, they provide a physical barrier that keeps a portion of the contamination away from the people inside.

Smart Weapon—A guided weapon intended to destroy a point target and minimize collateral damage.

Sociocultural Factors—The social, cultural, and behavioral factors characterizing the relationships and activities of the population of a specific region or operational environment.

Sortie—In air operations, an operational flight by one aircraft.

Specialized Teams—The teams formed from the existing installation and unit personnel resources to support emergency response operations.

Special Operations—Operations requiring unique modes of employment, tactical techniques, equipment and training often conducted in hostile, denied, or politically sensitive environments and characterized by one or more of the following: time sensitive, clandestine, low visibility, conducted with and/or through indigenous forces, requiring regional expertise, and/or a high degree of risk.

Special Operations Forces—Those Active and Reserve Component forces of the Services designated by the Secretary of Defense and specifically organized, trained, and equipped to conduct and support special operations.

Staging Area—A staging area is a place where personnel or equipment in transit is assembled or processed. Resting and feeding places for personnel, are referred to as staging areas.

Standing Operating Procedure—A set of instructions applicable to those features of operations that lend themselves to a definite or standardized procedure without loss of effectiveness.

Storage Tank—A stationary aboveground or below ground device that contains an accumulation of regulated substances.

Support Agreement—An intra-service, intra-agency, or inter-agency support agreement for a Supplier to provide support to a Receiver. It can take the form of a Defense Department (DD) Form 1144, Memorandum of Agreement, or Memorandum of Understanding. It is used to document recurring support in order to provide the unit commander with the capability to ensure resources are expended wisely and to help eliminate unnecessary resource duplication. It can also be used for single or non- recurring reimbursable support and non-reimbursable support.

Supporting Base—The installation closest to where a geographically separated family member resides. A supporting base may perform an FMRC for family members requesting government sponsored travel. All FMRC documentation is provided by the supporting base EFMP-M office to the sponsor's servicing base EFMP-M office for processing of all EFMP functions including, but not limited to recommendations for local clearances at the conclusion of the FMRC, FDIs, and initiation/removal of the ALC "Q" to/from the sponsor's personnel record.

Specialized Teams—The teams formed from the existing installation and unit personnel resources to support emergency response operations. For the purposes of this AFMAN, emergency response support teams that are part of the Disaster Response Force include the emergency management support team, shelter management teams, contamination control teams, and post attack reconnaissance teams. Other teams that support emergency response, but have functional responsibilities beyond emergency response, are not considered part of the Disaster Response Force. Examples of such teams are search and recovery or crash recovery.

Tactics, Techniques, and Procedures—Applies basic and operational doctrine to military actions by describing the proper use of specific weapons systems or detailed tactics, techniques, and procedures to accomplish specific military operations.

Target Audience—An individual or group selected for influence.

Task Force—A component of a fleet organized by the commander of a task fleet or higher authority for the accomplishment of a specific task or tasks.

Note—Unlike decontamination during conventional warfare activities, Environmental Protection Agency requires runoff control for this type of process. Also known as thorough or nine-step process decontamination.

Terrorist—An individual who uses violence, terror, and intimidation to achieve a result.

Theater of Operations—An operational area defined by the geographic Combatant Commander for the conduct or support of specific military operations. Multiple theaters of operations normally will be geographically separate and focused on different missions. Theaters of operations are usually of significant size, allowing for operations in depth and over extended periods of time.

Thorough Decontamination—Decontamination carried out by a unit to reduce contamination on personnel, equipment, materiel, and/or working areas equal to natural background or to the lowest possible levels, to permit the partial or total removal of individual protective equipment and to maintain operations with minimum degradation.

Threat—An indication of possible violence, harm or danger.

Threat Assessment—In antiterrorism, examining the capabilities, intentions, and activities, past and present, of terrorist organizations as well as the security environment within which friendly forces operate to determine the level of threat.

Time of Flight—In artillery, mortar, and naval gunfire support, the time in seconds from the instant a weapon is fired, launched, or released from the delivery vehicle or weapons system to the instant it strikes or detonates.

Toxic Industrial Chemical—A chemical developed or manufactured for use in industrial operations or research by industry, government, or academia that poses a hazard.

Toxic Industrial Material—A generic term for toxic, chemical, biological, or radioactive substances in solid, liquid, aerosolized, or gaseous form that may be used, or stored for use, for industrial, commercial, medical, military, or domestic purposes.

Toxic Industrial Materials—A generic term for toxic or radioactive substances in solid, liquid, aerosolized, or gaseous form that may be used, or stored for use, for industrial, commercial, medical, military, or domestic purposes. Toxic industrial material may be chemical, biological, or radioactive and described as toxic industrial chemical, toxic industrial biological, or toxic industrial radiological.

Unexploded Ordnance—Explosive ordnance that has been primed, fused, armed or otherwise prepared for action and then fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material, and remains unexploded either by malfunction or design or for any other cause.

Vulnerability Assessment—A DOD, command or unit-level evaluation (assessment) to determine the vulnerability of terrorist attack to an installation, unit, exercise, port, ship, residence, facility or other site.

Unexploded Ordnance—Explosives ordnance that has been primed, fused, armed or otherwise prepared for action, and has been fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installations, personnel or material and remains unexploded either by malfunction or design or for any other cause.

Vulnerability—(1) The susceptibility of a nation or military force to take any action by any means through which its war potential or combat effectiveness may be reduced or its will to fight diminished. (2) The characteristics of a system that cause it to suffer a definite degradation (incapability to perform the designated mission) as a result of having been subjected to a certain level of effects in an unnatural (manmade) hostile environment.

Vulnerability Assessment—A process that examines a friendly operation or activity from the point of view of an adversary, seeking ways in which the adversary might determine critical information in time to disrupt or defeat the operation or activity.

Weapons Of Mass Destruction—Chemical, biological, radiological, or nuclear weapons capable of a high order of destruction or causing mass casualties, and excluding the means of transporting or propelling the weapon where such means is a separable and divisible part from the weapon.

Weapons System—Items that can be used directly by the Armed Forces to carry out combat missions.

Attachment 2

PRE-CONFLICT, ATTACK RESPONSE, AND POST-CONFLICT OPERATIONS

A2.1. This chapter contains three sections that provide common actions and considerations for wartime operations. Section A2A covers pre-conflict actions and preparedness; section A2B lists attack actions. It provides pre-attack and post-attack actions for alarm conditions Green and Yellow, trans- attack actions for Alarm Red or Blue (Korean Peninsula), and post-attack actions to accomplish in Alarm Black. Section A2C provides post-conflict actions to support reconstitution after hostilities cease.

Section A2A—Pre-Conflict

A2.2. Introduction:

A2.2.1. In-place and deployed forces must be prepared to conduct combat operations as required by Air Force (AF), theater, or Major Command (MAJCOM) directives. Pre-conflict actions prepare forces for operations in Chemical, Biological, Radiological, and Nuclear (CBRN) threat areas. These actions require a readiness strategy designed to train and equip forces to counter the expected threats. This strategy includes training and equipping personnel, identifying shortfalls and limiting factors, and developing or reviewing base and joint support plans. Use existing unit and installation-level exercises and Readiness Assessments to compliment training requirements, emphasize airman common core skills, and focus on team and unit task integration. If unit and/or installation exercises aren't already being conducted, then those locations are accepting levels of risk beyond what the AF as an enterprise is willing to accept. Include exercise objectives to evaluate leadership effectiveness and assess unit readiness.

A2.2.2. When a crisis or conflict arises, mobility operations and force deployments begin. In-place forces will begin their transition to wartime operations and prepare to accept and bed down the deploying forces. These wartime operations build upon deliberate planning assumptions and focus efforts on the current threat, situation, and mission. Pre-, trans-, and post-attack actions support transition to wartime operations, survival, recovery, and mission sustainment. Successful conflict termination is followed by an orderly transition of forces from combat to post-conflict operations.

A2.2.3. Effective wartime operations require coordinated and integrated actions at all levels. When appropriate, the actions within this chapter identify one or more responsibility levels for execution. At the highest level, the Crisis Action Team (CAT) and Emergency Operations Center (EOC) direct installation-level actions to maintain overall mission focus and operations tempo. At the intermediate level, the unit commander directs actions through their unit control center, subordinate work centers, and team leaders. At the lowest level are actions that are the responsibility of each Airman. This separation by level allows for rapid identification of both tasks and responsibilities. It also supports and simplifies the development and integration of installation and unit standard operating procedures and execution checklists.

A2.3. Plans and Training:

A2.3.1. Identify and train deploying or in-place military, Department of Defense (DoD) civilian, contract, and host-nation personnel who have not received CBRN Defense training within the previous 18 months and In accordance with (IAW) AFI 10-2501. Train personnel, including those TDY and transient, to accomplish last-second contamination avoidance actions and seek overhead cover and physical protection prior to attacks.

A2.3.2. Identify and train other non-combatants at overseas locations in accordance with theater or Department of State directives.

A2.3.3. Form the Installation Threat Working Group. Assess the current CBRN threat at both home station and the deployment location.

A2.3.4. Review the IEMP 10-2 and the base or joint support plan for each potential deployed and transient location. Ensure plans include the procedures, manpower, and material to enable an installation to accomplish the tasks in **Table 1.2**. Coordinate with the plan OPR and advise the reception base or transient location of unique support requirements. Where possible, conduct a site survey at each deployment location.

A2.3.5. Develop plans and standing operating procedures to protect sortie generation and strategic airlift throughput capability. Include procedures for cross-functional actions and support.

A2.3.6. Identify CBRN manpower and material support requirements beyond unit type code (UTC) requirements within host-nation agreements and inter-service support agreements. Include support provided by the host-nation and support provided to the host-nation at both the installation and unit level.

A2.3.7. Identify and provide collective protection spaces for in-place and deployed Air Force personnel as required by theater or MAJCOM guidance. If theater or MAJCOM guidance is not provided, plan to provide rest and relief collective protection for at least 30 percent of the force and toxic free area rest and relief for at least 20 percent of the force per shift. Use any combination of Class I-IV transportable, fixed facility, or expedient collective protection systems. Include additional space, if required, to protect transient aircrew and passengers. For planning, assume collective protection shelters and toxic free areas used for rest and relief will operate two twelve-hour shifts and provide the capability to protect at least 50 percent (30 percent with collective protection, 20 percent with toxic free areas) of the installation population per shift. Consider adding additional capability to account for system attritions. Plan to sustain this capability for up to 96 hours (continuous or 12-hour segments) within a 30-day period.

A2.3.8. Identify and provide contamination control area (CCA) capability for in-place and deployed Air Force personnel as required by theater or MAJCOM guidance. If theater or MAJCOM guidance is not provided, plan to process at least 20 percent of the installation population during a 24-hour period. Include additional capability, if required, for transient aircrew and passengers. Reduce the CCA processing requirements by the number of personnel that will use Class I through IV collective protection CCA. Where feasible, include procedures

to rapidly process minimally injured (ambulatory) personnel through non-medical CCA. This speeds access to medical treatment and reduces the burden upon medical decontamination teams. For planning, assume the CCA will operate two twelve-hour shifts and provide the capability to process at least 10 percent of the installation population per shift. Consider adding additional capability to account for system attritions and CCA surge processing capability. Plan to sustain this capability for up to 96 hours (continuous or 12-hour segments) within a 30-day period.

A2.3.9. Identify CBRN augmentation manpower needs for installation and unit teams. Assign and train personnel. Requirements may include contamination control area, post-attack reconnaissance, shelter management, and command and control teams. Deliberate planning guidelines for identifying specialized team and augmentation support for CBRN defense will be included in the BSP Part II, Chapter 11, CBRN Defense Plan. (T-2).

A2.3.10. Ensure the installation has identified an effective defense sector and CBRN zone plan. Train the base populace and command and control elements to execute these operations.

A2.3.11. Consolidate multiple planning requirements into existing plans or documents whenever possible. For example, include hardening, dispersal, and contamination avoidance cover planning in the IEMP 10-2 and the base or joint support plan.

A2.4. Material:

A2.4.1. Identify the minimum theater, MAJCOM, and local requirements for CBRN equipment. Develop plans and procedures to obtain the quantity of material needed to meet minimum requirements and sustain operations for up to 30 days.

A2.4.2. Issue Individual Protective Equipment (IPE) and medical pre-treatment materials and nerve agent antidotes to and train DoD civilian and contract personnel (in accordance with contract) deploying to or stationed in CBRN threat areas. Issue IPE to and train host-nation personnel in CBRN threat areas as required by theater or MAJCOM guidance. Direct personnel to inspect their equipment to identify deficiencies and provide assistance to resolve discrepancies. Do not issue equipment to deploying personnel that will reach shelf-life limits within 180 days of the deployment date. Identify shortages and unresolved deficiencies to higher headquarters.

A2.4.3. Verify individuals have completed mask-fit training.

A2.4.4. Verify individuals have required eyeglasses and protective mask inserts. Correct deficiencies.

A2.4.5. Protect bulk stored or palletized IPE and CBRN equipment from weather, contamination, abuse, and theft. Double-wrap with plastic tarps or contamination avoidance covers. Periodically check for damage.

A2.4.6. Stockpile or plan to deploy materials that are essential for plan and mission execution. Contamination control items must be available at the in-place or deployment location. This includes items such as: bulk plastic sheeting, contamination avoidance covers, decontamination solutions, or other approved decontamination products or systems. Available

options include pre-positioning, War Reserve Material, unique contamination-control UTCs, and established unit-level UTCs. Periodically review these requirements for the appropriate type, quantity, and procedures to ensure material serviceability. Stockpiles should be convenient to their point of use, configured for rapid dispersal to improve survivability, and secure from pilferage.

A2.5. Medical:

A2.5.1. Verify individuals are medically qualified to deploy.

A2.5.2. Ensure individuals have received all required immunizations.

A2.5.3. Review medical intelligence sources for CBRN threats and treatment methods.

Section A2B—Attack

A2.6. Overview. Pre-attack actions begin upon receipt of the mobility warning order or when the in- place forces are directed to transition to wartime operations. Pre-attack action executed during Alarm Green and Alarm Yellow prepares the installation for attack. Trans-attack actions focus primarily upon individual and weapons system survival. Post-attack actions focus upon saving lives, detecting and mitigating hazards, mission restoration, and sustainment. Actions within any of the attack phases may be a continuation or refinement of actions initiated during earlier operations. If attacks have already occurred, priority restoration operations will continue when Alarm Green is declared. The installation will also replenish, repair, or replace lower priority resources expended, damaged, or destroyed in previous attacks or operations. Alarm Green - Attack is Not Probable:

A2.6.1. Update the current CBRN threat intelligence information. Review current intelligence information every 12 hours (or as new information is available). Review attack reports from other theater locations to determine enemy behavior and tactics.

A2.6.2. Upon initial declaration, recall forces and activate the CAT, EOC, and unit control centers. Direct 24-hour operations for primary and alternate command and control functions. Review standard operating procedures and conduct action drills for likely threat and mission scenarios. Identify time- phased actions by threat, mission priority, and the availability of resources. Initial CBRN defense priorities should focus on attack detection and warning, protection, and mitigation of specific threats and threat weapon systems. Follow-on priorities include recovery, mission sustainment, defense enhancements, and maintenance of existing capabilities.

A2.6.3. Contact the theater or joint force agency responsible for air, ground, and missile attack warning and defense. Verify the procedures and timelines for how the installation receives theater missile, aircraft, and ground forces attack warning and how the installation reports attacks. Identify each primary warning point and determine the time required to warn the installation under each likely attack scenario. Identify secondary warning methods and plan for 24-hour coverage. Test both the primary and secondary warning methods and procedures.

A2.6.4. Review installation warning signals and alarm conditions. Provide visual aids and current information to each unit control centers, the base population, and all assigned, attached, coalition, and host-nation forces. Develop multilingual visual aids and public address systems announcements. Include warning procedures for geographically separated units, non-combatants, and enemy prisoners of war.

A2.6.5. Develop command and control system procedures to rapidly receive notice of TBM launch, adjust mission focus, and disseminate warning to all base personnel.

A2.6.6. Verify the operation and coverage of the base warning system. Verify the actual times required to notify the installation population under each warning method. Commanders will verify the Installation Notification and Warning System (INWS) is able to provide attack warning and notification IAW DoDI 6055.17. (T-0).

A2.6.7. Implement MOPP operations based upon the current threat. Consult with Emergency Management and Medical personnel to determine the projected MOPP, work-rest cycles, and hydration standards for the next 24-hour period. Notify the base populace and re-evaluate every 12 hours or when climatic conditions significantly change. Determine the need for MOPP options and direct when appropriate. Based upon threat, direct personnel to wear field gear and personal body armor (if issued) in addition to the current MOPP. On a case-by-case basis, delegate MOPP authority to subordinate commanders. Direct personnel who wear contact lenses to remove them and wear spectacles or spectacle inserts.

A2.6.8. Implement the installation zones or sector plan to support the movement of contaminated assets (people and equipment) between zones or sectors. Identify critical post attack recovery teams (EOD, airfield damage assessment, building damage assessment, CBRN reconnaissance, and firefighting) and sector or zone crossing procedures to facilitate quick movement in support of post attack recovery operations. UCCs must ensure that personnel moving from contaminated zones or sectors to uncontaminated zones or sectors do not inadvertently reduce MOPP when split-MOPP operations are executed.

A2.6.9. If the previous alarm condition was Alarm Red/Blue or Black, re-evaluate the status of protective actions. Replenish material expended during contamination control or decontamination operations. Redistribute material, such as IPE and nerve agent antidotes, to support priority missions or units with high usage rates. Take action to replace casualties. Review previously reported damage. Verify damage, contamination, and UXO reports were received and action is complete or underway to resolve the situation. Initiate action to collect and dispose of contaminated waste, unclaimed weapons and ammunition, and UXO that is declared safe for movement to holding areas. Prepare a written record that identifies the location of previously contaminated areas, unrecovered human remains, contaminated waste burial sites, missile and bomb craters, and unrecovered UXO.

A2.6.10. Review the probable CBRN attack threat scenarios and actions with Security Forces, Emergency Management, and intelligence personnel at each shift change. Review the status of planned and in-progress medical pretreatments.

A2.6.11. Direct individuals to keep their canteens full at all times. Direct units to store potable water within unit work areas to support unit operations for a minimum of 24-hours without resupply. Direct commanders and supervisors to enforce hydration requirements.

A2.6.12. Develop and implement an installation Ground Sector and CBRN zone plan. Practice likely post-attack scenarios with command and control elements. Ensure unit control centers understand their responsibility to maintain control of their personnel when they enter or exit contaminated areas. Provide zone or sector information or maps to each unit control center and all assigned, attached, coalition, and host-nation command and control centers.

A2.6.13. Evaluate installation medical treatment capabilities based on the current threat and brief the commander and staff. Establish procedures for casualty collection. Identify casualty collection points (CCP) and notify each unit control center, the base population, and all assigned, attached, coalition, and host-nation forces. Consider collocating the CCP with the CCA.

A2.6.14. Establish base mortuary procedures for processing contaminated and uncontaminated remains. Identify and staff the mortuary collection point. Identify and prepare sites for temporary interment of human remains. Provide the information to the EOC, each UCC, the base population, and all assigned, attached, coalition, and host-nation forces.

A2.6.15. Activate CBRN specialized teams. Assign personnel where needed to bring teams up to 100 percent of required manning for 24-hour operations. Direct responsible units to verify team material is serviceable and operators are proficient. Conduct team drills and training to meet local proficiency standards.

A2.6.16. Maintain watch for covert attack indications. Periodically remind personnel to remain observant for signs of a covert or suspicious activity. Provide specific information on threats, if available.

A2.6.17. Increase protection for food and water supplies. Direct units to store a 24-hour supply of Meals, Ready to Eat (MRE) within their unit area. If CBRN attacks have occurred previously, consider the need to use uncontaminated MRE or packaged foods and bottled water until food service supplies are determined to be uncontaminated.

A2.6.18. Develop or implement the installation CCA plan. Identify primary and alternate CCA on-base locations. The CCA (including Classes I through IV collective protection shelter capability) must be able to process the required percentage of the installation population over a 24-hour period.

Attachment 3

CBRN POST-ATTACK RECONNAISSANCE

A3.1. Mission. Post-attack reconnaissance (PAR) is a base-wide effort that incorporates an integrated network of unit control centers, protective shelters, defensive fighting positions, and specialized teams to report information to the Unit Control Center (UCC) and EOC. PAR includes those deliberate individual, specialized team, and unit actions taken before and after an attack to assess damage and report status to the chain of command. PAR operations provide commanders at each level with a rapid means locating casualties, fires, contamination, and unexploded ordnance (UXO); identifying and marking hazards; and determining status of assessing damage to facilities and, or equipment in unit areas. Commanders and staffs use information collected during PAR to determine the need for and priority to conduct recovery operations, such as determining the Mission Oriented Protective Posture (MOPP) level(s), firefighting, casualty treatment, UXO removal (safing), rapid runway repair, and facility restoration.

A3.2. Operations. The responsibility for post-attack assessment does not rest with any single organization or specialized team, but with every individual assigned to an installation. Unit and base teams provide reconnaissance for specific unit areas while individuals provide information on activities within their immediate area. Accurate and timely post-attack reporting allows the UCC and EOC to assess the total status of mission resources and assign recovery forces to respond where they are most effective. Actions such as marking hazards and notifying people within the area of post-attack hazards prevents or minimizes further damage, injury, or the spread of contamination. Just as important as reporting actual damage or contamination is reporting that no damage or contamination has occurred.

A3.3. Airman (Individual) PAR Actions. Individual actions are normally limited to a person's immediate work area, assigned equipment, or vehicle. See **Table A3.1** for the Post-Attack Reconnaissance Enabling Tasks that summarizes PAR enabling tasks and responsibilities for pre-attack preparations and post-attack actions. When directed to leave their shelter or protected areas, individuals should survey the interior of the structure (if inside) or immediate area (if out- side). Personnel should look for evidence of damage, UXO, or contamination and provide aid to casual-ties. They must remain in protected shelters or under overhead cover (situation permitting) until directed otherwise by the EOC or their UCC. This delay will provide time for CBRN Reconnaissance and Damage Assessment teams to confirm or deny CBRN agent use and assess damage. If hazards are found, they should be marked. Notify other personnel within the area of the hazard or hazards and report the results to the UCC or EOC.

A3.4. Unit PAR Teams:

A3.4.1. Concept of Operations. Unit PAR teams are normally directed through the UCC and conduct explosive ordnance reconnaissance activities, survey for contamination, implement contamination avoidance actions, survey unit assets for damage and fire, and perform casualty care. Prior to attacks, the teams should be responsible for executing unit plans for pre-positioning M8 paper on unit assets and areas, dispersing and maintaining security of unit assets, implementing dispersal and expedient hardening measures, placing and maintaining the serviceability of contamination avoidance covers, and assisting unit shelter and other specialized teams prepare for operations. Units responsible for large areas and multiple PAR teams may find it more efficient to group teams and areas under sub-unit control centers (or

equivalent) that, in turn, report to the UCC. UCCs consolidate PAR team information and report it to their unit ESF representative or to a location designated in IEMP 10-2. PAR teams should mark hazards (i.e., UXO and contamination) as they are discovered. However, extensive marking may create unacceptable delays that prevent rapid reconnaissance of the assigned areas. Under these circumstances, an initial PAR survey may be conducted to identify major hazards and determine if contamination is present. Once the initial survey is complete and the results are reported, return and properly mark hazards and contamination.

Table A3.1. Post-Attack Reconnaissance Enabling Tasks.

	Responsibility Level		
Pre-Attack	**Installation**	**Unit**	**Airman**
Assemble and inspect PAR team equipment	X	X	
Survey area of responsibility	X	X	X
Identify primary and alternate routes	X	X	
Identify facility power, gas, and fuel cutoffs	X	X	X
Pre-position M8 paper	X	X	X
Identify expedient firefighting assets	X	X	X
Identify location and inspect first-aid kits		X	X
Identify blackout actions	X	X	X
Review UXO identification chart	X	X	X
Identify resources that require contamination covers	X	X	X
Implement contamination avoidance actions	X	X	X
Post Attack	**Installation**	**Unit**	**Airman**
Survey pre- determined route	X	X	X
Find and report casualties, fire, damage	X	X	X

Conduct explosive ordnance reconnaissance	X	X	X
Mark hazards where needed	X	X	X
Report CBRN detector alarms and indicators of attack	X	X	X
Post, check, and report on M8	X	X	X
Conduct expedient firefighting		X	X
Take injured to the casualty collection point		X	X
Report enemy activity (S-A-L-U- T-E format)	X	X	X
Report enemy casualties and abandoned weapons	X	X	X
Survey vehicles and equipment for damage	X	X	X
Maintain contact with the UCC or EOC	X	X	X
Request UCC or EOC assistance	X	X	X
Advise UCC or EOC on ability to conduct mission		X	X
Verify integrity of collective protection systems		X	
Verify the operation of CBRN detectors	X		
Practice contamination avoidance	X	X	X
Conduct immediate decontamination	X	X	X

A3.4.2. Organization. PAR teams are organized, trained, and equipped by the unit. The minimum size for a PAR team is two people. This enables one member to maintain a constant watch for hazards, provide security, and call for assistance if accidents or injuries should occur. There is no maximum number of PAR team members; however, team size should be kept to a minimum to reduce the number of people exposed to post-attack hazards and still accomplish the mission. Larger teams may be appropriate depending on the unit mission, weather, or if additional security protection is required. PAR teams should be knowledgeable of the unit area, mission and assigned equipment. Organize, train, and equip enough teams to enable a complete reconnaissance of all unit areas of responsibility within 15-20 minutes after the start of the reconnaissance mission. Commanders will identify and assign enough in-place installation personnel to conduct PAR team operations for a minimum of 96 hours. (T- 2).

A3.4.3. Training. Specialized training, beyond that received in the current CBRN Defense Training course and Explosive Ordnance Reconnaissance (EOR), is not required. Team proficiency is gained through practice and unit exercises.

A3.4.4. Equipage. **Table A3.2**. Recommended Equipment for a Two-Person PAR Team that provides a recommended list of team equipment items suitable for a two-person PAR team. Where appropriate, designate vehicles and communications equipment for team use. Adjust actual team equipment needs to match the threat, area of coverage, terrain, weather, and mission. Team equipment may be dedicated and stored into team kits. The team may use existing equipment from shelter management team or other unit team kits.

A3.5. Specialized PAR Teams. Various base specialized teams fill this role in one or more areas. They include EOD teams, CBRN reconnaissance teams, rapid airfield damage assessment teams (RADR), and Bioenvironmental Engineer teams. Specific actions and duties of these teams are contained within functional area publications. The CBRN reconnaissance teams operate under the direction of the Base Civil Engineer, through the EOC, and include CE readiness personnel. The primary mission of the CBRN reconnaissance team is to deploy and maintain the base CBRN detection network and conduct post-attack reconnaissance of base areas. Civil Engineer CBRN teams also provide pre-attack and post- attack expert assistance to base and unit PAR teams. The teams also provide pre-attack and post-attack expert assistance to base and unit shelters, mortuary collection points, casualty collection points, contamination control areas, and to units that request assistance or supplemental training. These teams work with base and unit representatives to resolve technical issues related to CBRN defense. During the pre-attack phase, they assist teams and units develop M8 paper detection post plans and PAR survey routes, brief team members, develop training drills for team member to practice for likely scenarios, and provide training on specialized equipment. During the post-attack phase, these teams may be tasked to assist or advise on operations for units and teams within their area. Although their first priority is base CBRN defense, these teams provide the EOC with a rapid response capability that can provide on-the-spot advice and assistance to base recovery teams.

Table A3.2. Recommended Equipment for a Two-Person PAR Team.

Item	Quantity
Flashlight (high quality, 5000 candlepower) with Batteries*	2 each
Chemical Light Stick, White	2 boxes
Chemical Light Stick, Red	2 boxes
Surveyors Tape, White	2 rolls
Radio on Unit Network with Spare Batteries*	1
M8 Paper	5 booklets
M9 Paper	2 rolls
Personal Weapon and Ammunition	1
Hot, Cold, and Wet Weather Gear (as appropriate)*	2 sets
Magnifying Glass	1
CBRN Marking Kit or local equivalent	1 set
Masking Tape (1-2” Wide) and Indelible Marking Pen*	2 Rolls/2 Pens
Map or Diagram of PAR Routes and Responsibility Area	
*Indicates this item is normally a dual-use unit resource and designated for team use in wartime.	

A3.6. Post Attack Reconnaissance. The EOC or UCC may direct PAR operations to begin immediately following the attack or they may delay operations to avoid or reduce exposure to CBRN contamination fallout or UXO hazards. Specialized base teams (EOD, airfield damage, assessment, BEE, and CBRN reconnaissance) may be directed to start operations immediately following the attack to provide senior leadership with a quick-look assessment of airfield status and the overall post-attack situation. If communications fail, commanders may also direct specialized teams to "auto-roll" as soon as the attack is over.

A3.6.1. **Hazard and Contamination Avoidance:**

A3.6.1.1. When conducting post-attack reconnaissance, be cautious when traveling or walking. Make every reasonable effort to avoid crossing through cordoned and contaminated areas. If chemical contamination is present on vehicles or equipment, use the M295 decontamination kits to decontaminate. Concentrate on areas where individuals will sit or touch. Examples include access handles, equipment controls, bare metal, glass, and other non-porous surfaces. Do not enter damaged structures or walk across downed power lines.

A3.6.1.2. Consider site security when selecting pre-positioned base CBRN detector and unit M8 paper sites. Detection sites should be located within areas where minimum owner-user security procedures are in force. The intent is to reduce the possibility that pre-selected and routinely checked sites could be mined or PAR teams targeted for ambush during routine operations. As a rule, detection sites should not be located outside of the installation-controlled areas or base perimeter unless they are coordinated with and approved by security forces.

A3.6.1.3. Personnel who travel outside of installation-controlled areas may receive little or no warning or indication that they are in a contaminated area. They must look for contaminated area marking signs, be alert for the initial symptoms of contamination, and have protective equipment ready for immediate donning at all times.

A3.6.1.4. Personnel within facilities, expedient bunkers, and defensive fighting positions (DFPs) should preposition some M8 paper in locations where it can be observed without having to physically leave the protected position. This will generally mean placing the M8 paper on a raised sur- face that is slightly canted towards the observation point. Binoculars, camera feeds on M-8 paper, and/or or a spotting scope can be used during daylight to better observe M8 paper from the protected position or from beneath over- head cover. For nighttime operations consider innovative methods (i.e. maybe attach a rope or string to the observation stand or pad and pull it to an opening to observe the M8 paper. Use a white light to accurately read the M8 paper colors).

A3.6.2. CBRN Hazard Marking. Follow MAJCOM or theater standards for marking hazards. When these standards are not provided, use the standard hazard markers to mark CBRN and UXO hazards. Construct expedient markers when standard markers are unavailable. Construct the markers to the approximate size and shape of the examples using any suitable material. Options for expedient marking include locally produced marking signs or decals and the use of masking tape, chalk, or paint to mark the hazard. If no markers are available, use any means to mark the hazard that draws attention to the problem and communicates to others that a hazard exists.

A3.6.3. **PAR Reporting:**

A3.6.3.1. How to Report. Individuals and unit PAR teams report post-attack information through their UCC by the fastest available communication means. Each element that receives a PAR report has two responsibilities. The first is to provide the information to the next level in their chain of command or designated agency. The second responsibility is to provide the information to others within the unit or within the area affected by the hazards. If normal communications fail, submit PAR reports to the next higher level in the chain of command.

A3.6.3.2. What to Report. Report information on casualties; unexploded ordnance; tactics employed by the enemy; nuclear, biological, or chemical weapons indicators; and damage to equipment, facilities, vehicles, aircraft, or roads. Look for activated CBRN detectors, M8 and M9 paper positive indications, operating or spent munitions delivery systems or spray tanks, aerosol generators, and sub munitions or bomblets. Include your name, rank, unit, present location, and a phone number or method of contacting you for further information. Be as accurate in your details as possible. The UCC and EOC will consolidate PAR reports to provide a complete assessment of the installation.

Attachment 4

CBRN TRAINING AND EXERCISES

A4.1. Competencies. In order to obtain Airmen's expeditionary skills (ES), the AF is using a tiered proficiency training and deliberate exercise approach, targeting mission essential tasks, functions, and tasks, UTC capabilities, and combat skill tasking's. ES must be relevant, synchronized, standardized and integrated across the AF to provide Combatant Commanders with Combat "Ready Now" Airmen trained to support requirements while maximizing resources. ES training and exercises are optimized when incorporated as a continuum across an Airman's career.

A4.2. A robust CWMD operational capability for the AF is: Not achieved through a single individual or skill-level, nor is it the responsibility of a single functional community. CWMD capability is realized through a life-cycle approach using Force Development principles to create an integrated whole-base capability. It is not developed as the result of a single lesson, schoolhouse, or exercise event, but rather the culmination of growing CBRN-smart Airmen capable of owning this operational environment regardless of an adversary's intent, will, possession, or use of CBRN weapons.

A4.3. The AF corporate structure provides: Opportunities for Airman to receive education and training through installation education and outreach programs, accession programs, functional training, and professional military education. However, these developmental mechanisms represent only a portion of the life-cycle approach to developing Expeditionary Airman who can survive and operate in a CBRN environment. Wartime exercises and Readiness Assessments complete the integrated operational approach to developing CWMD warfighters.

A4.4. Extensive research on joint and service component doctrine: Have yielded a comprehensive list of tasks that should be performed to sustain mission operations regardless of CBRN threats and/or contamination. CWMD exercise competencies are aligned to the applicable Universal Joint Task Library (UJTL) and AF-specific mission essential tasks. Commanders at all levels will ensure the CWMD exercise competencies listed in **Table A4.1**. Wartime CWMD Exercise Competencies of this instruction, and the proficiency standards listed in AFTTP 3-2.42, are integrated into installation exercises and Readiness Assessments that require an operational wartime focus. (T-2). Note. CONUS installations conducting the annual peacetime CBRN exercise IAW AFI 90-201, Table 5.2., will develop exercise desired learning objectives (DLOs) from the preparedness standards listed in DoDI 3020.52. (T-0).

A4.5. Installation Wing Inspection Team (WIT) members: Will develop functional DLOs for each applicable CWMD exercise competency and coordinated with the installation Inspection General's exercise planner for inclusion into the CBRN exercise and/or Readiness Assessment Master Sequence of Events List (MSEL). (T-2).

A4.6. Installations will: Develop and conduct realistic CBRN exercises with joint, combined, and coalition and interagency partners. (T-0).

Table A4.1. Wartime CWMD Exercise Competencies.

Competency	Targeted Audience
Understand CWMD Interdiction Policy.	Air Operations Center, AFFOR Staff, Crisis Action Team, Operations Support Squadron.
Understand planning considerations for air interdiction operations of in-transit CBRN weapons and materials.	Air Operations Center, AFFOR Staff, Crisis Action Team, Operations Support Squadron.
Understand the potential national, international, and diplomatic connections stemming from CWMD operations.	Air Operations Center, AFFOR Staff, Crisis Action Team, Operations Support Squadron.
Understand the consequences of hitting CBRN targets including desired and collateral effects.	Air Operations Center, AFFOR Staff, Crisis Action Team, Operations Support Squadron.
Demonstrate the ability to conduct air CWMD interdiction operations.	Air Operations Center, Operations Support Squadron.
Understand national and AF contributions to proliferation prevention.	Air Operations Center, AFFOR Staff, Crisis Action Team, Operations Support Squadron, Wing Plans & Programs.
Demonstrate knowledge of joint, combined, and coalition theater options in a CBRN-contaminated environment.	Air Operations Center, AFFOR Staff, Crisis Action Team, Emergency Operations Center, Unit Control Centers, Operations Support Squadron.
Understand the importance of establishing interagency agreements to share intelligence on CBRN threats and hazards.	Air Operations Center, AFFOR Staff, Crisis Action Team, Intelligence functions (e.g. MAJCOM, NAF, Installation), Staff Judge Advocates, Wing Plans & Programs.
Understand interagency cooperation related to CWMD homeland defense.	Air Operations Center, AFFOR Staff, Crisis Action Team, Wing Plans & Programs.
Identify typical CBRN agents and elements, their delivery means, and their characteristics and effects.	All Airmen
Know CBRN detection capabilities, methods, and limitations, as well the operational connections of detection/detector results.	Crisis Action Team, Emergency Operations Center, Unit Control Center, Post Attack Reconnaissance Team, CBRN and Medical SMEs, Specialized Teams.

Demonstrate the ability to identify CBRN targets.	Air Operations Center, Crisis Action Team, ISR functions (e.g. MAJCOM, NAF, Installation), Operations Support Squadrons.
Demonstrate the application of the targeting process to CBRN targets while minimizing risks to friendly forces.	Air Operations Center, Crisis Action Team, ISR functions (e.g. MAJCOM, NAF, Installation), Operations Support Squadrons.
Understand and apply the standing Rules of Engagement (ROE) to CBRN targets.	Air Operations Center, Crisis Action Team, ISR functions (e.g. MAJCOM, NAF, Installation), Operations Support Squadrons, Staff Judge Advocates.
Understand the differences between pre-, trans-, and post-strike information operations.	Air Operations Center, AFFOR Staff, Crisis Action Team, Communications Squadron, ISR functions (e.g. MAJCOM, NAF, Installation), Operations Support Squadrons.
Demonstrate the ability to integrate CWMD Active Defense into the development of the Air, Space, and Cyberspace Tasking Orders.	Air Operations Center, AFFOR Staff, Crisis Action Team, Communications Squadron, ISR functions (e.g. MAJCOM, NAF, Installation), Operations Support Squadrons.
Understand the levels of Command and Control (C2) and demonstrate the ability to report up and down the chain, relative to CBRN threats.	All Airmen.
Recognize indicators of enemy CBRN use.	All Airmen.
Understand the integration of AF, joint, and coalition CWMD detection networks and CBRN warning and reporting system procedures and capabilities.	Air Operations Center, AFFOR Staff, Crisis Action Team, Emergency Operations Center, CBRN Zone/Area/Collection/Control Centers, Command Post, & Watch Centers.
Understand the planning challenges for operating in CBRN environments in non-permissive environments.	Air Operations Center, AFFOR Staff, Crisis Action Team, Emergency Operations Center, Operations Support Squadrons, & Wing Plans & Programs.

Understand the process for transporting contaminated/contagious personnel (to include casualties and remains) and materiel (to include forensic samples).	Air Operations Center, AFFOR Staff, Crisis Action Team, Emergency Operations Center, Unit Control Center, CBRN and Medical SMEs, Force Support Squadron, Logistics Readiness Squadrons, Operations Support Squadrons, Wing Plans & Programs.
Understand planning considerations for the development of a medical surge plan.	AFFOR Staff, Crisis Action Team, Emergency Operations Center, Medical Control Center, Surgeon General, & Medical Group.
Identify approval process required to operate mobility aircraft to/from CBRN contaminated airfields.	Air Operations Center, AFFOR Staff, Crisis Action Team, Operations Support Squadron, & Deployment Control Center.
Understand considerations, constraints, and guidance (e.g. exchange zone) for airlift, aerial refueling, and base operations in a CBRN environment.	Air Operations Center, AFFOR Staff, Crisis Action Team, Emergency Operations Center, Operations Support Squadron, & Deployment Control Center.
Understand installation plans specific to CBRN response and associated health risks assessments for exposure to CBRN agents/materials.	All Airmen
Understand the process for warning airborne aircraft of CBRN attacks against airfields.	Air Operations Center, Crisis Action Team, Emergency Operations Center, Command Post, Operations Support Squadron.
Demonstrate the ability to identify inbound CBRN threats.	Air Operations Center, Crisis Action Team, Command Post, Operations Support Squadron
Identify the installation's CBRN threats/vulnerabilities as part of the Integrated Defense Risk Management Process.	Crisis Action Team, Emergency Operations Center, CBRN/Medical/Security Forces SMEs, Wing Plans & Programs.
Perform combat lifesaving skills in a CBRN contaminated environment to include medical prophylaxis and Self-Aid Buddy Care (SABC).	All Airmen.
Conduct CBRN casualty movement.	All Airmen.

Demonstrate the ability to monitor local populations for diseases of operational importance.	CBRN/Medical SMEs, Medical Group, Public Health Environmental Officer, Crisis Action Team, Emergency Operations Center.
Understand and demonstrate how to protect individuals, equipment, and assets from CBRN effects through contamination control and contamination avoidance.	All Airmen.
Understand and demonstrate the ability to react to AF, Joint, Host-nation, combined, and coalition warning systems and signals (e.g. Alarm Conditions, MOPP Levels).	All Airmen.
Understand Post-Attack Reconnaissance procedures and responsibilities for identifying, marking, and reporting CBRN materials, to include unexploded ordnance.	All Airmen.
Understand DOD and AF policy and guidance as it relates to Defense Support to Civil Authorities (DSCA).	Air Operations Center, AFFOR Staff, Crisis Action Team, Emergency Operations Center
Recognize behavioral and physical symptoms associated with CBRN agent/material exposure.	All Airmen
Understand wartime sheltering procedures for CBRN threats.	All Airmen
Understand decontamination levels (e.g. immediate, operational, thorough, clearance).	All Airmen
Understand planning considerations for Noncombatant Evacuation Operations (NEO) in CBRN environments.	Air Operations Center, AFFOR Staff, Crisis Action Team, Emergency Operations Center, Staff Judge Advocate, Wing Plans & Programs.
Understand the process for managing mass care in support of displaced personnel, to include food, shelter, and hygiene in a CBRN environment.	Crisis Action Team, Emergency Operations Center, CBRN/Medical SMEs, Force Support Squadron.
Understand the requirement for collecting lessons learned and preparing after-action reports during all phases of a CBRN incident.	All Airmen.
Demonstrate the ability to properly don, seal, clear and check the CBRN protective mask within nine (9) seconds.	All Airmen.

Understand and demonstrate the ability to respond to and recover from an insider threat.	All Airmen.
Demonstrate individual weapons sustainment (e.g. clearing/safing, loading, firing, reloading, unloading, maintenance/cleaning, immediate action).	All Airmen.
Demonstrate individual tactics (e.g. react to contact, react to indirect fire, react to ambush, react to sniper, and break contact).	All Airmen.
Demonstrate the ability to conduct land navigation to include: map reading, compass reading, point to point, etc.	All Airmen.
Demonstrate the ability to use radios, pro-words, phonetics, brevity codes, and communication out procedures.	All Airmen.
Demonstrate the ability to recognize and react to unexploded ordnance.	All Airmen.
Demonstrate the ability to conduct tactical combat casualty care (e.g. tourniquet, bleeding, airway, nasopharyngeal airway, sucking chest wound, shock, head/neck/spinal, abdominal, eye, sprains/fracture, and burns.	All Airmen.
Demonstrate the ability to self-protect (e.g. grappling, strikes, break contact, weapon takeaways).	All Airmen.
Demonstrate the ability to conduct mounted operations by reacting to contact, vehicle cross load, and vehicle rollover.	All Airmen.
Demonstrate Urban Operations through movement and building defense and retrograde tactics.	All Airmen.
Demonstrate the ability properly wear the protective mask, ground crew ensemble; employ M8/M9; conduct individual decontamination; conduct vehicle and equipment decontamination; and use the buddy system through response and recovery operations to CBRN environments.	All Airmen.

Attachment 5

CHEMICALLY CONTAMINATED OBJECT RULE (CCOR)

A5.1. Object Rule. Use of the "simplified" or "advanced" version of the CCOR.

A5.1.1. The primary difference between the simplified and advanced versions of the CCOR is that the hazard duration is fixed at 24 hours for the simplified versus being variable based on the CW agent involved with the advanced option.

A5.1.2. In the advanced version, the Mission Oriented Protective Posture (MOPP) 4 period around a contaminated object in an otherwise uncontaminated area is 12 hours for the blister agent distilled mustard (HD) and nerve agent Sarin (GB); 18 hours for the nerve agents Tabun (GA), Soman (GD), and Cyclosarin (GF); and 24 hours for V-series agents.

A5.2. The most influential considerations are: The likely CW threat agent(s), the installation's CW detection capability, and the perceived advantage of terminating the MOPP 4 portion of the CCOR prior to 24 hours will have on mission operations.

A5.2.1. If an adversary's perceived threat to airbases will likely be V-series agents, there is not a difference in the MOPP 4 timeline between the advanced and simplified versions of the CCOR – they are both 24 hours.

A5.2.2. The primary CW detectors in the field (Joint Chemical Agent Detector (JCAD), M256 series, M8/M9 paper) do not differentiate between the G-series agents e.g., GB versus GD. As a result, it may not be possible for an installation to fully utilize the advanced version of the CCOR. That being said, if the commander safe-sided the G-agent choice within the context of the CCOR, the decision would result in the termination of the MOPP 4 portion at 18 hours versus the 24-hours dictated by the simplified version of the CCOR.

A5.2.3. In the vast majority of scenarios, the CW hazard duration timeline associated with terrain is much longer than the MOPP 4 timeline associated with the CCOR. The CCOR is designed for contaminated items that are in otherwise uncontaminated areas e.g., a contaminated fuel truck transitions to a MOPP 2 zone in order to accomplish a mission there. In order to weigh the benefits of a shorter MOPP 4 timeline for CCOR activities, the installation must have an idea of how often contaminated assets are going to be used in uncontaminated areas of the base.

A5.2.4. It is unlikely the installation warfighters will effectively track the CCOR-related timing actions. As a result, leadership should consider making the appropriate announcements to the installation work centers through the Emergency Operations Center (EOC) e.g., "properly mark each vehicle that was contaminated with CW agents in liquid form", "the MOPP 4 timeframe for contaminated vehicles has passed", etc.

A5.3. Utilizing the "simplified" version of the CCOR will: Be the most effective choice (easier to track, one set of rules instead of multiple choices – especially if more than one agent is used in the attack and/or there are multiple attacks) in most scenarios.

A5.3.1. Installations should treat aircraft as if they are physically contaminated with CW agents due to the following:

A5.3.1.1. It is very difficult to determine when aircraft have been physically contaminated by CW agents in liquid or solid form. CW droplets and particles are very small, below the limits of normal human vision in many cases. The absorptive characterization of CW agents combined with the fact that the Air Force (AF) does not put M8 paper on aircraft further complicates matters. However, personnel should place M8 paper detection paints in the aircraft turn areas, aircraft parking areas, etc.

A5.3.1.2. The AF does not consider an aircraft that may have been exposed to a CW agent as inoperable. However, analysis shows vapor contamination will not absorb into aircraft surfaces and subsequently be released at levels above the thresholds specified in the 2014 DoD Chemical Clearance Guidelines. The threshold for the 2014 DoD Chemical Clearance Guideline levels is the Environmental Protection Agency (EPA) Acute Exposure Guideline Level (AEGL) 1 criteria. Airborne concentrations below the AEGL-1 represent exposure levels that could produce mild and progressively increasing but transient and non-disabling odor, taste, and sensory irritation or certain asymptomatic, non-sensory effects.

A5.3.1.3. The proximity of the aircraft in relation to known results from M8 paper detection points is the primary method for ascertaining the contamination status of the aircraft. Barring empirical evidence otherwise, use **Table A5.1** to determine the CW contamination status of aircraft.

Table A5.1. Determination of Contaminated Aircraft Decision Aid.

Threats	Is the Aircraft Contaminated?		
	NO	YES	Notes
Chemical			
Potential for Chem Threat in theater but no Chem Activity Reported yet	X		
Chem Activity in theater but no Chem activity on installation or Close-by	X		
Chem Threat in Vapor form only on installation	X		
Chem threat in liquid form on installation but not near aircraft	X		Verified by prepositioned M8 paper
Chem threat in liquid form near airfield		X	Verified by prepositioned M8 paper
Chem threat in solid form (dusty) on aircraft		X	

Biological			
Potential for Bio threat in theater but no Bio activity reported yet	X		
Bio activity in theater but no bio activity on installation or close-by	X		
Bio activity reported/confirmed on installation	X		Due to the time it takes to recognize a bio attack has taken place, the hazard will have passed and it will be impossible to determine what aircraft have been
Radiological/Nuclear			
Potential for rad/nuke threat in theater but no activity reported yet	X		
Rad activity in theater but no rad activity on installation or close-by	X		
Radiological contamination detected on installation and aircraft		X	Confirmed by radiation instruments
* Detection and identification of isotope should be done as soon as possible			

A5.4. When dealing with liquid contamination refer to: **Table A5.2**., when dealing with liquid contamination. The guidelines were calculated based on one-hour of exposure at the distances specified as no longer requiring MOPP 4.

Table A5.2. Chemically Contaminated Object Handling Guidelines.

Applicability
Chemically Contaminated Object Handling Guidelines apply when chemical contamination is liquid in nature (e.g., when the resource has been exposed only to agents in vapor or dusty form, these special handling procedures will not be necessary past the point of the hazard duration.)
The use of the special handling procedures embodies a safety factor that goes beyond existing DOD guidance, allowing the removal of Individual Protective Equipment (IPE) whenever detectors no longer detect a chemical agent vapor hazard.
The small object category covers resources that have 10 square meters or less of metal and/or glass surfaces. Examples include aerospace ground equipment, munitions trailers, munitions, and vehicles such as pick-up trucks, high mobility multipurpose wheeled vehicles, and one and one-half ton stake-bed trucks.
The large object category covers resources that have more than 10 square meters of metal and/or glass surfaces. Examples include 44-passenger buses, fuel trucks, fire trucks, and all aircraft.

A5.4.1. The times associated with the guidelines are not absolute guarantees of safety. The AF developed the guidelines for sustained mission operations and to prevent a few contaminated resources from unnecessarily driving the MOPP level in the entire CBRN zone. The guidelines do not automatically equate to a point at which personnel may safely operate for indefinite periods in close contact with the resource. Personnel must be cognizant of the circumstances that affect the time estimates and remain alert for evidence of chemically-induced symptoms in themselves or co-workers.

A5.4.2. Installations may choose to employ the simplified version of the Chemically Contaminated Object Rule guidelines, or if operational circumstances and base population capabilities warrant, bases may choose to use the more advanced Chemically Contaminated Object Rule protocols.

Table A5.3. Simplified Chemically Contaminated Object Guidelines.

Time	Small Object	Large Object
0-1 Hour	MOPP 4 in all Zones	
1-3 Hours	MOPP 4 within 10 feet	MOPP 4 within identified Zone(s)
3-24 Hours		MOPP 4 within 50 feet

A5.4.3. Advanced Chemically Contaminated Object Rule Protocols.

A5.4.3.1. Advanced Guidelines for Handling Small Contaminated Objects. If the CBRN reconnaissance team has identified the specific agent involved, the installation may choose to use the hour values in **Table A5.4**., below instead of using the generic procedure. The below list is not inclusive of all chemical agents.

A5.4.3.2. Advanced Guidelines for Handling Large Contaminated Objects. The installation may choose to use the timelines outlined in **Table A5.4.**, if the CBRN reconnaissance team has the ability to determine whether a resource was contaminated at a concentration level of less than 50 mg/m², and if the base population has a mechanism that allows them to determine when they are 500 feet from a large contaminated resource.

Table A5.4. Advanced Chemically Contaminated Object Rule Guidelines.

Agent	Time (Hours) After Attack	Small Object	Large Object
All	0-1	MOPP 4	MOPP 4
All	1-3	MOPP 4 within 10 feet	MOPP 4 for all operations within 50 feet, contamination level is ≤ 50 mg/m².
			MOPP 4 for all operations within 500 feet, contamination level is 50 mg/m².
Mustard (HD, HL, HN, L)	3-12	MOPP 4 within 10 feet	MOPP 4 within 50 feet
	12-24	MOPP 2 with gloves*	MOPP 4 within 50 feet
	24+	MOPP 2 with gloves*	MOPP 2 with gloves*
Sarin (GB)	3-12	MOPP 4 within 10 feet	MOPP 4 within 50 feet
	12-24	MOPP 2 with gloves*	MOPP 4 within 50 feet
	24 +	MOPP 2 with gloves*	MOPP 2 with gloves*
Tabun (GA) Soman (GD) Cyclosarin	3-18	MOPP 4 within 10 feet	MOPP 4 within 50 feet
	18-24	MOPP 2 with gloves*	MOPP 4 within 50 feet
	24 +	MOPP 2 with gloves*	MOPP 2 with gloves*
VX	3-24	MOPP 4 within 10 feet	MOPP 4 within 50 feet
	24+	MOPP 2 with gloves*	MOPP 2 with gloves*

*Personnel will use gloves of any sort (leather, rubber, cloth, etc.) when operating on or handling the contaminated equipment. Although a contact hazard is unlikely, relatively small amounts of the agent may still be present. The use of gloves will ensure that unnecessary bare skin contact with agent residue is avoided.

Attachment 6

ANALYTICAL DATA TO SUPPORT CBRN PASSIVE DEFENSE OPERATIONS

A6.1. Air Force (AF) Position on Decontamination. The AF does not believe decontamination needs to take place unless there is a tangible operational benefit and/or a reasonable increase in personnel safety is achieved. For example, if the warfighter is in Mission Oriented Protective Posture (MOPP) 4 at the beginning of the decontamination activity and has to remain in MOPP 4 at the end of the decontamination process, the AF believes the decontamination actions were not necessary.

A6.2. Decontamination Activities. Decontamination activities are designed to remove the "contact/transfer" hazard. As a result of CW agent evaporation and absorption characteristics, the severity and danger of the contact hazard degrades very rapidly. Tangentially, many people erroneously believe CW contamination is easily transferred from surface to surface. The truth is that this is not really a significant operational hazard, to include with modern "composite" materials. See **Table A6.1.**, **A6.2**, **A6.3** and **A6.4**

Table A6.1. Average Amount of VX Transfer from Surface to Joint Service Lightweight Integrated Suit Technology (JSLIST) Fabric.

Average Amount of VX Transfer (after 1-Hr Weathering) from 3700 mg/m² on Surface to JSLIST Fabric				
Surface	Average Agent Transfer (mg) from Surface to JSLIST Fabric	Percent (%) of Original Agent Transferred to JSLIST	Amount of Agent (mg) Transferred from JSLIST to Silicone Rubber	Percent (%) of Original Agent Subsequently Transferred to Silicone Rubber
Concrete	0.07 mg after 4-Hr Contact Time	0.000019	0.01 mg	0.000003
F-16 Aircraft Metal	1.05 mg after 1-Hr Contact Time	0.00028	0.02 mg	0.000005
F-16 Tire Rubber	0.05 mg after 1-Hr Contact Time	0.000014	0.01 mg	0.000003

·2 mg is dose required for Severe Effects for 50% of unprotected personnel

Table A6.2. Average Amount of TGD Transfer from Surface to JSLIST Fabric.

Average Amount of TGD Transfer (after 1-Hr Weathering) from 3500 mg/m² on Surface to JSLIST Fabric				
Surface	Average Agent Transfer (mg) from Surface to JSLIST Fabric	Percent (%) of Original Agent Transferred to JSLIST	Amount of Agent (mg) Transferred from JSLIST to Silicone Rubber	Percent (%) of Original Agent Subsequently Transferred to Silicone Rubber
Concrete	0.7 mg after 4-Hr Contact Time	0.0002	0.01 mg	0.000003
F-16 Aircraft Metal	0.8 mg after 1-Hr Contact Time	0.0002	0.01 mg	0.000003
F-16 Tire Rubber	0.3 mg after 1-Hr Contact Time	0.00009	0.01 mg	0.000003

•200 mg is dose required for Severe Effects for 50% of unprotected personnel

Table A6.3. Average Amount of HD Transfer from Surface to JSLIST Fabric.

Average Amount of HD Transfer (after 1-Hr Weathering) from 2000 mg/m² on Surface to JSLIST Fabric				
Surface	Average Agent Transfer (mg) from Surface to JSLIST Fabric	Percent (%) of Original Agent Transferred to JSLIST	Amount of Agent (mg) Transferred from JSLIST to Silicone Rubber	Percent (%) of Original Agent Subsequently Transferred to Silicone Rubber
Concrete	0.4 mg after 4-Hr Contact Time	0.0002	0.01 mg	0.000005
F-16 Aircraft Metal	0.5 mg after 1-Hr Contact Time	0.0003	0.01 mg	0.000005
F-16 Tire Rubber	0.2 mg after 1-Hr Contact Time	0.0001	0.01 mg	0.000005

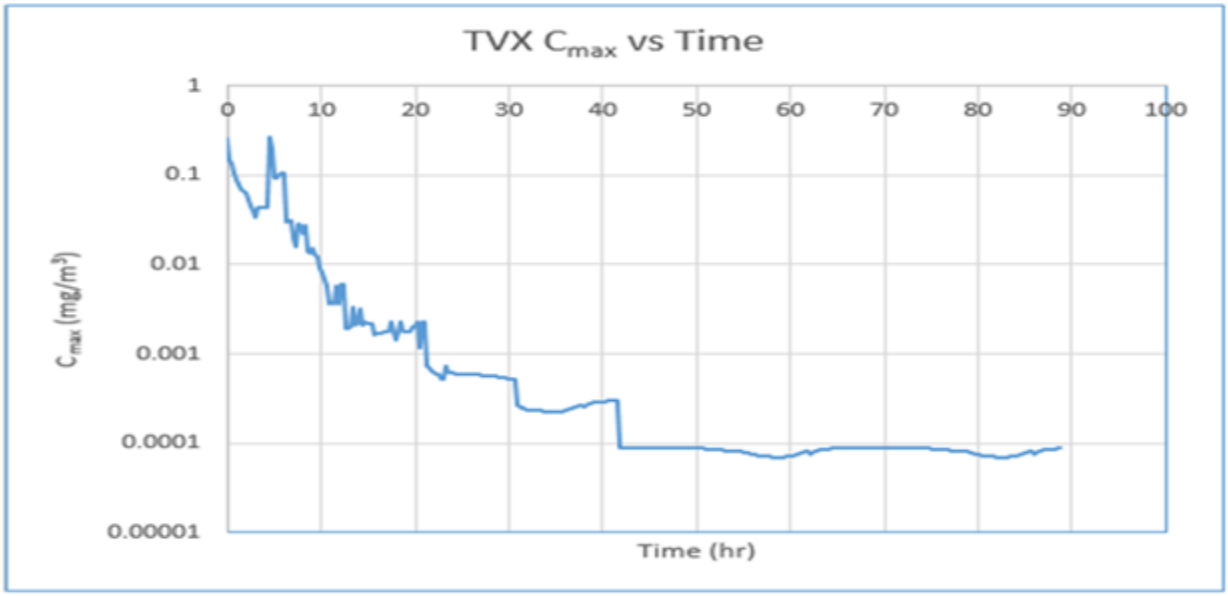
•600 mg is dose required for Severe Effects for 50% of unprotected personnel

Table A6.4. Average Amount of CW Agent Transfer from Carbon Composite Fuselage Material from C-17 Aircraft to JSLIST Fabric.

Average Amount of CW Agent Transfer (after 1-Hr Weathering) from "Carbon Composite Fuselage Material from C-17" to JSLIST Fabric				
Agent	Average Agent Transfer (mg) from Surface to JSLIST Fabric	Percent (%) of Original Agent Transferred to JSLIST	Amount of Agent (mg) Transferred from JSLIST to Silicone Rubber	Percent (%) of Original Agent Subsequently Transferred to Silicone Rubber
TGD	0.01 mg after 1-Hr Contact Time	0.000003	0.01 mg	0.000003
HD	0.4 mg after 1-Hr Contact Time	0.0002	0.01 mg	0.000005
*3500 mg/m^2 challenge for TGD and 2000 mg/m^2 challenge for HD				

A6.3. Regardless of the effectiveness of the decontamination technique: In regard to removing the contact/transfer hazard, people will have to remain in MOPP 4 because of the toxic vapors that continue to be generated by the absorbed agent. It is this off-gassing phenomena that can keep segments of an AF installation in MOPP 4 for days. See **Figure A6.1** and **Tables A6.1** and **A6.2**

Figure A6.1. Projected Hazard Duration for Thickened VX in South Korea in the summer.



8-Hr AEGL-1 level for TVX (initial AF criteria for de-masking) 8-Hr AEGL-1 level for TVX (initial AF criteria for de-masking)

8-Hr AEGL-1 level for TVX (initial AF criteria for de-masking) 8-Hr AEGL-1 level for TVX (initial AF criteria for de-masking)

Table A6.5. Hazard Associated with Average Vapor Reading after Decontamination Activity during Large-Frame Aircraft Decontamination Demonstration (LFADD).

Events	Average Vapor Reading after Event (mg/m3)	Representative Effect on Unprotected People**
Initial Contamination of Aircraft	N/A (5 g/m2 challenge level with 300 micron drops).	N/A
Weathering for 1-Hr (no physical decontamination)	N/A	N/A
Post Flight (after 2-Hr flights at ~10,000 feet)	0.579	After 15-minute exposure: Lethal to 5% of population Severe incapacitation effects to 42% of remaining population Mild incapacitation effects to the remainder of personnel.
After "Birdbath" (normal corrosion control wash of aircraft)	0.404	After 30-minute exposure: Lethal to 50% of population Severe incapacitation effects to 94% of remaining population Mild incapacitation effects to the remainder of personnel.
Completion of First Decontamination (Hot Soapy Water with Type V Aircraft Cleaning Compound)	0.063	Mild incapacitation effects to 100% of population after 2.4 minute exposure.
Completion of Second Decontamination (Bleach with pre-rinse corrosion inhibitor and post-rinse reducing agent)	0.04	Mild incapacitation effects to 100% of population after 3.9 minute exposure.
Completion of Third Decontamination (Hot Soapy Water with Type IV Aircraft Cleaning Compound)	0.013	Mild incapacitation effects to 100% of population after 24 minute exposure.
*WDTC-TR-04-073, Formal Test Report for the LFADD, December 2004.		
**Data derived from "Vapor Consequences" segment of AF/A10S Toxicity Calculation Tool.		

A6.4. If CW droplets in liquid form are still on the surface: AF warfighters do accomplish "spot" decontamination of resource areas that are going to be touched. Personnel use the M295 kit for the activity, and the reasons for this action are:

A6.4.1. Prevent cross contamination to the point that CW agents in liquid form do not enter the inside of the aircraft or vehicles. For example, maintenance personnel perform spot decontamination of the ladder and F-16 "rails" so the pilot(s) do not come into contact with liquid contamination and transfer the agent (in however small an amount) into the cockpit as they are climbing into the aircraft.

A6.4.2. Incorporation of a safety factor that mitigates mistakes personnel may make while wearing CW ensembles e.g., the glove gauntlet has come out from under the JSLIST sleeve and bare skin is exposed, the person has a hole in their rubber glove, etc.

A6.4.3. See **Table A6.6** below for a summary of M295 kit spot decontamination effectiveness by light condition (Reference Army Test and Evaluation Command (ATEC) System Evaluation report for the Sorbent Decontamination System, October 2002).

Table A6.6. Visible Liquid Removal and M8 Paper Results by Light Condition.

Light Condition	Number of Decons	Number Passing Visual Inspection	Number Passing M8 Paper Check	% Successful First Attempt
Day	25	23	19	76
Night	17	17[a]	17[b]	100
Low light/salt fog	42	35	30	71

[a] SMEs commented that it was difficult to see if liquid is present during night trials.
[b] SMEs commented that it was difficult to see M8 paper results during night trials.

A6.4.4. Even if there is physical contamination on people's JSLIST ensembles, there is a significantly reduced danger to personnel as long as they wear their CW protective equipment properly, and subsequently process through personnel decontamination stations (also known as "contamination control areas (CCA))."

A6.4.4.1. The ensemble components are designed to provide sufficient protection from agent penetration and CCA activities are designed to prevent the physical contamination form coming into contact with the warfighter's skin.

A6.4.4.2. The protective capabilities of the CW individual protective boots, gloves, and ensembles provide full protection for at least 24 hours after contact with CW agents in liquid form.

A6.5. The decision of whether or not to accomplish CW decontamination in the aftermath of an attack has immediate ramifications. For example, aircraft sorties may be lost or delayed for a period of hours if the decision is made to decontaminate the aircraft operating surfaces. Consequently, it is imperative Commanders have clear, realistic ideas about what can and cannot be achieved through CW decontamination.

A6.6. Vehicle, aircraft, and area decontamination cannot: Completely reduce the CW hazard to zero or near-zero, and as a result the area or resource will have restrictions on its use, regardless of whether or not CW decontamination has taken place. For example, previously contaminated aircraft must receive the appropriate foreign clearance approvals prior to flights leaving the CBRN contested environment.

A6.7. Listen critically to statements people make about area, vehicle, and aircraft decontamination. Ensure everyone is clear regarding what type of decontamination (CW, biological, radiological) and the level of effort (individual, teams) being discussed. For instance, some statements may be true for radiological decontamination but are absolutely not true for CW decontamination.

A6.8. Comprehensive area, vehicle, and aircraft decontamination activities (no matter how rigorous) are not: Likely to achieve operationally significant results, which will enable the immediate removal of protective equipment. The effective implementation of the Chemically Contaminated Object Rule (CCOR), combined with individual "spot" decontamination is the best way to approach CW-related vehicle and aircraft decontamination during Major Combat Operations (MCO) environments.

A6.9. Joint Service Lightweight Integrated Suit Technology (JSLIST): Ensemble re-use that have been exposed to CW agent vapors. Existing guidance in AFMAN 10-2503, Operations in a CBRNE Environment, specifies that people report to the contamination control area (CCA) to process through the personnel decontamination station and replace their JSLIST ensemble when the suit is "contaminated". However, the verbiage does not specifically say that "contaminated" equates to "ensembles that have been physically contaminated by CW agents in liquid or solid form". Consequently, many people erroneously believe that they must replace their JSLIST ensembles if it may have been exposed to CW vapor contamination e.g., they were in a MOPP 4 zone at any point.

A6.9.1. Unless personnel remained in functioning collective protection facilities for the entire time (both while on shift and while in off-shift/rest and relief status), it is likely that people will have been exposed to at least low-level concentrations of CW vapors at some point during each 24-hour period.

A6.9.2. It will be challenging to verify that the individual and their ensemble were exposed to CW vapor contamination. CW vapors are colorless and the M9 paper affixed to the ensemble will not react to agents in vapor form.

A6.9.3. In September 2016, the AF Countering Weapons of Mass Destruction approved the reuse of JSLIST ensembles that had been exposed to only CW vapors i.e., the suits were not directly contaminated with CW agents in liquid or solid form. The approved reuse period was 15 days. As of the time of the development of this guide, the reuse guidance has not been formally included in AF publications e.g., AFIs, AFMANs, etc. The basis for the CWMD Council's decision included the following:

A6.9.3.1. The Operational Requirements Document for the JSLIST (17 May 2000) specified that for Army and AF requirements the JSLIST had to be designed to protect the wearer from a dosage of at least 5000 mg-min/m3of CW agent (HD, GD, VX) vapor. The AF CBRN Survivability vapor challenge criteria for CW agents in vapor form is 100 mg-min/m3 per attack e.g., the JSLIST is designed to protect from far more CW vapor than is expected from missile attacks.

A6.9.3.2. The JSLIST is designed to provide the minimum required level of protection against liquid CW after 45 days of wear (protects from penetration of 10 g/m2 of agent). Testing has shown that JSLISTs worn for 60 days still provide adequate protection from liquid concentration of Distilled Mustard (HD) and persistent nerve agents. Further, testing showed there is no statistical difference in aerosol penetration for new JSLIST ensembles compared to JSLIST suits worn for 45 days (the established maximum wear time for the ensemble.

A6.9.3.3. In order to maximize personnel safety, there will likely be a need for war-fighters to wear JSLIST ensembles for as long as a vapor hazard exists on the installation. This generally equates to one-to-four days for each attack, with each succeeding attack re-starting the clock. Consequently, the number of CW attacks an installation is likely to experience is an important factor.

A6.9.3.4. There is no way of knowing for certain how many CW attacks each installation may experience. However, different Defense Planning Scenarios may provide some general insights. **Table A6.7**. provides an overview of two separate scenarios. NOTE: The attacks in each scenario were spread out over a period of weeks.

Table A6.7. Summary of Selected Defense Planning Scenarios.

Scenario	# of Attacks Per Location	% of Bases in "Range of Attacks"
1	Greater than 20	19%
	10 - 19	14%
	1 – 9	24%
	0	43%
2	Greater than 20	0%
	10 - 19	24%
	1 – 9	29%
	0	47%

A6.9.3.5. Based on a basis of issue of two (2) or even four (4), it is clear that people will have to reuse their vapor exposed JSLIST ensembles. Despite the increase in Chemical Warfare Defense Equipment C-Bag Asset Basis of Issue, for CBRN threat areas, it is not logistically feasible to have enough Chemical Warfare Defense Equipment assets on hand to automatically discard Joint Service Lightweight Integrated Suit Technology (JSLIST) Ensembles that are only exposed to vapor contamination from chemical warfare agents. Accordingly, units will plan to reuse any JSLIST Ensemble, which has been exposed to chemical warfare agents vapor contamination for up to 15 days.

A6.9.3.6. It is highly unlikely installations will have the personnel decontamination capacity to support running essentially everyone on the site through the contamination control area (CCA) locations at the end of each shift (see **Table A6.8**). This is especially true if attacks occur early in the deployment process and full complements of EM personnel are not yet at the installation. Note: For most people, this CCA processing time would be added to the length of their existing shift e.g., a person works 12 hours, travels to the appropriate CCA location, and waits 4-hours to be processed resulting in a total work day of 16-17 hours (every day there is CW contamination on the installation).

Table A6.8. Processing Line and Time Estimates for Open-Air CCA Personnel Decontamination.

# People to Process	# Fully Established CCA Lines	Required Time to Process People**
500	1	~6.9 hours
	2	~3.64 hours
	3	~2.56 hours
1000	1	Not tenable (requires 12 hours)
	2	~6.89 hours
	3	~4.72 hours
1500	1	Not tenable (requires 12 hours)
	2	~10.14 hours
	3	~6.89 hours
2000	1	Not tenable (requires 12 hours)
	2	Not tenable (requires 12 hours)
	3	~9.05 hours
3000	1	Not tenable (requires 12 hours)
	2	Not tenable (requires 12 hours)
	3	Not tenable (requires 12 hours)
	4	~10.14 hours
Note: Based on 77 person-per-hour processing rate established by AF Civil Engineering Center CCA during the validation Phase 2 Sustainment Exercise, Results and Conclusions dated July 2000. Time estimate included a 25-minute "spin up" time before line begins throughput of 77 people per hour.		
*Collective protection facilities can only process ~ 20 personnel per hour because of the time associated with the "airlock" step (which doesn't exist with open-air CCA processing.)		

A6.9.3.7. There is not an operationally significant danger from CW ensembles absorbing CW vapors and subsequently releasing CW vapors to personnel as a secondary hazard in open-air situations (see **Table A6.6**.). While the secondary hazard is greater in small collective protection spaces (size of a single general purpose medium tent), the danger is still very low.